

10 UTILITIES

A. UTILITIES VISION

BROOMFIELD PROVIDES A UTILITY INFRASTRUCTURE SYSTEM REPRESENTING STATE-OF-THE-ART EQUIPMENT, CONSTRUCTION, MANAGEMENT AND CONSERVATION TECHNIQUES TO SERVE THE NEEDS OF BROOMFIELD THROUGH AND AFTER BUILDOUT.

B. CURRENT SITUATION & FUTURE TRENDS

Utilities are the foundation to urban living. Clean drinking water, electricity, stormwater management, natural gas, telecommunications, and wastewater make city-living possible. Adequate, efficient, accessible and affordable utilities contribute to creating quality-of-life places, attracting business, reducing the environmental footprint of urban development, and playing a vital role in social development. The Utilities Element works in concert with the [Land Use Element](#) to ensure adequate infrastructure is in place to accommodate existing and future needs.

Infrastructure for utilities (water, wastewater, power, natural gas, waste disposal, storm drainage, telecommunications and reuse water) is provided by or in coordination with the City and County of Broomfield to serve the basic needs of the community's residents and businesses; to serve the needs incurred by a growing population; and to respond to legal mandates of legislation at federal, state and local levels. The City and County of Broomfield has an extensive utility infrastructure system in place, and the maintenance and expansion of this system is critical to Broomfield's ability to meet present and future utility services demands.

Growth will continue to strain utility infrastructure within Broomfield and the Front Range region. The challenge is to maintain an appropriate and affordable level of services for all members of the community. Broomfield currently enjoys a strong financial position, adequate existing infrastructure

and a broad commercial tax base. Continued growth will provide new opportunities for Broomfield, but it also will require extensive capital improvements or joint service agreements with developers to put necessary services in place. New technologies and changes in local and regional policies may present opportunities to diversify approaches to meeting the needs of the community in increasingly sustainable ways.

Utility systems within Broomfield will continue to grow as needed to serve the residents to final buildout of the community. Once buildout is achieved and further new development is minimal, the utility systems will switch to a repair, maintain and as-needed replacement mode to keep the utility systems in an optimal operating condition. After buildout is accomplished any new growth within the utility systems will be limited to serving existing areas within the community that are undergoing redevelopment. At this stage, no growth of utility services into new areas beyond Broomfield are anticipated.

Broomfield builds, owns, operates and maintains its own potable water, non-potable water and wastewater systems. Broomfield's stormwater system is a combination of public and private improvements, with ownership, construction responsibility and maintenance also being a combination of the City and County of Broomfield, private developers and the Urban Drainage and Flood Control District.



Electricity, gas, cable, and telecommunications are all supplied pursuant to franchise agreements by the private sector through Xcel Energy, United Power, Comcast, and CenturyLink Communications.

Based on the [2015 City and County of Broomfield Citizen Survey](#) and interviews with key Broomfield managers and stakeholders the following infrastructure issues have been identified to be important within the community (note, the survey did not cover specific issues related to broadband/telecommunications infrastructure):

- The severe drought in 2003-2005 exposed the challenges associated with water supply in arid climates and heightened the awareness of the need to create new efforts for water conservation.
- Broomfield residents currently enjoy a high level of service related to infrastructure, and there is a concern that additional development especially in the growing northern and eastern portions of the community may tax the capacity of the systems and diminish the quality of life. Consequently, it will be important to evaluate the demands of future development and to provide service in a manner that does not reduce service levels or increase costs for existing residents.
- Smart growth practices should be employed within Broomfield whereby infrastructure is installed in a sustainable manner commensurate with the ability to finance the required improvements.
- The utility infrastructure needed for new growth, particularly larger facilities such as pumping stations or substations, should be installed prior to the construction of surrounding residential or commercial buildings.
- Utility rates need to be sufficient to allow revenue for the repair and replacement of older existing utility infrastructure as it reaches the end of its useful life.



Broomfield residents enjoy a high level of service related to water/stormwater/sewer infrastructure, and there is concern that too much development may burden the capacity of the systems and diminish the quality of life. Consequently, it will be important to evaluate demands of future development, to provide service in a manner that does not reduce service levels or increase costs, and ensure maintenance of existing infrastructure continues for continued viability.

EXISTING UTILITY MASTER PLANS

The City and County of Broomfield currently has three utility master plans for its utilities. The Water Master Plan was updated in 2014. The plan identifies the scope and timing of improvements that are needed to adequately serve the community through buildout. The [Non-Potable Water Master Plan](#) is scheduled to be updated in early 2016. This update is intended to evaluate different buildout scenarios and to identify the new infrastructure needed to support the scenarios. The Wastewater Utility Plan was updated in 2013. These master plans need to be periodically updated to ensure that existing and planned infrastructure is adequate to handle future growth through buildout as proposed in this Comprehensive Plan.

Privately owned utilities that operate by franchise within the community have their own plans for serving customers within Broomfield.

CITY OWNED UTILITIES

Broomfield provides potable water, non-potable water and wastewater utility services within the City and County. In addition the storm water system within the City and County is owned and operated by the City and County and other public and private entities.

WATER SUPPLY CONSIDERATIONS

Like most communities within the western United States, Broomfield’s water supply must be viewed in terms of its physical availability, legal right to usage and delivery system for treatment, storage and transportation. Along the Front Range there is a finite supply of surface and groundwater that must be managed. Colorado’s complex system of water rights further complicates the delivery of water in the region because the point of diversion, consumptive-use credits, and return-flow requirements create constraints and require expert management to ensure that water is available under dry-year conditions. The ability to treat, store and deliver potable water is the essence of a community water system.

The Northern Colorado Water Conservancy District provides up to 8,994 acre-feet of untreated surface water from the Windy Gap and Colorado/Big Thompson Projects. Additionally, Broomfield can purchase up to 6,500 acre-feet of potable water from the Denver Water Department. The combined 15,494 acre-feet of potable water will support a base of 28,171 tap equivalents. Based on projected residential and commercial development, it is estimated that 37,300 tap equivalents will be needed at buildout. Broomfield does hold water rights within the Windy Gap system to adequately serve these estimated future needs. The Windy Gap Reservoir and pumping plant are constructed and operating. They provide Broomfield with sufficient water for an additional 11,000 tap equivalents meeting buildout demands.

The water rights for the Windy Gap project are fairly junior (other more senior water rights are satisfied first), which requires the construction of new water storage projects to “firm” the Windy Gap water supply. The Windy Gap water must be taken when it is available during high

Second Broomfield is planning the construction of Broomfield Reservoir sometime between 2020 and 2022. Chimney Hollow Reservoir will store Broomfield’s share of the Windy Gap water near Loveland until it is needed. For Broomfield to use this water, it must be transported to Broomfield through the Southern Water Supply Pipeline that runs from Carter Lake to Broomfield. At times more water will be required in Broomfield than the Southern Water Supply Pipeline can deliver. Broomfield Reservoir will provide raw water for treatment during high-use periods and will be located between Sheridan Boulevard and the Northwest Parkway near the Broomfield Water Treatment Plant.

Non-potable water supplies also are an important element of a sustained community water supply. Broomfield’s reuse “purple pipe” system has the capacity to provide up to 3,100 acre-feet of non-potable treated effluent (reclaimed water) from its wastewater treatment plant for irrigation of open space areas. This approach ostensibly “stretches”

Broomfield currently receives water from four sources:

1. Northern Colorado Water Conservancy District and its Municipal Subdistrict
 2. Denver Water Department
 3. Reclaimed (treated) wastewater
 4. Raw water from water rights owned by Broomfield
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flow periods, such as spring snow melt runoff, and stored for later use when it is needed. To provide this firming storage, Broomfield is currently planning for two water storage projects.

First, Broomfield, along with 12 other water providers, is participating in the building of the Chimney Hollow Reservoir, which will be built west of Carter Lake near Loveland. This reservoir is being proposed by the Northern Colorado Water Conservancy District, and construction could begin as early as 2018. Once adequate storage is built at Chimney Hollow Reservoir to firm the Windy Gap water, Broomfield will have adequate water available to serve the community through buildout.

available water supplies by freeing up potable water supplies to serve new users. The reclaimed wastewater may be used to irrigate about 1,275 acres of land.

The feasibility of expanding the reuse system further will be determined as part of the 2016 Non-Potable Master Plan update. The update should explore the feasibility of extending the non-potable purple pipe system to individual homes and businesses for purposes of landscape irrigation. This study would evaluate the amount of non-potable water available for sale to individual customers and the cost of installing, maintaining and metering this purple pipe system to customers in some portions of the community.

In addition the 2016 Non-Potable Master Plan update should explore amending Broomfield’s building codes to allow homeowners to capture, store and use for irrigation gray water from sinks and showers in a home or commercial building. Black water from toilets would continue to be

discharged to the sanitary sewer system. Both types of non-potable water reuse systems would reduce water available for treatment and discharge to Big Dry Creek and thus would have water rights implications that need to be addressed before either option can be implemented. As of 2016, Colorado allows residents to use rain barrels to capture water from roofs during rainstorms.

Broomfield also currently supplies water to the Rocky Mountain Metro Airport and the Mile High Water Company, although it is not the City and County’s policy to extend water supply services to additional areas outside Broomfield.

Water supplies must continue to be developed to match growth projections for Broomfield through buildout. Options include, but are not necessarily limited to, acquisition of additional raw-water supplies, additional water rights for the non-potable reuse system, groundwater development, increased raw-water storage and expanded use of reclaimed wastewater.



STORAGE, TREATMENT AND DISTRIBUTION

Broomfield’s water treatment plant currently meets all Safe Drinking Water Act requirements promulgated by the U.S. Environmental Protection Agency; however, there may be a need to provide for additional chlorination facilities within the delivery system to maintain required minimum levels of chlorine residuals as the system expands further to the north and east. One example is the chlorination station at Midway Boulevard and Zuni Street that increases the chlorine content of potable water purchased from the Denver Water Department before it enters the Broomfield system.

The potable water system currently has 15 million gallons of potable water storage and is capable of delivering water with pressures ranging from 60 to more than 100 psi. The distribution network south of 144th Avenue is nearly

complete, although significant expansion will be needed to serve the northern and eastern areas of the community.

Broomfield currently has a water license fee per tap equivalent. The water license fee is determined based on the anticipated annual water usage while separate fees are charged for the actual tap and for the meter. The fee is structured to pay existing water debt and to acquire water rights and build such systemwide improvements as reservoirs, treatment facilities and transmission works. The water license fee is reviewed annually to ensure that Broomfield will have adequate funds to pay for water rights through buildout.

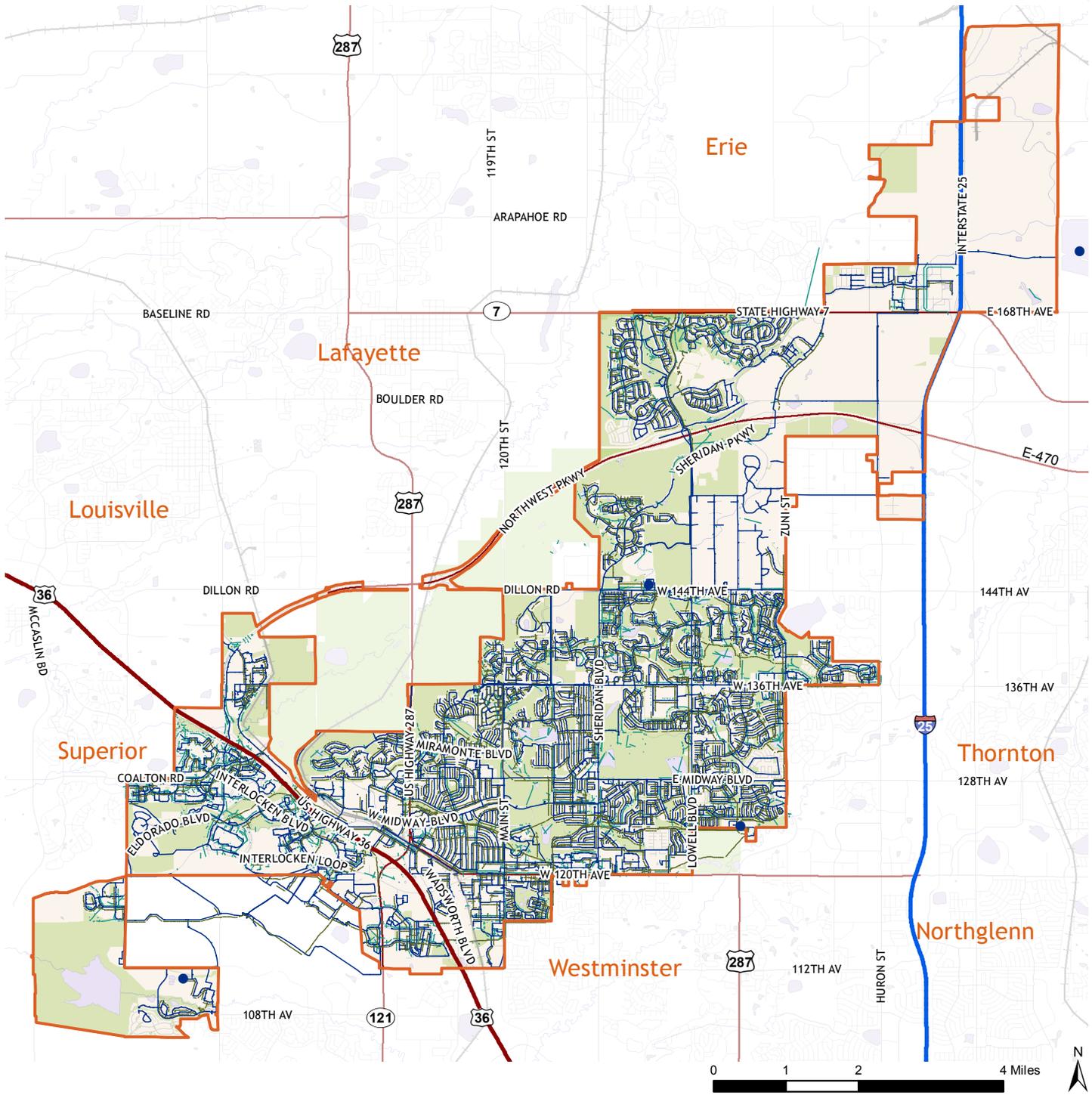
WASTEWATER TREATMENT CONSIDERATIONS

Broomfield recently completed an expansion of the Big Dry Creek Wastewater Treatment Plant, which resulted in a capacity of 12 million gallons per day. Continued expansion of treatment capacity will be needed to support buildout of the community. Broomfield plans to expand its Big Dry Creek facility by six million gallons per day with construction scheduled to begin after 2020. Options to partner in a regional system were evaluated in 2008 and it was determined that the current plant location offers the advantage of minimized water rights impacts and maximum opportunities for expansion of reclaimed water use. Having all of Broomfield’s wastewater treated in one plant provides maximum flexibility to balance between satisfying water rights requirements for discharging the treated effluent to Big Dry Creek and recycling the treated effluent back into the non-potable purple pipe reuse system.

A disadvantage of the continued expansion to the Big Dry Creek facility is that it would require multiple lift stations to bring flows upstream to the plant. This is particularly the case in the northern and northeastern areas of the City and County. The first of several new lift stations was recently completed in 2012 near the interchange of Interstate 25 and State Highway 7. Two to four additional lift stations will be required to serve the eastern and northeastern areas of Broomfield through buildout.

Being a fairly new facility, the Big Dry Creek Wastewater Treatment Plant has up-to-date technologies that allow high-efficiency secondary treatment operations to effectively meet all state and federal regulations for treatment and discharge of effluent to Big Dry Creek.

Map 31. Utilities



Source: Broomfield GIS Department; CDOT

LEGEND

- City and County of Broomfield
- I Interstate
- H Highways
- S Streets
- R Railroad
- C Creeks, Ditches and Canals
- W Waterbody
- O Open Lands
- Water/Wastewater Treatment Facility
- S Sewer Main
- W Water Main
- S Storm Drain

DRAINAGE AND FLOOD CONTROL.....

Drainage and flood control is an important component of Broomfield’s infrastructure system. Broomfield largely resides on higher ground that drains to the Big Dry Creek major drainageway. A small portion of Broomfield drains to Rock Creek to the north. Most of Broomfield is within the Urban Drainage and Flood Control District (UDFCD), the exception being those areas formerly within Weld County that were annexed into the City and County of Broomfield. With regard to the UDFCD’s Outfall Systems Master Plan, Broomfield has and will continue to work with developers within these drainage basins to implement the plan. Many of the drainage improvements constructed within Broomfield are related to development projects and are funded in part by private developers.

Broomfield is part of the enacted Phase 2 National Pollutant Discharge Elimination System (NPDES). The NPDES program requires communities to assess water quality opportunities and to establish a framework for future water quality programs.

The City and County of Broomfield has a Municipal Separate Storm Sewer System (MS4) permit issued by the Colorado Department of Public Health and Environment. The purpose of the MS4 is to protect the public’s water resources by reducing non-point source pollutants entering into the storm sewer system. Non-point source pollutants include such things as fertilizer runoff from yards and oil and other chemicals from streets and parking lots. The permit has six program areas: public involvement, public education, illicit discharge detection and illumination, construction oversight, post-construction inspections, and good housekeeping.

MAINTENANCE AND UPGRADE OF EXISTING UTILITY INFRASTRUCTURE..

Several portions of the utility infrastructure within Broomfield are reaching the end of their useful service lives and are in need of major repair or replacement. This is particularly the case in the First Filing area that was first developed in the 1950s. Utility lines in these neighborhoods are over 50 years old and need increasing repair and

eventual replacement. Broomfield’s Capital Improvement Program includes annual funding to address aging water and sewer system components. The utility rate structure needs to allow sufficient resources to continue with the replacement and upgrade of these old utility lines.

GREEN TECHNOLOGY.....

Landscape irrigation technology can be installed that detects the moisture of the soil and only waters when vegetation needs watering. Also, xeriscaping with low-water-demand plants can be encouraged throughout the community to reduce landscape watering. Potentially rebates on city water utility bills could be provided to encourage these water conservation measures.

Broomfield does not currently support composting of yard and food waste. It does treat solids at the wastewater treatment facility, and these are turned into compost used to condition and fertilize soil at Broomfield’s Weld County Farm. It also provides a tree-mulching operation

at the Recycling Center and may add a similar operation at Metzger Farm. It also is considering using the Metzger Farm as a drop-off and composting site for yard waste. Some nearby cities have adopted trash-hauling systems that allow for community-wide composting of all organic materials, including dairy and meat, at industrial composting sites. This would be an alternative to explore in more depth.

FRANCHISE UTILITIES

Franchise utilities are privately owned and operate within Broomfield under a franchise agreement. Franchise utilities are essential to maintaining a high and consistent level of service for residents' quality of life, as well as for attracting quality and high technology industries. Electric services currently are provided by United Power in the northern part of Broomfield and by Xcel Energy in the southern portion. Xcel Energy provides natural gas service throughout Broomfield. A telecommunications franchise is currently maintained by CenturyLink, and the cable TV services franchise is held by Comcast. Also several wireless telephone companies own and operate cellular towers that provide wireless cell phone services.

Each of these utility services requires planning and updating of facilities as Broomfield continues to grow and develop, especially in the north and east. The franchise utilities need to coordinate with Broomfield utilities with regard to the additions to their systems so that all utility services are in place and available to residents and businesses as development occurs.



PROVISION OF NEW UTILITY SERVICES

Some cities such as Longmont have installed free public WiFi in certain city parks. Broomfield could work with telecommunications providers to provide WiFi services in community parks and recreation centers. Also, Longmont has constructed and is operating a fiber-optic network system named Next Light to provide high-speed Internet connection to all city residents. Broomfield should explore doing the same through a telecommunications utility such as Century Link which presently provides this service in portions of Denver, Boulder, Aurora, and Fort Collins.

C. GOALS & POLICIES

Goal UT-A: Utility Planning

Adequately plan and coordinate so that all utilities within the City and County are reliable and support existing developed areas and future growth.

Rationale:

An important goal of this 2016 Comprehensive Plan is to maintain and enhance existing neighborhoods and businesses. A key component to maintaining quality neighborhoods and commercial areas is having efficient, reliable and up-to-date utility infrastructure servicing those areas. Analysis and good advance planning of the current situation in established neighborhoods and commercial areas are keys to identifying and financing future construction efforts. Broomfield’s Water and Sewer Funds’ capital improvement programs operate on a 10-year planning cycle, with annual allocations. Adequate advanced utility planning will allow Broomfield to finance, through its Water and Sewer Funds, utility improvements, upgrades and replacements in developed areas. The financing of improvements to the franchise utilities will be provided through their individual financing mechanisms.

Utility infrastructure also is an important consideration in land use planning and the management of growth. Ideally, communities such as Broomfield systematically plan and install (or work with developers to install) infrastructure as part of a long-term capital improvement program that balances expenditures with available funding. The challenge to this approach, however, is that major capital expenditures may be required to serve remote areas or where there is inadequate existing capacity to meet the demands of incremental growth. Also, infrastructure that is constructed too far in advance of demand will result in higher finance costs and more difficult maintenance conditions.

Conversely, infrastructure that lags behind demand may produce service constraints and inhibit the competitiveness of Broomfield to attract new residences and businesses. Also, if “unattractive” utility infrastructure is added after a neighborhood is developed, this may lead to community opposition to the new infrastructure. This opposition may be due to concerns about the neighborhood disruption when streets are torn up for construction. There may also be opposition for the installation of aboveground utility facilities (e.g., cell phone towers, electrical substations, natural gas odorizing stations, water pumping stations, sewer lift stations, telephone equipment boxes) that may not be aesthetically pleasing and thus may not be desired in an established residential neighborhood.

Accurate and up-to-date utility plans and coordination between the City-owned and the franchise utilities can help solve the dilemma. The existence of quality infrastructure planning allows Broomfield to support and direct future residential and economic growth.

Policy UT-A.1: Review and update utility plans on a regular basis for existing and new growth areas within Broomfield (and in other areas where prior service agreements exist).

Action Step UT-A.1.1: Periodically update the Broomfield Wastewater, Water Systems Utility and Non-Potable Water Master Plans, incorporating the goals, policies and final [Land Use Map](#) of this 2016 Comprehensive Plan.

Action Step UT-A.1.2: Continue maintenance and infrastructure evaluation of developed areas to determine infrastructure needs, and prepare and implement a short- and long-term plan for improving and replacing utilities where needed.

Action Step UT-A.1.3: Conduct an annual coordination meeting of all Broomfield-owned and franchise utilities with linear facilities (pipes and wires) to discuss Broomfield’s growth and development plans and to plan utility infrastructure improvements needed to provide utility services for new areas of growth and development. Conduct a separate annual meeting of cell phone providers to assess areas within Broomfield with inadequate cellular signal coverage, and develop plans to fill in these weak signal areas with new cell phone antennas. Both meetings will discuss growth and development within and immediately adjacent to Broomfield, since many utility systems are interconnected to areas outside of Broomfield.

Policy UT-A.2: Develop and manage all utility systems to increase reliability on a daily basis and in times of need (e.g., drought).

Action Step UT-A.2.1: Continue working with all applicable utility providers to increase reliability and aesthetic appearance by placing existing overhead utility lines underground. Coordinate the burial of separate utilities to minimize the number, duration and location of street cuts.

Action Step UT-A.2.2: Build the Broomfield Reservoir by 2022 and/or the Chimney Hollow Reservoir by 2018 to increase Broomfield’s raw-water storage capacity.

Action Step UT-A.2.3: Aggressively maintain, upgrade and replace utility lines as needed to ensure reliability of service.

Action Step UT-A.2.4: Work with area utility providers to develop systems that will minimize or prevent service interruptions.

Policy UT-A.3: Seek out new and innovative technologies to improve utility system planning, construction and maintenance.

Policy UT-A.4: Evaluate the feasibility of Broomfield providing public WiFi service in community parks and fiber-optic services throughout the community.

Action Step UT-A.4.1: Explore the installation of public WiFi in Broomfield-owned parks and recreation centers.

Action Step UT-A.4.2: Explore the installation of a fiber-optic communications system throughout the community that provides high-speed communications services including the Internet to all Broomfield residents.

Policy UT-A.5: Use utility franchise agreements to support and implement Broomfield’s goals and policies for growth and development and utility service reliability.

Policy UT-A.6: Review the solar panel contracts for Broomfield-owned buildings to see whether it would be better and possible for Broomfield to own these solar panels. Because the price of solar has decreased substantially, consider adding more panels.

Policy UT-A.7: Use Broomfield’s approval mechanisms to ensure that the efforts of metropolitan districts operating within Broomfield support the community’s overall goals regarding the provision of utilities.

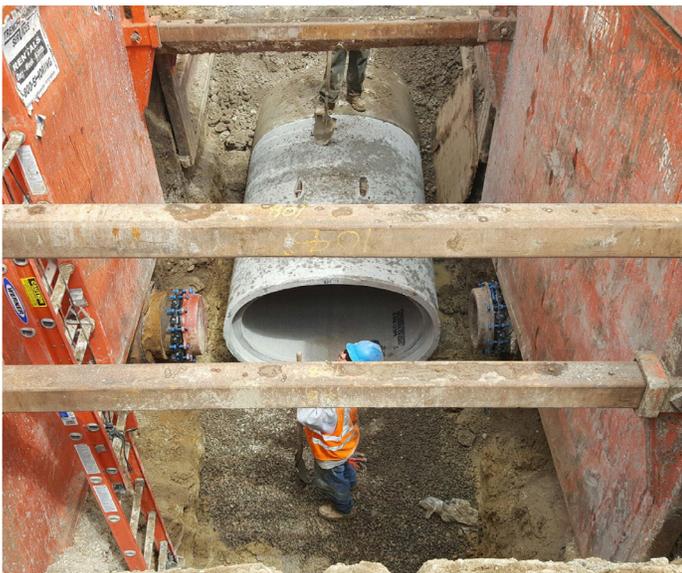
Policy UT-A.8: Work with Broomfield trash collection companies to encourage the provision of recycle pickup community-wide.

Policy UT-A.9: Establish methods for residents to have yard and kitchen waste collected for composting.

Action Step UT-A.9.1: Explore having trash collection companies pick up compostable yard and kitchen waste.

Action Step UT-A.9.2: Alternatively explore setting up community-owned compostable material drop-off sites and transporting that material to the Weld County Farm or Metzger Farm for composting.

Policy UT-A.10: Consider developing a task force that would work on a plan to reduce landfill and make trash hauling more efficient, economical, and environmentally sustainable.



Goal UT-B: Financing Utilities for Buildout

Ensure that the long-term cost of developing utility infrastructure to serve Broomfield can be met.

Rationale:

The cost of providing quality and reliable community utilities and the revenue stream to finance and maintain those services (whether public or private) should match. To meet the needs of an expanding population and to provide for a high level of service, a number of funding mechanisms will be required. These may include a combination of water and sewer licenses, development impact fees, Urban Drainage and Flood Control funds, state and federal funds and grants, special improvement districts, special assessments, and Title 32 Metropolitan District financing and reimbursement agreements with individual parcel owners.

Franchise utilities, such as electric, gas, cable and telephone, are funded through private development and are not the City and County's responsibility to install and maintain. Local distribution facilities of the franchise utilities (power, gas and telephone lines) generally are installed with new development at the developer's expense. Neighborhood utility systems to serve each development however are the responsibility of the franchise utility. Upgrading existing franchise utilities occurs on a planned basis according to the supplying company. This planning needs to be coordinated with the City and County so that all utility expansions are adequately accommodated as the development occurs.

Policy UT-B.1: Continue annual financial planning to ensure that utility services are constructed and maintained to an acceptable level of service.

Action Step UT-B.1.1: Annually review financial commitments necessary to maintain Broomfield's water system, and adjust water licenses rates, consumption rates or alternative sources to accommodate long-term growth projections.

Action Step UT-B.1.2: Continue to explore alternative long-term financial sources for providing, maintaining and upgrading all utility services (public and private) as well as the potential purchase of solar panels serving city buildings and the addition of more solar panels. Consider also negotiating with energy utilities for more solar and wind-based sources of power.

Action Step UT-B.1.3: During updates to Water and Sewer Fund capital improvement programs, budget to ensure that infrastructure needs can be met for growing and for future planned areas where Broomfield has financial commitments to provide utilities.

Policy UT-B.2: Continue to establish private/public partnerships to build municipal infrastructure by negotiating with developers to implement the long-term water, wastewater and storm drainage master plan.

Policy UT-B.3: Continue to establish cost-sharing and cost-recovery mechanisms that encourage private investment and enable infrastructure to be built as development occurs, thereby achieving maximum cost efficiencies and savings.

Policy UT-B.4: Continue to use improvement and urban renewal districts to manage implementation of local infrastructure programs. This may include the issuance of bonds or other debt instruments to build infrastructure. Use of these techniques should consider potential impacts on future residents and businesses.

Policy UT-B.5: Phase infrastructure improvements to match and immediately precede the rate of development, while avoiding excessive debt expense and negative fiscal impacts.

Policy UT-B.6: To the extent possible (i.e., where other agreements are not already in place), new development should pay its own way regarding the provision of utilities.

Policy UT-B.7: In the establishment of metro districts, evaluate the varying impacts from neighborhood to neighborhood, with the overall goal of protecting the community as a whole.



Goal UT-C: Sustainable Utilities Contributing to Overall Quality of Life

Provide environmentally sustainable and efficient utility systems that protect Broomfield's and the region's natural resources and that contribute to overall quality of life.

Rationale:

Utility planning, design, construction and maintenance provide Broomfield with a great opportunity to be a leader in demonstrating environmental stewardship and utilizing new technology. To protect, preserve and enhance our natural resources, we need to develop in a sustainable manner with a focus on the conservation and the restoration of our community's resources. The water sources that are acquired in the future should be renewable surface-water supplies rather than groundwater, which may decline over time.

The benefits of and uses for utility infrastructure can extend far beyond their primary purpose. For example, detention ponds can be combined with parks, open space, trails, and urban design improvements and public art planning to change a simple utility into a great community amenity with multiple purposes. Multiple uses also afford the opportunity for additional funding sources in building utility infrastructure and the ability to meet multiple master plan goals.

The electric utilities and private developers within the community provide the streetlights in Broomfield. The streetlights use either high-pressure sodium or halogen bulbs. New technology is becoming available using LEDs. Also motion sensors are available to turn the streetlights on only when people or cars are nearby.

Policy UT-C.1: Design stormwater detention ponds and water-quality features to maximize opportunities for wetlands and other native plant materials, thereby creating natural water quality filtering and native plant and wildlife habitat.

Policy UT-C.2: When financially practical, use state of-the-art technologies and practices in utility design, construction and maintenance.

Action Step UT-C.2.1: Explore and implement new techniques and technologies for pond management to eliminate such issues as fish kills, odors and mosquitoes.

Action Step UT-C.2.2: Implement provisions of the Environmental Protection Agency and the Colorado Department of Public Health and Environment programs and discharge permits to reduce non-point source pollution runoff from City and County streets and yards onto stormwater drains.

Policy UT-C.3: Whenever feasible, utility facilities should preserve natural features.

Policy UT-C.4: Use non-potable water systems (reuse water or raw water) for irrigation whenever possible.

Action Step UT-C.4.1: Explore allowing residents to capture gray water from showers and sinks to reuse for irrigation.

Action Step UT-C.4.2: Explore allowing individual residents and businesses to purchase treated wastewater from the City and County's reuse water system for purposes of landscape irrigation.

Policy UT-C.5: Continue work with Farmers Reservoir Irrigation Company (FRICO) regarding re-vegetation efforts along irrigation ditch corridors controlled by the company.

Policy UT-C.6: Develop stormwater facilities, particularly those associated with residential projects, with usable recreation components above the 10-year storm capacity.

Policy UT-C.7: In coordination with the Environmental Stewardship Element's Education goal, make Broomfield wastewater and stormwater facilities available for educational programs. Educational components also should be considered in the design of such facilities.

Action Step UT-C.7.1: Improve public information programs to get more residents aware of water conservation opportunities such as using irrigation systems with soil moisture sensors or planting xeriscaping that requires little water.

Policy UT-C.8: Explore and encourage such alternative renewable energy sources as solar, wind and water.

Action Step UT-C.8.1: Conduct public information seminars for residents on the installation and use of solar, wind and water conservation systems.

Policy UT-C.9: Work with Broomfield utility franchises and metropolitan districts to ensure that their efforts support Broomfield's sustainability goals.

Policy UT-C.10: Work with Broomfield electric utility franchises and developers to encourage the use of motion-sensor LED streetlights within the community.

Policy UT-C.11: When acquiring new supplies of water, obtain water supplies that are from fully renewable surface sources.

Goal UT-D: Community Aesthetics

Utility infrastructure should contribute to overall positive community aesthetics.

Rationale:

Every part of our built environment contributes to a positive or negative community image. Utilities are no exception. Overhead utility lines, buildings enclosing utility infrastructure, water towers, reservoirs and detention ponds, for example, can have a dramatic impact on overall community aesthetics. The need for utilities and the nature of utility design means that they will impact pristine areas; ridgelines and highpoints, and all types of development, including commercial, residential, and industrial areas.

Historically, the high cost of providing utilities lends itself to not giving priority to aesthetics in their design and construction. This trend, however, has changed dramatically over the last decade. Communities such as Broomfield have modified their focus to include attractive design components in the design and construction of utility facilities. This goal establishes a set of policies to help contribute to Broomfield's efforts to design utility systems that contribute to overall positive community aesthetics.

Policy UT-D.1: Consider community aesthetics as a priority in planning, siting and financing utility infrastructure.

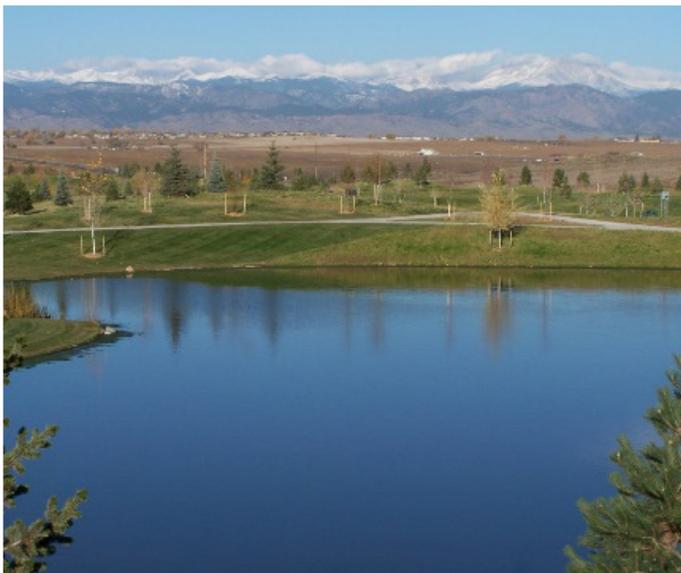
Action Step UT-D.1.1: Utility building design and location should give priority to architectural character and aesthetics and should not create an eyesore for the community. Rather, the design either should blend into the surroundings or should stand out as a quality community feature. To the extent possible, the infrastructure should be built before the surrounding area is developed.

Action Step UT-D.1.2: Continue working with Xcel Energy, United Power, CenturyLink and Comcast on siting utility boxes/cabinets, as well as moving existing utilities underground through replacement programs.

Action Step UT-D.1.3: Investigate new opportunities for screening, sculpture and other urban design solutions for hiding or disguising cell towers.

Policy UT-D.2: Utility infrastructure (including but not limited to buildings, stormwater ponds/detention areas and reservoirs) should be maintained in a manner that maintains the appearance of the community.

Policy UT-D.3: Work with Broomfield utility franchises to ensure that their efforts support the 2016 Comprehensive Plan goals.



Goal UT-E: Communications Infrastructure

Facilitate the construction of state-of-the-art communications infrastructure.

Rationale:

The continued evolution and expansion of e-commerce and the high-tech industry will increase the demand for faster and more reliable Internet service, as well as for new and unforeseen technological services. Residents increasingly are expecting access to new technologies and high-speed data services. Similarly, the business community demands a cutting-edge communications infrastructure to keep it competitive in local and global marketplaces. For Broomfield to sustain a well-educated and satisfied population, and to be competitive in industry, a prolific high-tech communications infrastructure system should be implemented.

Furthermore, as the telecommunications industry continues to mature, there will be more definition to the advantages and disadvantages of different networks for TV, phone and the Internet. The competition among these modes occurs at a very large scale, and Broomfield should maintain as many viable options as possible to supply these services to its residents and businesses.

Policy UT-E.1: Develop a means of implementing state-of-the-art, high-tech communications facilities throughout Broomfield.

Action Step UT-E.1.1: Create an action plan for constructing a comprehensive state-of-the-art communications system in Broomfield, including undertaking an inventory of existing residential and commercial areas to determine what communication infrastructure/facilities are available and what facilities are needed.

Goal UT-F: Public Health and Provision of Utilities

Enhance the public health of the community through the provision of adequate, clean, safe and reliable utilities.

Rationale:

The premise of this goal is that public health concerns (e.g., water and soil contamination from failing septic systems) should be given high priority in planning utility infrastructure and requiring utility services. Broomfield soils typically are not suited to long-term use of septic systems. Also, as densities increase and land uses transition away from a rural character, the potential for contaminating groundwater resources increases dramatically. As Broomfield continues to grow and densify, careful attention must be paid to public health issues with respect to water and sewer provisions.

Efforts will be made to ensure that in the long term, all residents and businesses will be connected to the community's wastewater sewer system. However, in the short-term, trade-offs may be necessitated by financial considerations or by previous annexation agreements. Additionally, some appropriate rural densities (large lots and few lots) may lend themselves to either temporary or long-term use of septic system and/or water well use.

Policy UT-F.1: Eliminate existing and potential water wells and septic systems that negatively impact public health.

Action Step UT-F.1.1: With regard to public health concerns, evaluate developed areas not currently on public water and sewer. Determine short- and long-term plans for including these areas in the public wastewater utility system. Devise a reduced-tap-fee incentive program to encourage residences to connect to public water and sewer lines.

Action Step UT-F.1.2: Continue to apply and refine criteria for future development (e.g., minimum lot sizes and uses) where septic systems may be allowed. These criteria should be used to protect public health, as well as to discourage (or disallow) large subdivisions that will not provide public utilities (water and sewer).

Action Step UT-F.1.3: Continuously comply with water discharge permits including the NPDES permit for the treated effluent discharge from the Big Dry Creek Wastewater Treatment Plant and the non-point source pollution MS4 permit.

Goal UT-G: Regional Coordination

Influence and implement regional utility planning efforts to be environmentally, economically and functionally advantageous to Broomfield.

Rationale:

Utilities provided within Broomfield, especially the franchise utilities, are part of regional utility systems in the northern Denver metro area. Accordingly, the utilities within Broomfield are not an island; they are provided on a regional basis that serve several surrounding cities. The franchise utilities are all provided this way. Another example is that Broomfield has previously studied connecting sanitary sewers from portions of the community to wastewater treatment plants being built by other northern metro-area wastewater utilities, rather than sending this wastewater to the Broomfield Big Dry Creek Plant. However, for several reasons Broomfield has rejected this option, but it may wish to revisit this issue in the future.

For these reasons, the planning for providing for utility service in Broomfield must be done on a regional basis. Broomfield needs to work together with the wastewater and franchise utilities regarding their systems within the surrounding communities to ensure that these utilities adequately serve Broomfield residents and businesses.

Broomfield's water utilities are related directly to water supply resources (e.g., the Northern Colorado Water Conservation District or the Denver Water Department) that cross many political boundaries. Therefore, working with regional agencies is critical to achieving a well-balanced water utility system. Such efforts also provide opportunities for outside funding.

Broomfield has been committed to working with its regional agencies and will continue to do so. However, where it is not economically or environmentally advantageous, Broomfield will work to eliminate reliance on other communities.

Policy UT-G.1: Continue working with Broomfield's neighbors on the Windy Gap/Colorado Big Thompson northern water supply system including the potential construction of the Chimney Hollow Reservoir.

Policy UT-G.2: Continue to work with Urban Drainage Flood Control District (UDFCD) on updating the Outfall Systems Master Plan.

Policy UT-G.3: Continue to explore opportunities for joint use of regional utility infrastructure that will provide more cost-effective means of servicing Broomfield.

Policy UT-G.4: Work with franchise utilities to ensure that the development and operation of their utilities both within and outside Broomfield will provide adequate utility service to the residents and businesses in Broomfield.