UTILITIES

GOAL

Provide safe, reliable, and resilient public utility infrastructure and services, such as water, wastewater, stormwater management, solid waste management and recycling, within the Town's service area. Facilitate the provision of reliable and resilient private utility infrastructure and services, such as electricity, natural gas, and broadband. Public and private utilities should meet demand needs, promote economic growth, be equitably distributed, and result in a high quality of life for the community.

Sustainability Goal

Provide utility infrastructure and services, including access rights, through safe, environmentally sensitive, and cost-efficient methods. Partner with state and local governments, utility franchises, and other public and private entities to increase resiliency for critical infrastructure systems and incorporate climate adaptation into future infrastructure investments. Employ best management practices of new technologies and take active steps to accelerate Blacksburg's transition to a low-carbon energy future.

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 utility topics including the NRV Regional Water Authority, Blacksburg-VPI Sanitation Authority, and the Montgomery Regional Solid Waste Authority. Community members are also encouraged to attend Planning Commission and Town Council public hearings when utility topics are being discussed.

OVERVIEW

Reliable and resilient provision of these services is vital for the community, particularly during unexpected events such as public health emergencies and natural disasters. Utilities available within the Town include **water, wastewater, stormwater management, solid waste management and recycling, energy provision and consumption, and technology**. The Town provides infrastructure and services for water, wastewater and solid waste collection in conjunction with regional service authorities as well as providing stormwater infrastructure and services. Private companies under franchise with the Town provide infrastructure and services for electrical, natural gas, technology and telecommunications services. This chapter is divided into **Town Provided Services** and **Privately Provided Services** to accurately reflect how utilities are provided within the Town of Blacksburg.

TOWN PROVIDED UTILITY SERVICES

Public Water System

All people in Blacksburg should have access to clean, safe drinking water. To meet this end, the Town of Blacksburg purchases treated water from the NRV Regional Water Authority. There is inter-jurisdictional cooperation with the Town of Christiansburg, Montgomery County, and Virginia Tech on the water treatment and distribution system through Water Authority membership.

The water source for the water authority is the New River. The capacity of the plant is approximately 12 million gallons per day (MGD). Current daily use by all members is approximately 6.5 MGD, of which 2.5 MGD is used by Blacksburg customers and 1.3 MGD by Virginia Tech. Combining current water usage rates with new water-efficient appliances installed during renovations and new water-efficient building construction standards leaves significant treatment plant capacity available for projected water demand. The water treatment and distribution system complies with all state and federal regulations, as documented in annual water quality reports.

Greywater

Wastewater generated from domestic activities such as laundry, dishwashing and bathing which can be recycled on-site for uses such as landscape irrigation.

Water reuse is becoming an important component of water resources management. Water reuse can include collection and use of stormwater, reuse of greywater in homes and businesses, and reuse of treated wastewater. Water can be reused for irrigation, vehicle washing, toilet flushing, and industrial purposes. Water reuse is consistent with the Town's environmental and sustainability goals.

The Town's water service area includes areas outside the corporate limits. The Town and the Montgomery County Public Service Authority (PSA) have water service area agreements in place that establish the boundaries of the Town's service area outside the corporate limits. Any new areas outside the corporate limits that desire water service must request a boundary line adjustment and become a part of the Town prior to water service being provided.

The Town of Blacksburg and the Town of Christiansburg adopted a Regional Water Supply Plan in 2011, with an update completed in 2018. The plan covers the two Towns and Virginia Tech since the campus receives its water supply via the Town of Blacksburg's water distribution system. The plan governing Blacksburg and Christiansburg includes existing water resource information, existing water use information, water demand management, drought response and contingency plan, projected water demand, and statement of need based on existing and future water sources and demands. As part of the plan, the Town adopted an Emergency Water Resource Management Ordinance in case of a significant drought or emergency that threatens the Town water supply.

The Town's water system consists of two separate zones: the "high" elevation zone and the "low" elevation zone. The "high" elevation zone is located along the northern and eastern ridgelines of the Town and serves areas of Town that are at an elevation of 2,190 feet or greater. The "low" elevation system serves the majority of the Town and areas that are at an elevation below 2,200 feet, including the Virginia Tech campus.

A water storage supply and delivery system equal to 48 hours of use is ideal when interim emergency

water provisions are needed. As of 2020, current water storage tanks will provide service to the Town of Blacksburg and Virginia Tech for approximately 45 hours in the event of an interruption in supply.

As discussed in the *Public Safety & Community Facilities* chapter, the Volunteer Blacksburg Fire Department serves all areas of Town utilizing a combination of fire hydrants and tanker trucks to supply water in emergencies. As waterlines are upgraded or extended into areas of Town not currently served by public water, fire hydrants are installed.

Public Wastewater System

The Blacksburg-VPI Sanitation Authority treats the wastewater from Town of Blacksburg, Virginia Tech, and areas of Montgomery County. The Sanitation Authority Plant is located where Stroubles Creek crosses Prices Fork Road southwest of Town. The current design capacity of the Sanitation Authority Plant is 9 million gallons per day (MGD), which provides adequate treatment capacity for growth projections. The plant has the ability to expand to 12 MGD treatment capacity in the future if necessary. The current averaged daily flow volume at the plant equals 5.8 MGD.

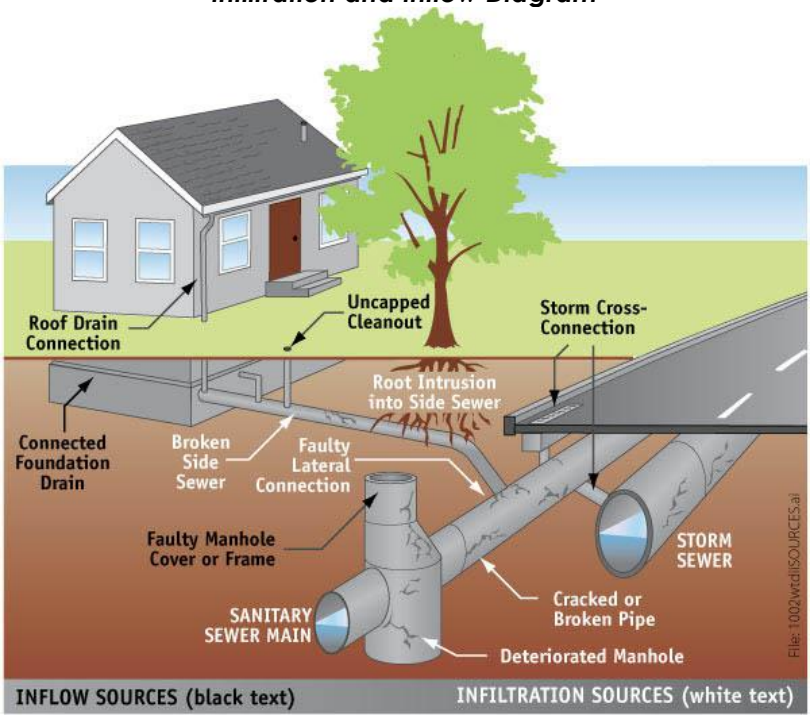
The Sanitation Authority Plant uses best management practices to prevent further impairment of local creeks. While not mandated, the plant also has a nitrification/denitrification process to help improve the quality of the wastewater discharge. This process provides a benefit to the New River, the receiving water body, by helping to preserve its existing river biology. Sludge removed during the treatment process is treated with an autoheated thermophilic aerobic digestion process, which will produce pasteurized (Class A) biosolids that can be reused, land applied, or land filled. The Town, in partnership with the Authority, administers the industrial pretreatment program, which is effective in protecting the integrity of the wastewater collection system and the treatment plant process.

The Town of Blacksburg owns, operates, and maintains the public wastewater collection system within the Town's service area, which includes portions of Montgomery County. As of 2020, this infrastructure includes more than 130 miles of gravity collection lines ranging in diameter from six to 24 inches, 14 miles of force main, 22 Septic Tank Effluent Pumping systems (STEP), 222 Septic Tank Effluent Gravity systems (STEG), and 27 wastewater pumping stations. Virginia Tech owns and operates the wastewater lines on the Virginia Tech Campus. Wastewater from Blacksburg and Virginia Tech flows into larger interceptor lines that are jointly owned and operated by the Blacksburg-VPI Sanitation Authority.

Public wastewater service is unavailable to the majority of the land area west of the Route 460 Bypass, including most of Toms Creek Basin. In these areas, STEP and STEG systems are used and connect downstream to public sewage. This alternative wastewater system is proposed to serve future population growth in designated areas approved by Town Council.

The Town's wastewater service area has expanded both through private development projects and through the cost-share program. The Town is evaluating effective ways to provide new services while operating and maintaining the wastewater infrastructure as it ages and expands. This includes implementing Environmental Protection Agency (EPA) Asset Management for Water and Wastewater Utilities Framework. To meet these principles, a Town-wide data logging program and hydraulic model has been developed to evaluate the effect of rainfall-derived **INFILTRATION AND INFLOW** (I/I) on the system and to develop a strategy to increase capacity within the existing infrastructure.

Infiltration and Inflow Diagram



Source: King County, Washington, https://www.kingcounty.gov/services/environment/wastewater/ii/what.aspx.

Additionally, the Town has proactively embraced the EPA's Capacity, Management, Operations, and Maintenance (CMOM) Program for municipal wastewater systems. The CMOM program seeks to evaluate and correct excessive I/I in the wastewater collection system through enhanced management practices such as root-control and rehabilitating aged or damaged pipes. Town staff works with homeowners to develop alternative discharge points for roof drains and sump pumps and to remove other inappropriate connections that impact the system's limited capacity.

EPA Asset Management

"Asset management is a process that water and wastewater utilities can use to make sure that planned maintenance can be conducted and capital assets (pumps, motors, pipes, etc.) can be repaired, replaced, or upgraded on time and that there is enough money to pay for it…Asset management is centered on a framework of five core questions, which provide the foundation for many asset management best practices:

1. What is the current state of my assets?
2. What is my required "sustainable" level of service?
3. Which assets are critical to sustained performance?
4. What are my minimum life-cycle costs?
5. What is my best long-term funding strategy?

Asset management is a scalable approach that can be used by systems of any size."

Source: "Asset Management for Water and Wastewater Utilities". United States Environmental Protection Agency. www.epa.gov/sustainable-water-infrastructure/asset-management-water-and-wastewater-utilities

Stormwater Management System

As land develops, an increase in compacted soils and impervious cover is often the result. This also results in an increase of volume and velocity of runoff within the watershed. Surfaces such as parking lots, roadways, buildings, and other impervious surfaces that do not allow water to penetrate or be absorbed, create flows of stormwater that are conveyed to the storm sewer systems and ultimately to the downstream waterways. Increases in stormwater volume associated with development accumulate downstream and present the potential for localized flooding and stream degradation. In addition, these impervious areas collect pollutants and funnel them directly into our natural waterways. The Town has taken a proactive approach for addressing issues related to stormwater management in order to protect public health, properties, and downstream waterways. Additional information on watersheds, flooding hazards, climate vulnerabilities including changing precipitation patterns, groundwater, and water reuse can be found in the *Environment* chapter.

The Town of Blacksburg owns and operates a Municipal Separate Storm Sewer System (MS4), which releases stormwater to our local creeks and waterways. Therefore, the Town must obtain a Virginia Pollutant Discharge Elimination System (VPDES) permit and maintain a stormwater management program. Adherence to the permit conditions and the plan is regulated by the Virginia Department of Environmental Quality (DEQ). The VPDES permit requires that the Town actively work towards implementation of programs, evaluations and best management practices to reduce pollutants entering waterways.

Water quality is an issue in several local watersheds. Once a watershed is determined to be impaired, the watershed is then scheduled for a Total Maximum Daily Load (TMDL) study. TMDL studies have been completed for Stroubles Creek, Wilson Creek, the Upper New River and the Upper Roanoke watersheds. Since 2012, the Toms Creek watershed has also been designated as impaired by DEQ due to violations of the state's water quality standards. A study is scheduled to be completed by DEQ for this watershed. In addition to the TMDL study, the watershed stakeholders must attempt to restore water quality by developing and implementing a set of strategies that will limit pollutants discharged to impaired creeks. The respective TMDL studies and the Town's MS4 together identify major strategies for improvement of stream quality, including measures for stormwater control and education of community members, contractors and engineers.

The following watershed conditions were identified as issues contributing to the impairment of Stroubles Creek and other local watersheds:

- Lack of streamside tree cover and vegetation
- Livestock access to streams
- Agricultural runoff
- Increasing development which contributes to greater peak flows from stormwater runoff
- Stream channel modifications
- Sewer overflows
- Downtown business wastewater disposal
- Pollutant buildup on impervious surfaces
- Lack of compliance with erosion & sediment regulations at construction sites
- Improper disposal of grass clippings and trash

Implementation actions consist of a variety of practices to address human impacts arising from the combination of rural, suburban, and urban land uses in this area. Proposed actions include agricultural Best Management Practices (BMPs), stream channel BMPs, stormwater management BMPs, sanitary sewer system improvements, and urban/residential education components. In recent years, the Town has engaged residents, neighborhoods, and landowners on a number of the topics listed above including: responsible application of residential and agricultural fertilizers, restricting livestock from accessing streams, and riparian area restoration.

Storm Drain Marker for Public Education

To address stormwater management issues, Town Council created the Stormwater Management Task Force in 2008 that assessed the financial impacts of implementing a comprehensive stormwater management program. This financial analysis led to consideration of a stormwater utility fee. Town Council appointed a Stormwater Stakeholders Advisory Group in August 2012 to work on the utility fee as well as to engage and educate the public, further develop the stormwater program, and recommend spending priorities. Based on the recommendations of the Stormwater Stakeholders Advisory Group, Town Council adopted a stormwater management ordinance in 2014 including a stormwater utility fee.

The stormwater utility fee provides funding for a variety of stormwater management programs and outreach. These projects are reflective of Blacksburg's most devastating flooding problems, targeting areas where residential structures are impacted and areas where water quality measures are needed to help reduce the input of sediment and pollutants into the local water bodies. The funding also provides for proactive maintenance to the existing stormwater system to address the everyday needs of the system, with the aim of preventing future stormwater problems from occurring. The funding also aids in public outreach and education, stormwater infrastructure modeling, and compliance with the Town's MS4 and local TMDL programs.

Solid Waste Management and Recycling

Blacksburg is environmentally conscious and progressive in waste reduction efforts. As part of the Town's Refuse and Recycling Program and its commitment to a sustainable environment, the Town strives to reduce waste and increase recycling.

The Town is a member of Montgomery Regional Solid Waste Authority (MRSWA), which was created in 1994. Member jurisdictions are Blacksburg, Christiansburg, Montgomery County, and Virginia Tech. Through DEQ's Virginia Environmental Excellence Program, MRSWA has an E3 Certification as an Exemplary Environmental Enterprise (E3) community.

Funding for MRSWA is provided solely through tipping fees and recycling revenues. MRSWA is a member of a regional landfill and has constructed a transfer station at the former landfill site. Solid waste is disposed of at the New River Resource Authority in Pulaski County. MRSWA has constructed a regional recycling facility that has recently been converted to accept materials from the New River Valley and beyond, and truck the material to the new single stream processing center in Roanoke. Recycling and Disposal Solutions (RDS) processes the material and sells it to the appropriate markets.

Tipping Fee

The charge levied upon a given quantity of waste received at a waste processing facility. In the case of a landfill, it is generally levied to offset the cost of opening, maintaining, and eventually closing the site.

To achieve a higher level of environmental awareness and protection, efforts to educate the public about waste reduction and recycling are emphasized in the Town and regionally. Source reduction is the first step, followed by reuse, and then recycling. As part of the Authority, the four jurisdictions now combine their recycling material to be shipped to Roanoke where it is then combined with the recycling materials collected in the Roanoke Valley and beyond. The combined process of collection, sorting, and marketing of recycling products strengthens representation in the recycling industry and enables a much larger volume of materials to be baled.

The Town currently provides curbside recycling for residential customers. Apartment complexes are required by ordinance to contract with private entities to provide recycling opportunities similar to those provided curbside by the Town. In 2011 and again in 2016, the Town revised regulations to proactively promote recycling in residential apartment complexes and increase resident convenience.

The Town provides temporary recycling at major street festivals such as Steppin' Out and is seeking to provide recycling on a daily basis to residents and visitors Downtown. However, providing solid waste collection and recycling for Downtown, especially to businesses, is challenging. The majority of merchants contract privately for refuse and recycling service, and there is no requirement for recycling. Cleaning up alleyways while providing for safe and effective refuse and recycling solutions is a top priority for improving the aesthetic appearance of the area. In conjunction with community partners such as Sustainable Blacksburg and Downtown Blacksburg, Inc., the Town has developed a number of convenient and secure recycling facilities for Downtown businesses. The newest solid waste and recycling site is now planned for construction in the Church Street parking lot. This site will provide convenient trash and recycling service to an extended Downtown area.

The Town has partnered with the YMCA at Virginia Tech since 2006 to offer a battery, compact fluorescent bulb, and residential electronics re-use and recycling program at the YMCA Thrift Store. For more than a decade, the program has helped ensure that end-of-life electronics are properly recycled and/or disposed of in the landfill.

The Town has an adopted policy to formalize a longstanding internal recycling program within all Town government operated-facilities to reuse or recycle 50% of the solid waste stream. Additionally, Public Works has constructed an inert debris fill site at its facility, which can be used for long-term hauling of construction debris—concrete, pavement and dirt that cannot be recycled. This material would otherwise be hauled to MRSWA and would come at a significant cost to the Town in tipping fees.

PRIVATELY PROVIDED UTILITY SERVICES

All utilities are placed in the street, in rights-of-way, or in public easements held by the Town in trust for the use of the public. These are finite assets that interest multiple users. The value of rights-of-way as a public asset has increased as more utility and communications providers have become interested in serving Blacksburg residents. The Town has an obligation to charge fair compensation for the use and restoration of this asset. The Town also has the duty to manage its rights-of-way and easement assets wisely for the public good. This duty includes, but is not limited to, adopting reasonable regulations for utility separation, the timing and coordination of work in the right-of-way, safety rules and regulations, and preservation of streets in a condition to best serve the traveling public.

Energy Provision and Consumption

American Electric Power (AEP) Company and Virginia Tech Electric Service (VTES) provide electric service for Blacksburg. Generally, VTES serves the central area of Town, including the Virginia Tech campus, the Corporate Research Center (CRC), the Gables Shopping Center, and several neighborhoods as shown on the Electric Utility Service Areas map. The remainder of Town is served by AEP.

Most of the power utility lines within Town are above ground. In new construction, these lines and other utilities are provided underground. Overhead utility lines are more vulnerable to weather events causing service outages. The Town has worked with utility companies to places lines underground in the Downtown area. The Town encourages the transition to underground utilities and will continue to work with private utilities for increased safety, reliability, and consideration of community character.

Atmos Energy currently has a franchise agreement to provide natural gas to customers in most areas of Blacksburg, which is detailed on the Natural Gas Utility Services Areas map. Virginia Tech has its own heating system fueled by an onsite power plant that predominantly uses natural gas as fuel.

The Town government and residents want reliable and affordable energy, both now and in the future. Existing providers meet the current energy needs for the community. However, there is growing community interest in renewable energy sources as demonstrated through the successful Solarize Blacksburg and Solarize Montgomery programs. The Town urges utility providers to accelerate their efforts to transition to carbon-neutral energy sources.

Residential Solar Photovoltaic System

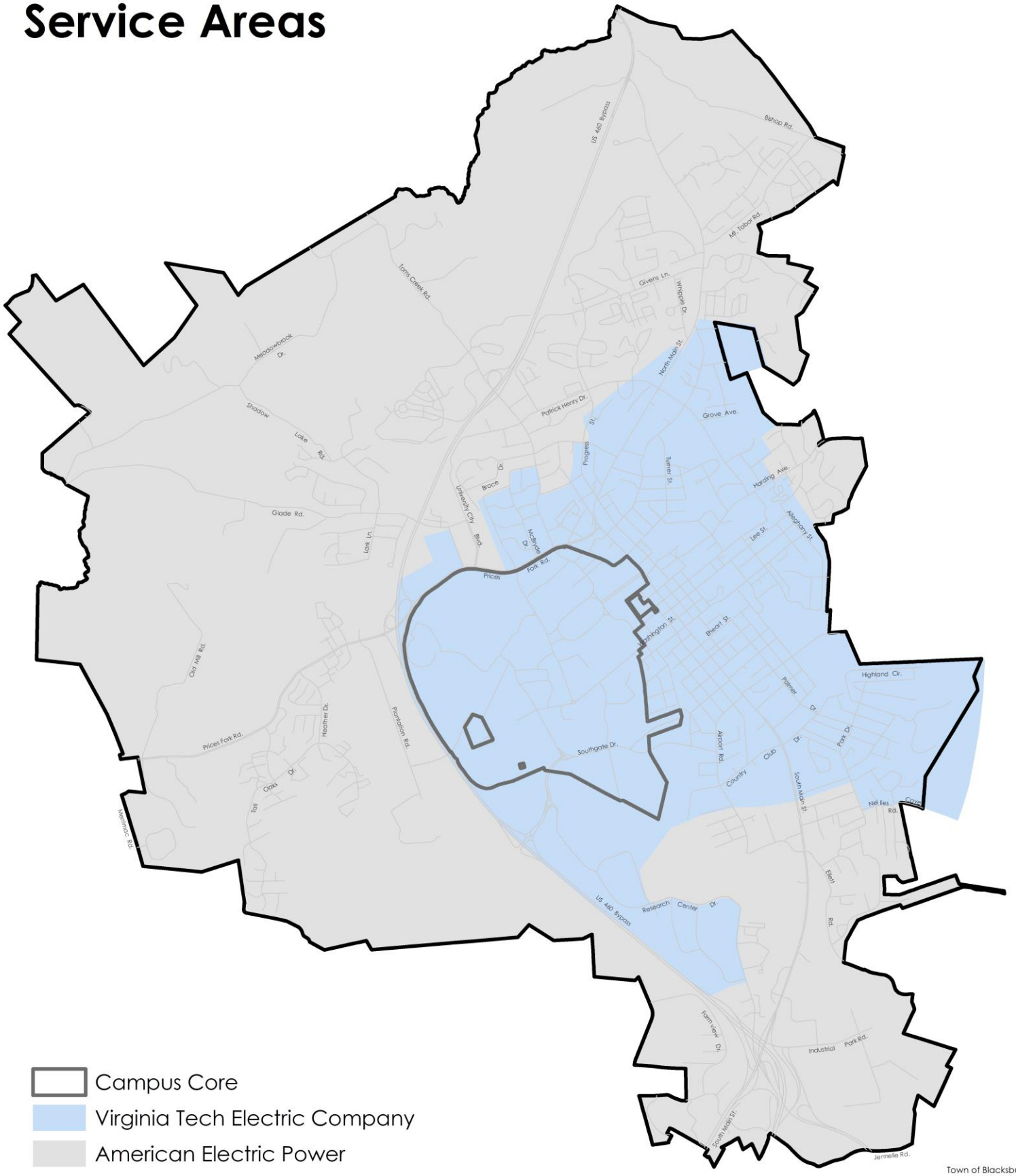
Solarize Blacksburg

Solarize Initiatives encourage individuals and businesses to group together to lower costs for the installation of solar projects. Solar installers are able to offer lower costs to the customer as they spend less on marketing and customer enrollment during the initiative's limited time period.

In March of 2014, Blacksburg became the first community in Virginia to launch a **Solarize Initiative**, which resulted in quadruple the amount of residential solar in 6 short months and over one million dollars in local clean energy investment. By the end of 2015, 25 other Virginia communities had followed Blacksburg's lead and launched Solarize initiatives of their own, creating real momentum and demonstrating the enormous amount of untapped consumer demand for clean energy in Virginia. That same year, Blacksburg was awarded the U.S. Conference of Mayors Climate Protection Award for the Solarize Blacksburg initiative.

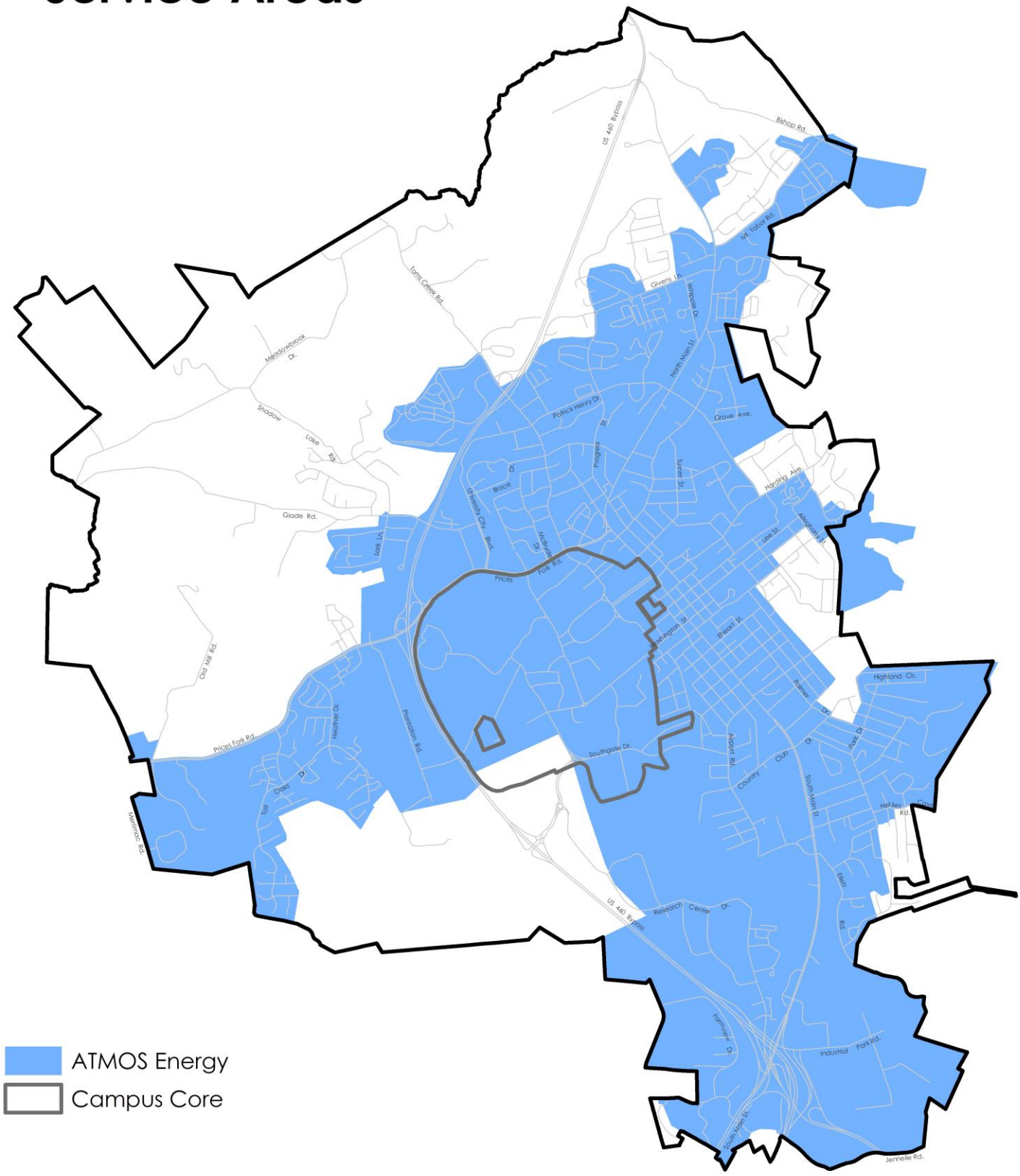
VTES and AEP own the streetlights within their respective service areas that are then leased to the Town. All of the commercial areas and a number of residential areas within Town have streetlights. Streetlights are required to be installed as new developments are constructed on collector and arterial streets. The addition of streetlights in existing areas can occur through the establishment of lighting districts funded by residents in the area. Street lighting and other site and security lighting can have negative impacts on the community without regulation. Site lighting is subject to the lighting regulations contained in the Town's Zoning Ordinance. The Town continues to seek ways to balance nighttime visibility and security needs, while protecting human health and minimizing disruptions to the natural environment and animal habitats. The Town is supportive of the International Dark Sky Association standards and evaluation the standards to Town lighting policy is an objective in the *Sustainability* chapter.

Electric Utility Service Areas



Town of Blacksburg
Engineering & GIS
April 27, 2021
Map is Not to Scale

Natural Gas Utility Service Areas



Town of Blacksburg
Engineering & GIS
April 27, 2021
Map is Not to Scale

Technology

Fitting the dynamic nature of technology into the traditional infrastructure planning process is a challenge. Community expectations are changing and a significantly higher level of service for technology is essential for residents and businesses alike. In particular, broadband and wireless technology infrastructure are vital utilities in the same way as water or electrical service.

Demonstrating this community interest, 1 in 5 respondents in the Comprehensive Plan Survey selected improved access to broadband as a goal over the next 10 years. Providing the level of service to meet these expectations will only happen through a collaborative public/private effort. At one time, Blacksburg was a technology leader, especially for a town of its size, with the creation of the Blacksburg Electronic Village. Technology has changed and service in the community has not kept pace. Community technology needs are constantly growing as technology is increasingly incorporated into more and more aspects of daily life. Access to technology infrastructure and service should be equitable and affordable for all Blacksburg residents and businesses regardless of location within the Town.

As technology changes, private providers can find themselves at odds with local governments with how and where to build technology infrastructure. There have been successful federal and state legislative efforts to remove local governmental authority from some types of technology infrastructure installations, such as small-cell antennas. The Town and private technology providers need to work cooperatively to provide adequate access to technology infrastructure throughout Town. Often, what is referred to as the last-mile component of the infrastructure is the most difficult to provide. Please refer to the *Economy* chapter for additional information.

Wireless Service

Wireless technology facilities take a variety of forms including telecommunication towers and monopoles as well as antennas like small cell facilities. Larger scale facilities like telecommunication towers and monopoles can be challenging to locate within existing developed areas. To address this challenge, a regional approach was developed to encourage the construction of low-impact facilities throughout the New River Valley. This regional approach supports co-location with existing facilities, consistent notification procedures for neighboring jurisdictions, and facility siting with the lowest visual impact.

Small cell facilities are low-powered antennas that provide wireless service coverage to a limited geographic area, often with ranges of a few hundred feet. These are used to supplement and expand the coverage provided by the traditional, larger-scale network. While these facilities have a smaller visual impact than telecommunication towers and monopoles, the coverage area is smaller requiring placement of a greater number of facilities to provide the same coverage. Since the accumulation of these facilities can have a large visual impact, the Town is creating guidelines that support placement in locations that are the least physically and visually intrusive to the public. In particular, the Town encourages facilities to use the least amount of physical space and to be co-located on existing buildings, utility poles, streetlights, and traffic signal poles.

TOWN PROVIDED UTILITY SERVICES

Public Water System

U.1. Provide an adequate and reliable water distribution system throughout the Town that meets Town water specifications and standards that strive to limit water loss. This includes construction of new facilities plus maintenance and upgrades of existing facilities.

U.2. Extend waterlines and upgrade all properties to provide fire protection service, ensuring waterlines are extended and fire hydrants are installed as part of any new development projects that occur in areas of Town not currently served by public water.

U.2.1. Ensure that fire hydrants are installed within all existing developments in accordance with Town Code.

U.3. Ensure the public water system provides adequate water storage facilities to serve Town residents.

U.3.1. Maintain water storage supply equal to 48 hours of service to all areas within the Town and its service area.

U.4. Provide distribution and supply system redundancy.

U.4.1. Coordinate with the Water Authority to construct a new transmission main from the treatment plant to the west end of Town along Prices Fork Road.

U.4.2. Investigate construction of a new pump station to provide a second feed between the high-elevation system and the low-elevation system.

U.5. Ensure that all residents within Town limits are served by public utility services that provide adequate and reliable water and wastewater services. Areas outside the corporate limits will not be eligible for Town provided utility services unless a boundary line adjustment is requested and approved and the property becomes a part of the Town prior to services being provided.

U.6. Require new developments to utilize pipe design and construction of the water system in accordance with Town Code sections and development standards.

U.7. Plan regionally with local jurisdictions and authorities for public water needs, infrastructure, and utility extensions across jurisdictions.

U.7.1. Work cooperatively with other jurisdictions in the New River Valley to promote water conservation and to supply clean water to residents in the region without degrading the quality or quantity of the Town's water supply.

U.7.2. Continue to participate in the New River Valley Regional Water Authority on drinking water issues.

U.8. Encourage water reuse, including collection and reuse of stormwater and reuse of graywater.

Public Wastewater System

U.9. Provide a resilient, sustainable and cost-effective public wastewater service that is in conformance with all state and federal regulations.

- U.9.1. Decrease the amount of inflow and infiltration (I/I) within the system before peak flows exceed pipe capacity.
- U.9.2. Employ renewable engineering strategies, such as refurbishment, to extend the life of existing wastewater assets.
- U.9.3. Encourage industrial process water recycling to reduce wastewater volumes and treatment demand.
- U.9.4. Document existing environmental and ecological conditions prior to the construction of any wastewater system to provide baseline ecological information on any potentially affected creek.
- U.9.5. Advocate for policies to encourage safe wastewater reuse.

U.10. Continue an ongoing inspection and maintenance program as identified in the Capacity, Management, Operations, and Maintenance (CMOM) Program for the existing public wastewater system.

- U.10.1. Use Capital Improvement Program funds to upgrade and replace existing wastewater lines to reduce I/I.
- U.10.2. Maintain a cleaning and root-cutting program to prevent stoppages.
- U.10.3. Reduce I/I by disconnecting sump pumps and roof drain spouts from wastewater collection lines and utilizing other best management practices.
- U.10.4. Explore the feasibility of establishing a program to require inspection of roof drains and sump pumps at the time of real estate property transfers.

U.11. Plan regionally with other local jurisdictions and authorities for public wastewater needs, infrastructure, and utility extensions across jurisdictions. Participate with the Sanitation Authority to evaluate the region's rate of development and forecast treatment facility upgrade needs.

U.12. Utilize educational campaigns to raise public awareness to help reduce maintenance issues and blockages (e.g. baby wipes, grease, etc.) and ensure waste not suitable for the wastewater treatment plant is disposed of properly (e.g. pharmaceuticals, hazardous waste, etc.).

Stormwater Management System

U.13. Maintain stormwater management programs that include public outreach and education.

U.14. Continue modeling of the stormwater infrastructure to better address unknown discharges and to effectively plan for future upgrades.

U.15. Continue to support the maintenance of all public and private stormwater management facilities to ensure designed water quality and quantity benefits are achieved.

U.16. Maintain compliance with the Town's Municipal Separate Stormwater Sewer System (MS4) Permit.

U.17. Continue to meet requirements of the required Total Maximum Daily Load (TMDL) on Stroubles Creek and Roanoke River tributaries.

U.18. Continue implementation of the Virginia Stormwater Management Permit program.

U.19. Support the installation of regional Best Management Practices (BMPs) to facilitate future economic growth in our heavily commercial areas.

U.20. Continue the development of "stormwater parks" and regional recreational amenities such as greenways that also manage stormwater volume and quality.

U.21. As a part of local or regional climate vulnerability and resiliency planning, assess the capacity of stormwater infrastructure to manage anticipated increases in intensity or frequency of precipitation events. Ensure future infrastructure design and upgrades are built with anticipated climate models as a guide.

U.22. Implement the Best Management Practices needed to address the issues contributing to the impairment of Stroubles Creek and other local streams.

U.23. Expand engagement and outreach with the public on the value of our local watershed resources and steps that community members and businesses can take to reduce the sources of water impairment and improve water quality, to include:

- Responsible application of fertilizers, pesticides, and herbicides in residential, commercial, and agricultural settings
- Proper disposal of residential, commercial, and agricultural chemicals
- Restrict livestock from accessing streams
- Restoration of streamside riparian buffers

Solid Waste Management and Recycling

U.24. Promote and expand waste reduction, reuse, and recycling locally and regionally by community members, government, and private businesses.

U.25. Develop a comprehensive Environmentally Preferable Purchasing Policy for all Town government operations to encourage purchase of less toxic, more environmentally friendly products. For example, select products that contain recycled materials or that can be reused locally.

U.26. Continue to develop and promote long-term waste management and disposal strategies that explore alternatives to landfilling, encouraging the reduction of single-use consumer and commercial materials. Some alternatives include food composting and yard debris recycling.

U.27. As regional waste collection practices become more uniform, contract regionally for collection services to increase cost effectiveness.

U.28. As technology allows, consider development of a pay-as-you-throw program for refuse disposal

whereby fees are based upon the amount of waste generated.

U.29. Explore feasibility of a joint composting facility with Virginia Tech for municipal brush and leaves, dining hall organics, agricultural wastes, and potentially food waste from restaurants and grocery stores.

U.30. Explore the feasibility of commercial composting.

PRIVATELY PROVIDED UTILITY SERVICES

Energy Provision and Consumption

U.31. Support a reliable, affordable, efficient, and environmentally sound electrical infrastructure.
- U.31.1. Urge energy utilities to accelerate their transition to carbon-neutral energy sources.
- U.31.2. Urge energy utilities to offer rate structures that increase energy affordability for lower-income households.
- U.31.3. Urge energy utilities to offer rate structures that encourage conservation behaviors and efficiency investments.
- U.31.4. Urge energy utilities to integrate climate adaptation into their future infrastructure plans.

U.32. Emphasize conversion to underground utilities during all franchise negotiations and encourage Virginia Tech Electric Service and American Electric Power Company to convert overhead lines to underground on a continual basis.

U.33. Convert utility lines to underground service in Town road improvement projects and lay conduit in all Town projects in the right-of-way to provide for future utility relocations.

U.34. Adopt or maintain reasonable regulations for utility separation, timing and coordination of work in the right-of-way, safety rules and regulations, and preservation of the streets in a condition to best serve the traveling public.

U.35. Encourage all utility franchisees to implement and maintain Best Available Technology (BAT) practices and infrastructure.

U.36. During all utility franchise negotiations, include a requirement that all utility companies report service disruptions on an annual basis to the Town of Blacksburg.

U.37. Work with electrical and natural gas utilities to plan for and implement a transition to a low-carbon energy future by 2050.

U.38. Support programs for public and private entities to become more energy efficient and utilize renewable energy sources such as solar, wind, or other decentralized technologies.
- U.38.1. Promote the use of Demand Side Management (DSM) to reduce energy use through efficiency improvement devices and peak load reduction strategies.
- U.38.2. Review and amend the Zoning Ordinance to incorporate clear standards for

renewable energy.

U.38.3. Publicize Blacksburg's solar-community friendly designation and promote the Town's solar landing page, which provides clear guidance to residents and businesses that are interested in pursuing solar.

U.39. Coordinate with Virginia Tech Electric Service and American Electric Power Company to ensure a reliable electrical power supply to all areas of the Town and encourage planning and cost-share projects between the Town and utility companies.

U.40. Provide cost-effective, energy-efficient street lighting in Town and on the Virginia Tech campus and VDOT-maintained roads that is appropriate to the use and character of the area and that considers with International Dark Sky Association standards.

U.41. Accept alternate street lighting within neighborhoods that is appropriate to the character of the area, available through the electric utility, and where any excess cost is paid by the neighborhood residents or commercial property owners.

U.42. Support statewide legislative initiatives to make renewable energy more available and affordable for all customer classes.

Technology

U.43. Establish and maintain a vision of and goals for the Town's globally competitive telecommunications infrastructure and technology-related services.

U.44. Explore requiring open conduit as part of the development process.

U.45. Establish public and private partnerships to undertake projects connecting any major public or private facility with fiber optic services.

U.46. Apply infrastructure and applications to make the municipal workplace and technology services more reliable, faster, and more secure in a manner that is fiscally responsible.

U.47. Regularly assess the Town's technology infrastructure and applications, monitor performance of infrastructure and services, and adjust activities as necessary.

U.48. Continue the transition toward paperless communications for all Town of Blacksburg processes, including website upgrades to implement the latest technology advances for on-line registration, payment and tracking of applications for all Town services and programs.

U.49. Continue to pursue technology initiatives to provide additional access to Town and County services, including an upgrade for online virtual Town Hall meetings and additional meeting space designed for digital recording.

U.50. Adopt policies that reduce the lifecycle environmental impacts of electronics.

U.51. Continue to implement the regional approach to siting wireless facilities. Encourage Virginia Tech to carefully consider the placement of wireless facilities on-campus and at the Corporate Research Center.

U.52. Adopt design and siting guidelines for the development of small cell facilities.

U.53. Encourage co-location and support the placement of small cell facilities in locations that are the least physically and visually intrusive to the public.