

SUSTAINABILITY



Neighborhood sustainability refers to the responsible use of the area's natural resources to meet the needs of the present without compromising the ability of future generations to meet their own needs. It addresses environmental issues concerning resource conservation, preservation of natural corridors, and guiding new growth into the existing community. The purpose of sustainability in neighborhood planning is to develop strategies and actions that encourage sustainable living and building practices across the planning area.

Central College Station residents expressed a strong interest in learning more about sustainability. The purpose of this chapter is to outline the variety of opportunities that exist to encourage sustainable living practices and strategies to help promote and educate residents about the benefits of sustainable living.

The goal of this chapter is to outline strategies and actions that will **increase awareness and participation in resource conservation efforts.**

Key Planning Considerations

There are several considerations in relation to sustainability. Specifically, this area is impacted by the following issues: recycling, water and energy conservation, stormwater management, and alternative transportation.

Recycling

Recycling is an important component to conservation efforts. By recycling basic household items, residents are preserving landfill space and keeping potentially harmful items out of existing landfills. Recycling also helps to extend the life of scarce resources, like oil, which is utilized to make many plastics and reduces energy waste that is needed to produce new items from raw materials. In maximizing space in municipal landfills, the City can utilize existing infrastructure for longer periods of time and minimize capital costs of purchasing land and constructing additional landfills.

The City of College Station currently offers curbside recycling collection and a E-waste drop-off center to its residents. The City recycles newspaper, magazines, white paper, aluminum and steel cans, #1 and #2 plastic, clear and brown glass, and lead acid car batteries curbside. Recyclables are required to be pre-sorted and are not collected if not sorted correctly. To participate in curbside recycling, residents sign-up online to receive bags. Recycling is picked up once a week on the same day as brush and bulky pickup. This service is only provided to residences with curbside trash pickup which includes all single-family and duplex residences. Additionally, the City provides annual curbside Christmas tree recycling. City participation in curbside recycling is around 60%, but no data exists to monitor neighborhood level participation.

Drop-off service is available at the City of Bryan Drive-in Recycle Center located at Wal-Mart on Villa Maria, and at the Texas A&M University Physical Plant on South College.

College Station also offers a drop off site for small E-Waste, rechargeable batteries, catalogues, and phone books, located behind the Police Department on W. King Cole Dr. The City also offers a 24 Hour Do-It-Yourself Used Motor Oil and Oil Filter Center. Recycling used oil is the only legal method of oil disposal.

The City does not offer recycling pick-up service at commercial or multi-family locations. However, the City is currently proposing a drop-off facility for commercial and multi-family complexes. City Council has requested a funding request for the FY2011 budget, but there are currently no dedicated funds for this project.

During 2002, a multi-family recycling pilot program was conducted by the City. This program provided valuable information about the cost efficiency of multi-family recycling. The program utilized two different methods of providing on-site drop-off containers at different apartment complexes in town. Both methods had high rates of contamination which raise the cost of providing the service because of the labor involved in sorting and decontaminating the recyclable materials. On-site recycling for apartments will not be financially feasible for College Station until such a time that single-stream recycling can be made available. Single-stream recycling would allow for all recyclable materials to be bagged and picked up together and sorted at a separate facility. This service is unlikely to happen without partnerships with the City of Bryan and Brazos Valley Solid Waste Management Agency (BVSWMA) to make the service cost-effective.

Recycling of white goods, or large appliances with freon, is available at the BVSWMA landfill on Rock Prairie Road with a charge for freon extraction. There is also a drop-off location for used motor oil and oil filters. Recycled motor oil can be reprocessed into industrial burner fuel or refined into gasoline, home heating oil, or new motor oil.

The City also offers a Borrow-A-Bin program for large events, where groups can borrow up to eight recycling bins for free to offer recycling opportunities at large gatherings like picnics or other neighborhood events. The Cash for Trash program rewards residents that participate in the recycling program. Once a quarter, the City monitors addresses on a randomly drawn street and those houses that recycle that week are entered into a drawing for \$250.

Composting

Composting is a second method to increase sustainability through the reuse of existing materials. Green waste, such as food and yard waste which make up a large portion of the waste stream, are kept out of the landfill and utilized to create compost. The process of composting utilizes natural decomposition processes to create nutrient-rich soil that can be used in gardening and lawn maintenance without creating additional waste. Brazos Valley Solid Waste Management Agency (BVSWMA) offers Master Composting Classes to all residents of the Brazos Valley. This program offers College Station residents more in-depth information about proper composting. Currently, the class costs \$15, is offered twice a year and has a maximum capacity of 15 people per class. The fee also includes a compost bin. The BVSWMA website

also offers step-by-step instructions on how to construct your own vermicomposting bin which utilizes worms to create the compost.

In addition to these programs, as a College Station Utility (CSU) customer, residents are also offered two free green waste drop-offs a month at the City of Bryan Compost Facility. This service is included as part of the residential sanitation fee. In addition to drop-off, the facility also offers the purchase of compost for reduced rates.

Hazardous Waste

Brazos Valley Solid Waste Management Agency offers a Bi-Annual Household Hazardous Waste Collection at no charge to all residents of the Brazos Valley. This event offers the opportunity to safely dispose of harmful chemicals and products and without harm to the environment. Residents can find out about this service by checking their monthly utility bill insert, keeping up with municipal news on the website (www.cstx.gov) or watching local media.

Recycling Strategies:

- **Increase neighborhood notification processes (S1.1)** - Develop a neighborhood recycling communication program to ensure that organizations are getting up-to-date information about existing programs that are offered, and also provide information back to the neighborhood about the effectiveness of their programs.
- **Provide effective organization support and training opportunities (S1.2)** - Work with established neighborhood organizations to develop a standing green committee that works on developing projects that encourage recycling, participation in green events, and promoting sustainable living practices.
- **Program Continuation (S1.3)** - Continue to promote existing programs like Household Hazardous Waste Collection and Master Composting Classes. Work with neighborhood organizations to provide more effective communication about programs and encourage more participation.
- **Ongoing evaluation and indicator program (S1.4)** Begin tracking recycling participation rates at a neighborhood level to provide baseline data for evaluating program effectiveness.
- **Provide Technical Support for New Neighborhood Programs (S1.5)** - Explore opportunities to create a community gardening project that would allow neighborhood organizations to utilize public spaces like parks to host community gardens.
- **Program Continuation (S1.6)** Continue to evaluate feasibility of providing drop-off location for multi-family and commercial recycling.
- **Program Continuation (S1.7)** Continue to evaluate fiscal feasibility of operating a single-source recycling program to allow residents in apartments the opportunity to recycle.
- **Program Continuation (S1.8)** Continue to contact new residential utility customers to educate about recycling programs and encourage participation in curbside recycling. Provide information about recycling opportunities on clearinghouse website (See **Chapter 2**, Neighborhood Integrity).

Utility Conservation

Water Conservation

Water conservation is a large part of sustainability, while water is a renewable resource; College Station relies on water drawn from aquifers. Texas aquifers have been an abundant supply of potable water for the state; however, production from aquifers must be carefully monitored so that the rate of extraction of the water does not exceed the rate of recharge. The City currently has capacity to produce 23 million gallons of drinking water each day with seven different wells. During drought conditions and dry summer months, daily water usage has reached full capacity of the existing system. To increase the existing capacity, the City currently has a new well under construction to provide additional capacity; however, water conservation is still the best method to provide additional capacity to the water supply and continue to protect the City's water sources from over-extraction.

Water usage is monitored by College Station Utilities on a daily basis. Summer months have the highest water usage due to irrigation and pool usage. Overall, the majority of the Central College Station Planning area has average water usage, but two areas – Southwood Forest and Brandon Heights – have significantly higher than average water usage (See **Existing Conditions Report, Water Consumption**), generally because of larger lot and house size and the presence of pools. **Map 4.1, Water Consumption** illustrates water usage for properties in the Central College Station Area.

Improving water conservation

Improving water conservation is not only important to preserving future capacity of the City's water resources, but also can save residents money. Additionally, by preserving the capacity in our existing wells, residents can help lower capital expenditures for additional wells and expand the current supply. In order to help improve water conservation efforts, the City has instituted a tiered water rate

Reducing Water Consumption

One of the easiest ways to reduce water use is to modify household irrigation systems. Overwatering, especially during the summer months, is a significant contributor to the City's water consumption rates. There are a variety of methods that can be utilized to reduce the amount of water used for irrigation. One way is to perform an irrigation audit and make sure that water is not running off the property after irrigating.

Generally, lawns only need to be watered once a week. The City of College Station's website offers detailed information on how to determine how long to run the irrigation system to adequately irrigate different types of lawns. The length of time depends on the output rate of the system, the type of sun exposure of the lawn, and the type of lawn being irrigated. Residents and Homeowner Associations can also invest in irrigation systems that have rain sensors to keep them from running during or immediately after a rain event.

Residents that wish to make a significant impact on water conservation can invest in installing xeriscaping or native lawns that are more suited to the climate and require less watering. Xeriscaping is a type of landscaping that emphasizes the use of plant material that is appropriate to the local climate while working to avoid water evaporation and run-off through grading. Texas Agricultural Extension Services website provides information about how to utilize xeriscaping to become more water efficient. Planting a native lawn that requires less watering is one component of xeriscaping. Native lawns utilize grasses that are compatible with the local climate. Once planted, a native lawn can reduce both the amount of water needed to maintain it and the frequency in which it needs to be mowed.

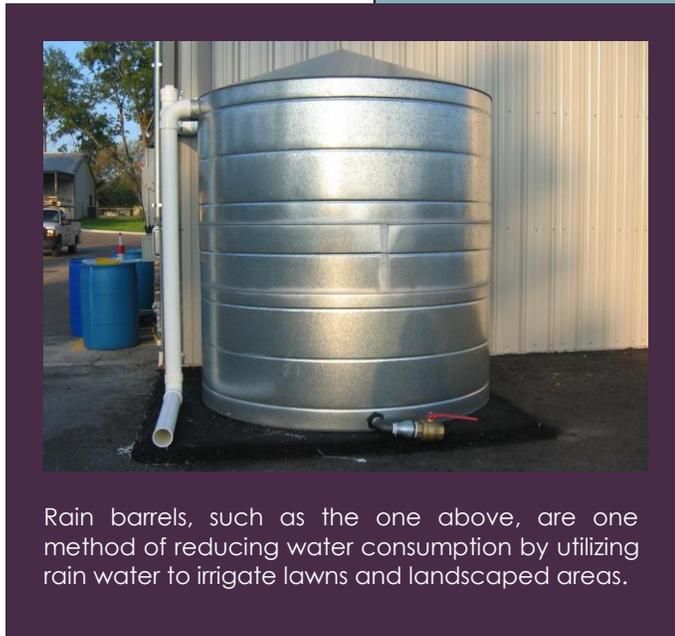
Simple adjustments like low-flow shower heads and aerators, repairing water leaks, and using a toilet tank bank are small and inexpensive improvements that can make a home more water efficient. More expensive methods include installing more water efficient toilets, washing machines, pool covers, and tankless water heaters. Everyday habits like turning off the water faucet when washing hands or brushing teeth, and making sure to only wash full loads of laundry can also improve water conservation.

system that places higher rates on monthly usage that is over 10,000 gallons.

To improve City water conservation, the City has invested in the development of a grey water irrigation system at Veterans Park to irrigate its athletic fields. Residents can also capture water run-off and utilize rainwater harvesting to offset the need to irrigate by installing rain barrels. Residential rain barrels are generally attached to a home's gutter system and collect rain water that can then be utilized to irrigate gardens and lawns.

The City offers free water audits to its residents to help identify ways to conserve water within the home. Of the 43 water audits conducted by the City in 2009, only three were in the Central College Station Neighborhood. Making better use of this resource will assist in meeting water conservation and sustainability goals.

To encourage investment in water conservation, College Station Utilities currently offers rebate programs for the purchase of rain barrels and low-flow toilets. The City also works with the top 1% residential water users to schedule water audits and ensure that water resources are being used as efficiently as possible.



Rain barrels, such as the one above, are one method of reducing water consumption by utilizing rain water to irrigate lawns and landscaped areas.

Energy Conservation

College Station Utilities (CSU) is the sole energy provider in Central College Station. CSU is a wholesale power purchaser with no generation capabilities; the City's power supply is purchased from American Electric Power. In 2009, Central College Station averaged 34.73 kilowatt hours per account per day, slightly more than the city-wide daily average of 30 kilowatt hours per day. Total average usage ranged from a monthly low in March of 22.23 kilowatt hours to a high of 56.39 kilowatt hours in July. The highest energy users were in areas with larger homes like Southwood Forest, Edelweiss Estates, and Brandon Heights (See also **Existing Conditions Report**, Electric Consumption).

Improving Energy Conservation

Conserving energy resources can also have an impact on household budgets. Energy consumption in Texas averages nine percent of household after-tax income (2009 estimate, Source: www.americaspower.org). Reducing household energy waste not only lowers individual costs, but preserves natural resources that are used to create electricity.

Heating and cooling a home typically has the most impact on energy consumption. Installing energy efficient HVAC systems and utilizing programmable thermostats can help to reduce residential energy consumption. Other methods to reduce energy include installing

efficient doors, windows, and insulation, as well as sealing air leaks around a home. Although the City does not provide rebates for these types of improvements, there are existing tax credits for installing energy efficient HVAC units, water heaters, doors, windows, and insulation. More information is available through www.energystar.gov.

The City now provides rebates for the installation of solar panels, and the availability of net metering. Solar panels create energy from sunlight that is used to provide electricity to a home. Net metering allows for individuals with solar panels to receive payment for excess electricity that is produced beyond what is needed for the home. In addition to City rebates, other federal rebates exist to encourage the use of solar panels. There are currently four homes in the City that have been issued permits for solar panel installation, one of which is located in Central College Station in Edelweiss Estates.



The City of College Station now offers rebates for residential solar voltaic panel installation (Source: www.nachi.org)

To encourage customers to invest in energy conservation, College Station offers rebate programs on the cost of CFL bulbs and energy-efficient air conditioning units. CSU also offers voluntary participation in the Wind Watts program which allows customers to purchase power solely from wind energy sources. This program costs at most \$0.02 more per kilowatt hour, but a portion of the wind energy premium goes to a tree-planting fund for the City of College Station. Additionally, CSU offers free energy audits to help residents reduce their energy consumption. In FY2009, the City conducted 150 energy audits, and issued 144 air conditioner rebates and 72 CFL rebates. In the current fiscal year, 137 audits have already been conducted, and 178 rebates for air conditioners have been processed.

Conservation Strategies:

- **Expand Neighborhood Grant opportunities (S2.1)** - Expand neighborhood grant funding to allow for neighborhood organizations to conduct water and energy audit campaigns, installation of efficient irrigation systems, or replanting drought-resistant plants in community areas.
- **Program Continuation (S2.2)** Continue to fund and promote rebates for CFLs, solar panel installation, rain barrels, and low-flow toilets. Explore opportunities to expand funding for popular rebate programs.
- **Provide Technical Support for New Neighborhood Programs (S2.3)** - Work with neighborhood organizations to develop a green work day for rain barrel or xeriscaping installation or other like projects as neighborhood building activities.

- **Provide effective organization support and training opportunities (S2.4)** - Promote and education neighbors about water and energy audits through neighborhood organizations.
- **Community Partnership Opportunities (S2.5)** - Work with community partners like Keep Brazos Beautiful, Brazos County Agricultural Extension, and other organizations to develop a residential xeriscaping and native lawn planting list for area residents to use as a guide when landscaping. Work with local landscape retailers to make lists available.
- **Realign Neighborhood Partnership Program (S2.6)** - Incorporate green seminar participation as a part of Neighborhood Partnership program participation responsibilities.
- **Streamline City permitting processes (S2.7)** - Explore opportunities and fiscal feasibility to reduce or eliminate permitting fees for LEED certifiable homes, solar voltaic panel installation, and other green building upgrades.
- **Ongoing evaluation and indicator program (S2.8)** - Begin tracking utility use, Wind Watts participation, utility audits, and rebate participation through neighborhood indicator program to obtain a better knowledge of program participation and effectiveness.
- **Identify opportunities to expand funding sources (S2.9)** - Explore opportunities and fiscal impact of property assessed clean energy (PACE) financing to incent local investment in clean energy alternatives.
- **Program Continuation (S2.10)** Continue to monitor water use for high users and work with users to conduct a water audit.
- **Program Continuation (S2.11)** Continue to utilize tiered water rates as a water conservation measure.

Stormwater Management

Stormwater management plays a role in maintaining healthy streams and creeks, preserving natural habitats, and ensuring safe water supplies for downstream users. Stormwater management aims to improve the quality of stormwater run-off, or water from a rain event that flows over the ground. During and after a rain event, stormwater can pick up debris, fertilizers, chemicals, and other household pollutants as it flows across both pervious and impervious cover and pollute local streams and creeks.

Under the regulation of the Clean Water Act of 1972, which is to "restore and maintain the chemical, physical and biological integrity of the Nation's waters," the City has begun implementing programs and practices to control polluted storm water runoff. The program intends to eliminate the discharge of pollutants to the maximum extent practicable; protect water quality; satisfy the appropriate water quality requirements of the Clean Water Act; and manage storm water activities through the Storm Water Management Plan. The Plan includes public education, participation and outreach, pollution prevention, construction site runoff control and post construction site runoff control.

Residential property owners can help improve stormwater quality by reducing the use of chemicals in maintaining landscape, properly

containing exposed soil and mulch to reduce erosion from water run-off, safely disposing of household waste like used motor oil and other contaminants, and not littering in drainage ways and creek beds. In urbanized areas like Central College Station, the largest contributor to declining stormwater quality comes from over-irrigation and over-fertilization of lawns. By utilizing water conservation methods to reduce over-watering, residents can make a large impact on the quality of stormwater run-off and improve the natural habitats of the creeks and streams to which it flows.

Pervious materials are materials that permit water to enter the ground by virtue of their porous nature or by large spaces in the material.



Examples of Modular Porous Pavers
(From Georgia Stormwater Management Manual,
Volume 2, Chapter 3, Section 3.3-44)

Increased stormwater can also have a detrimental impact on the health of natural corridors. Development and impervious cover (i.e., rooftops, roads, driveways) increase stormwater run-off into these corridors without the opportunity to utilize the ground to naturally filter many common pollutants. While much of the area within Central College Station is built out, minimizing the negative impact on the existing floodplain and drainage ways reduces flooding and improves the quality of the floodplain so that it will operate effectively to convey floodwaters without harm to the community. Existing floodplain areas in the neighborhood are identified in **Chapter 1, Community Character**.

Residents can also assist in managing stormwater run-off by limiting additions to homes that add rooftop area, and by installing pervious materials for patios, sidewalks, and driveways. The **Existing Conditions Report** outlines the average lot coverage by subdivision in this neighborhood. Finding ways to reduce the percentage of impervious lot coverage reduces stormwater runoff and potential contamination.

Stormwater Management Strategies:

- **Provide effective organization support and training opportunities (S3.1)** - Include stormwater management education in other sustainable neighborhood education programs.
- **Provide Technical Support for New Neighborhood Programs (S3.2)** - Develop promotional activities for neighborhoods like a creek clean-up or a chemical free fertilizer campaign to increase awareness and participation in stormwater management practices.
- **Program Continuation (S3.3)** - Continue to monitor water quality in neighborhood creeks and include in neighborhood indicator program.
- **Coordinated Public Facility Investment (S3.4)** - Where road diets are encouraged in **Chapter 3, Mobility**, consider the utilization of rain gardens and other stormwater management techniques to reduce pavement and provide additional opportunities for water filtration.

- **Floodplain Management Policy (S3.5)** - Create a comprehensive floodplain management program as identified in **Chapter 1, Community Character**, to create standards that relate to better site design and stormwater management for floodplain protection.
- **Increase neighborhood notification processes (S3.6)** - Work with Neighborhood Partnership organizations to include neighborhood residents in developing additional stormwater management standards.

Alternative Transportation and Land Use

Transportation and land use also impact sustainability. The ability to walk or ride a bicycle to nearby destinations not only relieves congestion on local roads but reduced energy consumption and encourages exercise. Promoting alternative transportation options and efficient land use patterns is an important component to responsible use of natural resources.

Because of the suburban style land use pattern of the Central College Station neighborhood, the alternative transportation network is disjointed. A lack of sidewalks on cul-de-sacs, gaps in bicycle lanes and sidewalks, lack of destinations, and limited bus service makes vehicular travel the preferred method of transportation for most households.

Future land use designations exist to provide more dense housing options along the perimeter of the neighborhood (See **Chapter 1, Community Character**). Because the majority of properties in these areas are built out, existing opportunities to increase density are mostly limited to redevelopment. While the existing land use pattern presents obstacles to a more fully sustainable neighborhood, a majority of the residents of Central College Station live within walking or biking distance of commercial or retail uses or a park or school. These areas serve as neighborhood centers where it is likely residents will interact with each other. Providing a complete alternative transportation network, and promoting the use of these areas as neighborhood centers will positively impact neighborhood sustainability.

Chapter 3, Mobility focuses on the three primary alternative transportation networks – walking, bicycling, and bus transit. Neighborhoods can also organize to promote the management of these systems, as well as other methods like carpooling, carsharing, or hosting a No Drive day for their residents.

Alternative Transportation and Land Use Strategies:

- **Coordinated Public Facility Investment (S4.1)** - Continue to expand open space, bicycle, and pedestrian connections through the implementation of the Bicycle, Pedestrian, and Greenways Master Plan and the strategies outlined in **Chapter 3, Mobility**.
- **Coordinated Public Facility Investment (S4.2)** - Promote transit opportunities outlined in **Chapter 3, Mobility**.

- **Feasibility Study (S4.3)** - Explore opportunities and feasibility of having a carshare program like U Car Share or Zipcar in College Station.
- **Provide Technical Support for New Neighborhood Programs (S4.4)** - Promote Bike to Work Week, or develop a No Drive day to encourage biking, walking, and bus ridership.
- **Provide Technical Support for New Neighborhood Programs (S4.5)** Work with neighborhood organizations to develop work or shopping carpools or rideshare programs.
- **Expand Neighborhood Grant opportunities (S4.6)** Amend neighborhood grant program to allow funds to be utilized for installation of bike racks or other similar efforts to enhance alternate transportation use at local businesses.

Education

Education is another important component to sustainability. Outreach to residents is important to help emphasize the importance of preserving natural resources, and the impact it has on the cost of providing services. There are a variety of educational opportunities offered by the City. The latest addition is the Green Seminars Series being offered through the City's Recycling Division. This series is currently offered during the first half of the year and features monthly brown-bag seminars with topics about conservation and sustainability. They are free to the public, and dates and topics can be found on the College Station Recycling website.

College Station is also a sponsor of the Brazos Valley Earth Day celebration every April that highlights different programs, services, and sustainable practices that are available to residents of the Brazos Valley.

Additionally, College Station has several staff members dedicated to conservation efforts in the City. These staff members have a variety of educational programming, presentations, and literature that are available on request to neighborhoods and residents. Recycling has a mascot that is available for children's events, and other materials specifically geared towards educating children on the importance of recycling. CSU Water and Energy divisions, along with BVSWMA also have a variety of education and informational material that is highlighted in the monthly Utility bill insert. Hands on experience with City services through tours of facilities like Carter Creek Wastewater Treatment Facility or the BVSWMA landfill are also available.

Education Strategies:

- **Provide effective organization support and training opportunities (S5.1)** - Create a green seminar to incorporate into the neighborhood seminar supper program.
- **Provide effective organization support and training opportunities (S5.2)** - Incorporate green education into new organization training.
- **Provide effective organization support and training opportunities (S5.3)** - Promote the Green Seminar Lunch series to neighborhoods through the neighborhood partnership program.

- **Community Partnership Opportunities (\$5.4)** - Work with community organizations like Keep Brazos Beautiful to bring education and other sustainability opportunities to neighborhoods.
- **Ongoing evaluation and indicator program (\$5.5)** - Create a green score program that rates neighborhood sustainability through sustainable living practices.
- **Program Continuation (\$5.6)** - Continue to fund and promote other existing education programs.