CITY OF DENTON

SIMPLY SUSTAINABLE

A Framework for Denton's Future

June 2020

sustainable DENTON

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Executive Summary

The City of Denton first adopted "Simply Sustainable — A Strategic Plan for Denton's Future" in February of 2012, establishing a framework for improving quality of life, protecting the environment, and creating economic opportunities for its citizens, businesses and institutions through sustainability initiatives. The collaborative effort with our citizens, workforce, business owners, institutional leaders, and elected officials resulted in a document developed by the community and for the community. Eighty two (82) percent of the actions in the original plan were adopted and are completed or on going.

The update to Simply Sustainable includes new strategies based on best practices, STAR Communities/ LEED for Cities goals and community feedback. Our Vision and Guiding Principles remain the same moving forward, while our focus areas and goals have expanded to include additional strategies to further our sustainability as a community.

The framework is a living document with goals and strategies reviewed and updated every five to seven years. Progress reports are completed annually and reported on the Sustainability website. Provided herein is an Executive Summary of the Framework, for which the full document can be downloaded at www.sustainabledenton.com.

Sustainable Denton Vision and Guiding Principles

Sustainability is defined as "meeting today's needs without compromising the ability of future generations to meet those same needs." Working with the community the City developed a common vision for a sustainable Denton, along with guiding principles to help lead the way.

Vision

The City of Denton will be a sustainable community that will engage our employees, businesses, institutions, organizations, and citizens in more sustainable practices. We will work in a leadership role to improve our environment and utilize our resources in ways that are fiscally and socially responsible. We do all of this to protect and restore our environment, create economic value, and support and strengthen our community.

Guiding Principles

- Involve the community in developing and implementing the Framework.
- Develop partnerships that encourage collaboration on sustainability issues.
- Promote energy management practices within municipal operations and throughout the community that are efficient and economically sound while reducing emissions.
- Support transportation strategies that reduce air pollution and increase alternative transportation choices.
- Support waste management strategies, including diversion, reuse, recycling, and energy producing disposal options.
- Support green building and sustainable site management within the Denton community through policy implementation, education, and incentives.
- Maintain a diversified power supply portfolio while establishing aggressive energy efficiency and energy conservation programs.
- Commit to the use and purchase of environmentally and socially responsible materials and products.
- Provide high quality drinking water, wastewater treatment, and watershed management in ways that are environmentally and economically sustainable for current and future customers.
- Conduct all of the activities above with a focus on inclusiveness, equity, and social responsibility

Background

Denton has embraced sustainability concepts for decades, Simply Sustainable uses a systematic and comprehensive approach to implementing sustainability improvements throughout the community. The roots of environmental management in Denton are deep, and the City's approach to environmental management aims to balance the protection of natural resources with the economic and social realities of resource utilization.

Historically, sustainability programs in the City of Denton focused primarily on energy, water, and wastewater management. However, as regulations became more stringent and far reaching, programs were developed to address land use, sludge management, waste disposal management, air quality, transportation, environmental, resiliency, public health and energy issues. While the purpose for establishing these programs was predominantly regulatory compliance and resource protection, the City recognized the benefits of sustainable management. Today the City's operations are more focused on balancing the economic, political, and social implications of policies and programs. One of the goals of City officials and staff is to encourage and support sustainability projects both internally and externally. Today, sustainability is a priority of the City Council and has been incorporated into the City's strategic planning efforts. This commitment continues with the creation and implementation of this updated Framework.

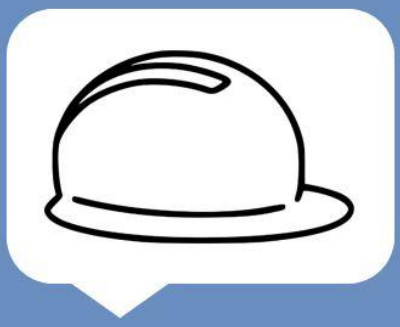
Strategies for a more Sustainable Denton

The document includes strategies across eight focus areas, which were selected through a public involvement and prioritization process. These strategies include recommendations for policies, community programs, outreach and education, and capital improvements.

Implementation actions will be identified for each strategy. The sum is certainly greater than the parts – on its own, each strategy provides a distinct benefit, but as a collective whole, the Plan provides a substantial opportunity for improving sustainability in Denton.

2 Online Surveys
551 Responses

33 Participants at
3 Public Meetings



32 Participants at
2 Internal Staff
Meetings

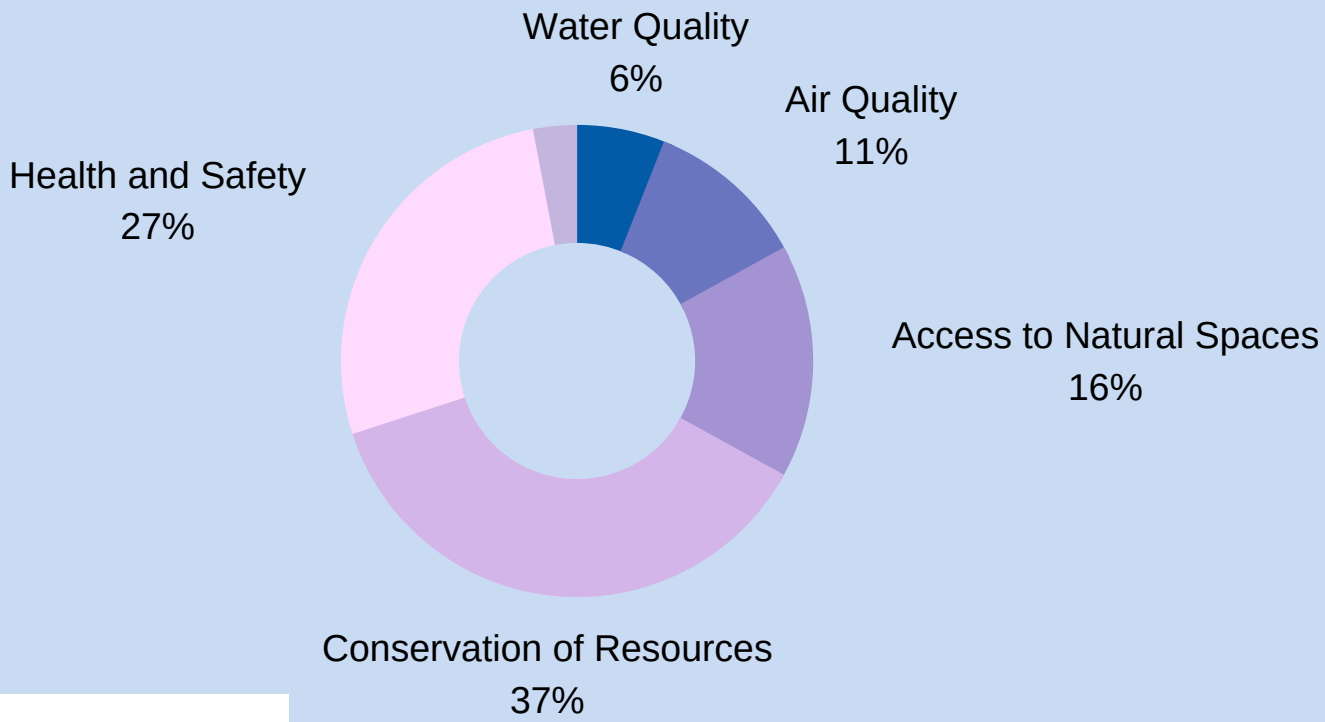
Measuring and Communicating Progress

Denton has focused on quantitative and representative metrics that are or can be tracked at the city scale. The Framework utilizes key performance indicators (KPIs) to measure progress. For each KPI, a baseline measurement is provided and targets are established for sustainability improvements. Measuring and communicating the status of these indicators is an important component of the implementation of the document.

Each focus area summary includes strategies and key performance indicators (KPI) to help measure progress. Specific targets are identified to represent milestones and guide the City's progress. These indicators and targets may be reported and tracked at either the goal or strategy level.

Primary Interest in Sustainability

Dentonites ranked the following concerns in an online survey.



Supporting Plans and Policies

- Stormwater Management Plan
- Integrated Pest Management Plan
- Drought Contingency Plan
- City of Denton HazMap
- Denton County HazMap
- Mobility Plan
- Bike Pedestrian Plan
- Solid Waste Management Strategy (Future)
- Parks Master Plan
- Urban Forestry Master Plan
- Denton 2030 Plan
- City of Denton Strategic Plan
- Clear Creek Natural Heritage Center Master Plan
- City of Denton Stormwater Design Criteria Manual
- Consolidated Plan and Action Plan for Housing & Community Development
- Consolidated Plan and Action Plan for Housing and Community Development
- Green Fleet / Idle Reduction Policies
- Green Purchase Policy (Future)
- Denton Development Code

Glossary

Adaptation – The modification of a system to maintain function despite an anticipated impact

Air Quality – Rating system for the quantity of pollutants such as ozone and particulate matter at the ground level impacting the environment and public health

Benchmarking - A strategy to measure the change in a process or function against a known standard or baseline.

Climate Risk - Any hazard brought about by changes to the long term climate system such as temperature, precipitation, and extreme weather conditions.

Climate Change - A long term impact on global and regional climate patterns that impact precipitation temperature, and other environmental conditions.

Community Resilience - The capacity of a community system to adapt, thrive, and maintain function in the face of chronic stress and acute shocks.

Climate – The average weather pattern for a region of a time scale greater than or equal to 30 years

Glossary Continued

Composting - Method of reusing organic matter in a way that is beneficial to create nutrient soil to promote the growth of a lawn or garden.

Energy Audit - A service offered to evaluate a buildings energy efficiency particularly as it relates to heating, cooling, and weatherization.

Equity – justice according to natural law or right

Greenhouse Gas (GHG) Emissions - Gases that trap heat in the atmosphere.

Green Infrastructure – planning and design practices that restore natural systems and processes into the design and construction in order to conserve resources and protect the environment.

Infill Development – The process of optimizing vacant areas within urban centers to best utilize existing infrastructure.

Low Impact Development (LID) - planning and design practices that mimic natural systems or processes in order to protect water quality and aquatic habitats.

Mitigation – Strategies that reduce the future impact of climate projections by reducing Greenhouse Gas emissions as well as removing them from the atmosphere.

Vehicle Miles Traveled (VMT) - An overarching metric of the number of miles traveled by a community used in GHG calculations.

Weather – Short term conditions related to temperature precipitation and other atmospheric factors.

Focus Area and Goals:

WATER

- Protect and restore Denton's water bodies
- Maintain high level of drinking water quality
- Invest in sustainable stormwater, watershed infrastructure, management and education
- Ensure wastewater is collected, treated, and discharged in accordance with all regulatory requirements
- Take measures to encourage reductions in per capita water consumption

AIR QUALITY

- Improve regional air quality and take actions to improve non-attainment status
- Take actions to reduce air pollutant emissions, including greenhouse gases and emissions from government operations
- Set reduction targets for municipal and community greenhouse gas emissions
- Annually Update Greenhouse Gas Inventory and Contribution Analysis
- Assess community hazards and vulnerabilities
- Create a Greenhouse Gas Mitigation Plan

ENERGY

- To have under contract by the end of 2020 sufficient renewable energy supplies to achieve and maintain the 100% renewable energy supply objective
- Encourage energy conservation and efficiency in new and existing homes and businesses
- Ensure efficient energy use in city government facilities through demand reduction in both new construction and building retrofits
- Continue to require exceptional energy efficiency building standards for new construction

LAND USE

- Encourage land use and code/zoning patterns that positively affect energy use and the environment
- Preserve open space, natural areas, and tree canopy
- Minimize water use, promote stormwater quality, and reduce stormwater quantity through management measures
- Encourage redevelopment of infill areas and brownfield sites
- Create and Improve park and open space opportunities within 10 minute walking distance of residents' homes
- Partner with city departments and local organizations to implement tree planting goals to increase the tree canopy to 40 percent by 2040.

Focus Area and Goals:

TRANSPORTATION

- Expand infrastructure for non-vehicle modes of transportation
- Promote public transportation ridership and the use of fuel efficient/alternative fuel vehicles
- Reduce environmental impacts from impervious parking surfaces
- Increase amount of non-road trail systems

EDUCATION,COMMUNICATION AND COMMUNITY INVOLVEMENT

- Develop and promote city government and community sustainability programs to ensure community members of all demographics have access to participate actively and effectively
- Encourage and promote citizen involvement of community members of all ages to further understanding of basic principles of sustainability
- Increase sustainability education, awareness and personal responsibility

MATERIAL RESOURCE MANAGEMENT

- Reduce solid waste generation and divert waste away from landfill disposal through increased recycling and reuse options
- Leverage city government's purchasing power to procure goods and services that cause less harm to humans and the environment, in accordance with procurement laws and regulations

RESILIENCY AND PUBLIC HEALTH

- Increase consumption of fresh, locally produced, organic produce to promote public health and to minimize resource consumption and negative environmental impacts
- Ensure that no one geographic or socioeconomic group in the city is being unfairly impacted by environmental hazards
- Incorporate Resiliency into City of Denton planning efforts

Chapter 1: Water

"We never know the worth of water til the well is dry."
-Thomas Fuller

Water is an integral part of our community. Denton Water Utilities serve our residents, businesses, schools, parks, and public buildings. As increasing demands are being placed on finite water resources, sustainable water, stormwater, and wastewater systems are necessary to ensure the environmental and economic viability of communities.

On average, Denton uses about 18 million gallons of water a day from Lake Lewisville and Ray Roberts Lake. Water use relies on the availability of freshwater supplies and requires a significant amount of energy to power pumps and treatment processes. Improving the efficiency of Denton's water treatment and delivery system also has the potential to significantly reduce energy demand and help keep rates affordable. Water quality of receiving waters is also a high priority.

Water pollution can compromise human and environmental health. Lake Ray Roberts and Lewisville Lake are great places for recreation, natural beauty, and wildlife habitats. Effective water management (supply, stormwater, and wastewater) is necessary to preserve these assets.

Goals

1. **Protect and restore Denton's water bodies**
2. **Maintain high level of drinking water quality**
3. **Invest in sustainable stormwater, watershed infrastructure, management and education**
4. **Ensure wastewater is collected, treated, and discharged in accordance with all regulatory requirements**
5. **Take measures to encourage reductions in per capita water consumption**

Successes to Date and Ongoing Initiatives

The City continues to place an emphasis on maintaining high standards for drinking water supply and quality, wastewater reclamation, stormwater management, and watershed protection. Over the past three (3) years, the City has added more than 60 miles of water and sanitary sewer lines to meet the demands of growth. City crews also replaced 17 miles of water distribution and sanitary sewer collection mains to prevent the failure of old pipes installed decades ago. By replacing older water and sewer mains with newer, more reliable materials, we continue to reduce the number of water main breaks and sanitary sewer blockages experienced annually.

In addition to these physical improvements to our infrastructure, Water Utilities has implemented a process to complete annual updates to the Water and Wastewater Design Criteria Manual and Standards to better control the quality of construction in the City of Denton.

Sustainability Metrics:

Key Performance Indicators	Targets
Number of Texas Pollutant Discharge Elimination System (NPDES) permit violations	Maintain no violations
Compliance with water quality standards; Number of EPA health violations	Maintain compliance with minimum standards; Maintain no violations
Volume and number of sanitary sewer overflows (SSOs)	Minimize volume and number of SSOs
Per Capita Water Consumption	5 percent reduction by 2024 (in the Water Conservation and Drought Contingency Plan)
Number of Participants in Water Audit Program	50 percent increase by 2024
Total volume of Fats, Oils and Greases (FOGs) collected	5 percent increase by 2024

Strategy #1

Minimize Wastewater Impacts on the Environment

Discharges of raw sewage into urban or natural areas can have significant detrimental impacts. Raw sewage poses a health risk in urban areas, and prolonged discharge into waterways poses a risk to water quality and species habitats. Monitoring and minimizing sanitary sewer overflows (SSOs) and instances when raw sewage is discharged, is an effective way of reducing negative environmental impacts of wastewater in Denton. While few large wastewater systems achieve zero SSOs, the number of instances, gallons discharged and net discharge should be minimized. Tracking the rate and the location of SSOs can help direct efforts to improve wastewater and address point source pollution concerns.

Strategy #2

Implement Changes to the Drainage Design Criteria Manual

The quality of Denton's waterways is a critical component of the region's environmental sustainability. The goal of Denton's current storm water ordinance is to maintain pre-development runoff characteristics of a site as much as possible. Where appropriate, revisions will be made to promote the use of landscape design, site design, and low-impact development (LID) practices as acceptable stormwater collection and treatment design criteria. Approaches such as plantings in medians for roadway runoff and the reduction of impervious surfaces can help reduce pollution. In addition, these practices can reduce the need for additional separate storm sewer construction and maintenance, and they often have the benefit of bringing attractive landscaping into otherwise paved urban areas.

Strategy #3

Maintain High Quality Drinking Water

It is important to track water quality to ensure that high standards are maintained. The City of Denton publishes annual water quality reports listing levels of regulated contaminants. To obtain an overall picture of water quality in Denton, information from water quality reports will be combined with SSO tracking and other key indicators to compile ongoing metrics or indicators of water conditions in Denton.

According to the EPA, the average household uses 320 gallons of water per day. In the City of Denton, at least 40 percent of this goes to lawn irrigation, and this increases to around 70 percent during summer. Approximately 10,000 gallons per household is lost each year from leaking toilets, faucets, and valves.

Strategy #4

Exceed Minimum Regulatory Compliance with Texas Commission on Environmental Quality (TCEQ) Municipal Stormwater Permit

TCEQ requires a permit for municipal separate storm sewer systems (MS4). Meeting permit requirements ensures stormwater capture, conveyance, and treatment is compliant with the minimum stormwater quality measures established by the TCEQ. Using the minimum measures as a baseline, Denton can set goals for stormwater management.

Denton also has a Stormwater Management Plan that includes Best Management Practices (BMPs) which can be associated with control measures and goals to reduce pollutant loads in the city.

Strategy #5

Promote Water Conservation

North Texas often faces persistent drought or near-drought conditions which can limit or deplete our lake levels. This has led to the development of five-year and ten-year targets focused on water savings that are also required by the TCEQ. To meet these goals the City has developed a Drought Contingency Plan that includes various policies focused on increasing water conservation within our community.

The Learn 2 Conserve program at the City of Denton offers various resources and materials to the public on how to reduce water usage at home and in the work place. Another program the city offers allows citizens to receive a water audit which can help check irrigation systems for leaks.

Additional Strategies for Consideration:

1. Minimize impacts to the environment from on-site sewage facilities (OSSF).
2. Ensure that water, wastewater, and stormwater infrastructure is managed and maintained so that it meets current and future needs.

Chapter 2: Air Quality and Greenhouse Gas Management

"When one tugs at a single thing in nature, he finds it attached to the rest of the world."

-John Muir

Air quality impacts our health and our environment. Denton is located in a non-attainment area for ozone; air pollution levels in the region persistently exceed national air quality standards set by the United States Environmental Protection Agency (EPA). High ozone levels can cause shortness of breath and coughing. It is also linked to lung diseases such as asthma and emphysema. Greenhouse Gases and Ozone forming pollutants share many of the same sources. Through Greenhouse Gas management and regional air quality efforts, both GHG mitigation and air quality improvements can be accomplished with shared strategies.

Climate change is the rise in global temperatures resulting in part from increased levels of greenhouse gases (GHGs). Recognizing the importance of this issue Denton initially signed the US Conference of Mayors Climate Protection Agreement in 2005.

Goals

1. Improve regional air quality and take actions to improve non-attainment status
2. Take actions to reduce air pollutant emissions, including greenhouse gases and emissions from government operations
3. Set reduction targets for municipal and community greenhouse gas emissions
4. Annually Update Greenhouse Gas Inventory and Contribution Analysis
5. Assess community hazards and vulnerabilities
6. Create a Greenhouse Gas Mitigation Plan

Successes to Date and Ongoing Initiatives

Air quality is not just a local issue - it is affected by pollutants throughout the region and thus requires regional solutions. The City has formed partnerships with regional organizations, including North Central Texas Council of Governments (NCTCOG), North Texas Clean Air Coalition (NTCAC), ICLEI - Local Governments for Sustainability, Denton County Transportation Authority (DCTA), and Dallas Regional Mobility Coalition (DRMC). Together, the City and these organizations can use their collective resources to identify and implement regional air quality improvements and make joint decisions to improve air quality. The City also recognizes ozone action days. During ozone season (May through November) employees and residents are encouraged to make clean air choices.

Each year, the City will complete a Greenhouse Gas (GHG) emissions inventory for municipal operations and the community-at-large. The inventory provides an assessment for establishing GHG emissions reduction targets and developing action plans to achieve those targets.

Sustainability Metrics:

Key Performance Indicators	Targets
Air Quality Index (AQI)	AQI is a regional issue that is not only influenced by local City of Denton efforts, yet still important to track
GHG Emissions- Municipal Government Operations (Metric Tons of Carbon Dioxide Equivalent)	Reduce GHG emissions
GHG Emissions- Community-wide per capita (Metric Tons of Carbon Dioxide Equivalent)	Reduce GHG emissions per capita
Annual Municipal Fleet Fuel Consumption	Reduce use of traditional fuels; Increase alternative fuel consumption as percentage of total fuel consumption
Number of Alternative Fuel Vehicles (AFV) (Hybrids, CNG, Electric, etc.) in Municipal Vehicle Fleet	Increase number of AFVs
Percentage of GHG emissions from Municipal Fleet (2018 Baseline)	25% by 2025

Strategy #1

Implement Sustainable Municipal Fleet Program

The City has recently enacted an updated “sustainable fleet policy.” The policy comes from a regional effort to improve local air quality. Purchases, operations, efficiency, and necessity are some of the criteria used to evaluate the efficiency of the City’s vehicle fleet. The City has developed a comprehensive sustainable fleet program to identify opportunities and actions the City can take to improve air quality through fleet operations. The goal is to have a more sustainable fleet using the most appropriate vehicle, operated efficiently, and properly maintained. The intended results of this policy are to reduce\emissions, improve fuel efficiency, and effectively manage the operating funds required to run the City’s fleet.

Understanding fleet performance enables the City to take targeted actions to improve efficiency. The City of Denton’s Fleet Services currently uses a computerized management system. Fleet Services maintains an inventory of fleet vehicles and monitors fuel consumption, fuel economy, mileage, maintenance schedules, and repair costs on a monthly basis.

Strategy #2

Continue and Expand GHG Program for Municipal and Community Operations

As a member of ICLEI-Local Governments for Sustainability and signatory to the 2005 U.S. Conference of Mayors Climate Protection Agreement, the City is committed to addressing GHG emissions from its own facilities and operations. The City completes an annual GHG emissions inventory for municipal operations and forecast GHG emissions to assess the “business as usual” scenario of emissions growth over time. These emissions forecasts can help determine the City’s emissions scenario projected forward, and help set a feasible emissions reduction target and timeline.

Strategy #3

Create and Implement a Greenhouse Gas Mitigation Plan

Goals 1, 2, 3, and 6 can be encompassed into the single strategy of a GHG mitigation plan. GHG mitigation is typically one of the first parts of any climate action, or community resilience plan, and is designed to limit the impacts of climate related hazards. The City will first identify a target, and will then select the actions best suited for Denton to meet that goal. This strategy has the added benefit of improved air quality as greenhouse gases, ozone precursor pollutants, and other emissions that reduce air quality share similar sources.

UPDATE

The Denton community has reduced their GHG emissions by 22% since 2006. Reductions are anticipated to decrease further as Denton continues to implement actions that lower their carbon footprint.

Chapter 3: Energy Conservation and Efficiency

"We shall require a substantially new manner of thinking if mankind is to survive"
-Albert Einstein

The current emphasis on improving energy efficiency is a result of several dynamics—air quality attainment, GHG reduction, demand management, and ensuring a consistent supply of power to Denton residents. The City recognizes the importance of energy conservation and efficiency to Denton's citizens, environment, and economy. Patterns of energy use for industrial, commercial, residential, and transportation sectors are important indicators of community sustainability. Globally, population growth, industrialization, and urbanization have led to the upward trend in energy consumption. National demand for electricity has also continually grown, despite the increases in energy costs and energy efficiency improvements. According to Energy Outlook 2020 produced by the U.S. Energy Information Administration, buildings and transportation sectors make up a large portion of primary energy use. Because buildings require a large amount of energy in the United States, understanding the distribution of energy consumption is an important step in setting goals for energy reduction.

Goals

1. To have under contract by the end of 2020 sufficient renewable energy supplies to achieve and maintain the 100% renewable energy supply objective
2. Encourage energy conservation and efficiency in new and existing homes and businesses
3. Ensure efficient energy use in city government facilities through demand reduction in both new construction and building retrofits
4. Continue to require exceptional energy efficiency building standards for new construction

Successes to Date and Ongoing Initiatives

Denton Municipal Electric (DME) and Sustainability are committed to environmental responsibility as demonstrated through conservation projects and investments in renewable energy. Since the 1980s, DME has implemented energy conservation programs, including energy audit services, demand management and rebate programs. Specifically, the Green Sense Energy Efficiency Rebate Program is a customer incentive program that offers rebates to DME customers who perform authorized energy efficiency improvements in their homes and businesses. Through regional partnerships such as the South-central Partnership for Energy Efficiency as a Resource (SPEER), North Central Texas Council of Governments (COG), and City Efficiency Leadership Council (CELC), Sustainability continues to research and collaborate to ensure the most up to date information on energy efficiency and conservation. In 2016, the City Council approved the Renewable Denton Plan, an industry leading initiative to increase renewable power from 40 to 70 percent by 2019. The Council replaced the Renewable Denton Plan with an even more ambitious goal in 2018 with the adoption of the Renewable Resource Plan. With this plan in place DME strives to provide and maintain 100% renewable energy to all of its customers by the end of 2020.

Sustainability Metrics:

Key Performance Indicators	Targets
Total municipal government energy consumption	Reduce municipal facility energy consumption
Number of participants in energy rebate and audit programs	Increase number of participants
Renewable percent of DME's electric power generation	Continue to evaluate options for renewable energy generation
Number and size of private renewable energy systems installed throughout community	Continue to evaluate options for renewable energy generation

Strategy #1

Expand Commercial, Residential and Industrial Energy Efficiency Program

DME has a variety of tools available to commercial, residential and industrial sector customers. The program is currently centered on demand management and rebate programs. DME will continue to explore opportunities to work with large customers and provide assessments of current conditions, alternate sources of generation, rebates, and innovative demand management programs. Continued education will be the key to DME's successful programs.

Strategy #2

Continue to Evaluate Building Energy Code Implementation to Maximize Energy Efficiency

The City of Denton can reduce energy consumption in new construction through efficiency improvements in lighting, insulation, and heating and cooling components of the building code. The continued evaluation of building energy codes provides minimum building energy requirements, increased energy efficiency, and ensures opportunities for cost savings in utilities. Energy codes may include insulation requirements, window requirements, and mechanical controls for off-hours, wattage requirements, and other standards to raise building energy efficiency beyond minimum requirements.

IECC

The International Energy Conservation Code serves as the model energy building code. The IECC code sets minimum energy efficiency provisions for residential and commercial buildings, offering both prescriptive and performance based approaches. As standards are updated, or if the City adopts additional green building guidelines or incentives, it is important to raise the standard of building energy efficiency to help reduce total energy usage and peak electric demand in buildings.

Strategy #3

Improve the Energy Efficiency of Existing Homes and Buildings

To reduce community energy consumption, the City continues to evaluate opportunities to improve energy efficiency in existing homes and buildings. Beyond energy efficient building codes and DME's successful residential and commercial energy rebate and audit programs, the City will continue to offer educational programs for home and business owners and track the programs' success. Additional programs centered around weatherization, and EV/Solar readiness could be possible considerations for the future.

Additional Strategies for Consideration

1. Continue to research and pursue energy conservation opportunities, on-site power generation, and other renewable technologies.
2. Pursue district heating and cooling opportunities where technically and economically feasible.
3. Continue to research and review building rating systems.

Chapter 4: Land Use and Open/Natural Space

"I think that I shall never see a poem lovely as a tree."

-Joyce Kilmer

Open space and the preservation of natural resources are critical to community character and quality of life. Land use and development policies should support efficient use of infrastructure, minimize environmental impacts, and prevent sprawl, or expansive development patterns. When we preserve the environment we experience several benefits including carbon sequestration, improved air quality, drainage, water quality, soil health, and biodiversity.

Goals

1. Encourage land use and code/zoning patterns that positively affect energy use and the environment.
2. Preserve open space, natural areas, and tree canopy.
3. Minimize water use, promote stormwater quality, and reduce stormwater quantity through management measures.
4. Encourage redevelopment of infill areas and brownfield sites.
5. Create and improve park and open space opportunities within 10 minute walking distance of residents' homes
6. Partner with city departments and local organizations to implement tree planting goal to increase the tree canopy to 40 percent by 2040.

A healthy tree canopy has been shown to reduce energy needs, reverse the heat island effect, improve quality of life, and air quality.

Successes to Date and Ongoing Initiatives

The City of Denton continues to prioritize land use and open space preservation. With Denton's current park lands, Clear Creek Natural Heritage Center, and our commitment to preserving environmentally sensitive areas (ESAs), the City has made great progress in restoring and keeping open spaces. The City understands that effective land management can help reduce the loss of open space, improve transportation efficiency, and improve air quality. This goes hand-in-hand with the City's commitment to keep Denton's tree canopy robust and healthy. Denton recently adopted a new Urban Forest Master Plan that includes new strategies to help identify, protect and increase the City's tree canopy.

Sustainability Metrics:

Key Performance Indicators	Targets
Square feet of new infill development buildings and acreage impacted	Continue to increase infill development and track progress
Acres of protected open space and environmentally sensitive areas (ESAs)	Continue to increase percentage of open space and protected areas.
Percent of city area currently covered by tree canopy	Increase tree canopy coverage
Acres of brownfield sites redeveloped	Pursue additional brownfield development

Strategy #1

Encourage Infill Incentives

Infill development is redeveloping land within a built-up area. It focuses on reusing obsolete or underutilized buildings and sites, and can be important for community character and growth. Infill development can also be cost and resource- efficient. Transportation, water, and energy infrastructure are often already present for existing buildings, and the cost of connecting new development to existing infrastructure is usually a fraction of the cost of extending infrastructure to entirely undeveloped areas.

Denton offers a variety of incentives for businesses interested in locating in Denton. Denton offers incentives through tax abatements and Chapter 380 agreements per the City's adopted Tax Abatement and Incentive Policy.

Strategy #2

Evaluate Available Affordable Housing Programs/Incentives and Implement as Feasible

Planning for Denton's future requires careful examination of the community's affordable housing options and projected housing demand. The City is in the process of completing Phase 1 of an Affordable Housing Assessment to help gain valuable insight into the city's housing needs, existing assets, and future housing needs with the overall goal to facilitate a policy discussion and strategic plan to support the acquisition, preservation, and creation of affordable housing in Denton. Currently the City offers Home Repair Programs to help preserve affordable housing and a Homebuyer Assistance Program to help increase affordable homeownership. The City's home repair programs provide assistance to low-income homeowners to make essential minor and emergency repairs when the owner-occupant lacks sufficient resources or major repairs, including both rehabilitation and reconstruction. The Homebuyer Assistance Program provides assistance to first-time homebuyer to purchase a safe, affordable home. The City continues evaluating existing programs, planning for future affordable housing opportunities for residents, and ultimately meeting the City of Denton's changing housing needs.

Strategy #3

Implement Subchapter 7.4 of the Denton Development Code Regarding Environmentally Sensitive Areas

Subchapter 7.4 of the Denton Development Code (DDC) provides the City with the legal framework for the conservation and protection of floodplains, riparian corridors / buffers, wetlands, and eastern cross timbers forests (“upland habitats”), commonly known as Environmentally Sensitive Areas (ESA's). Water-dependent habitats areas, the interface between land and a river or stream, are vital for water quality, habitat and flood mitigation. Upland areas are home to unique animal and plant habitats, and often serve as treasured recreational areas. The City will continue to preserve and restore these natural corridors.

Strategy #4

Implement Code Changes to ensure Landscape Requirements are based on the Concept of Multiple Uses (Stormwater, Shading, and Drought Tolerance)

The City will evaluate and address landscaping and stormwater requirements of commercial development. Code revisions could greatly enhance future landscape designs by incorporating multi-use elements that are both environmentally beneficial and aesthetically pleasing. Options for revisions to the landscape and stormwater regulations range from a full- scale integrated stormwater plan that uses natural elements, such as swales to capture stormwater and guidelines that recommend local plants requiring less watering. It is also important to emphasize planting during dormant season and effectively addressing irrigation. Denton’s code should strike a balance between key design features/practices and provide a menu of different options that leave ample room for the creativity of the designer and property owner. Landscape recommendations will be tailored to the local climate and environment. Best practices will also be incorporated into educational material to promote new landscapes that also meet code compliance.

Strategy #5

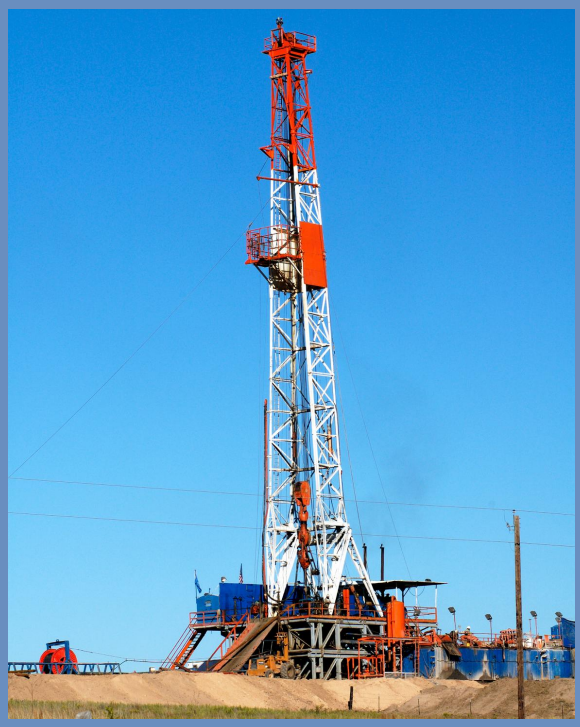
Promote Mixed-Use, Compact Development in Targeted Areas

Communities such as Denton are attracting citizens who desire more compact or dense development with a greater variety of uses. This type of development in turn has many environmental, economic, and social benefits. The City will promote mixed-use, compact development in the downtown transit area and commercial districts by specifying minimum density requirements.

Strategy #6

Implement Urban Forestry Master Plan (UFMP)

Denton's tree canopy is an iconic part of the landscape and a critical element of the natural environment. Currently at 19 percent of the city's area, the urban tree canopy has room to expand in certain zoning districts. The UFMP advances the objectives of retaining existing trees, replacing and replanting trees, increasing the urban tree canopy, and planting native trees. Denton continues to work internally and partner with other departments and organizations to promote the planting of trees.



Strategy #7

Gas Well Development, monitoring and tracking of inspections

The City of Denton is located atop the eastern edge of the Barnett Shale. The Gas Well Inspections Division works to protect the health, safety, and general welfare of the public, and in addition it ensures the orderly and practical development of mineral resources in a manner compatible with existing and future development of affected surface uses. Denton Development Code Subchapter 6 regulates gas well drilling and production within the city limits. This section of the code was developed to protect public health and safety while allowing the practical development of mineral resources. Monitoring and Inspection information is available on the city's website.

Strategy #8

Implement Clear Creek Master Plan

Clear Creek Natural Heritage Center (CCNHC) is a valuable natural resource with more than 2,900 acres of open land. It includes ecosystems such as bottomland hardwood forest, upland prairie, and diverse aquatic habitats. In 2014, a Master Plan was developed to utilize the area based on the needs of the community. This innovative plan lays out the vision and goals for Clear Creek along with plans for restoration and reforestation but also the design for improvements upon the land. The City is building new trails, natural play structures, and facilities that allow the community to continue utilizing this area as a natural resource for education and recreation.

Additional Strategies for Consideration:

1. Review Code to allow/ promote Green Infrastructure Development Code
2. Implement and Review Integrated Pest Management Plan and Update
3. Implement a Program to Clean Up, Redevelop, and Reuse Brownfield Sites

Chapter 5: Transportation

"It is every man's obligation to put back into the world at least the equivalent of what he takes out of it."

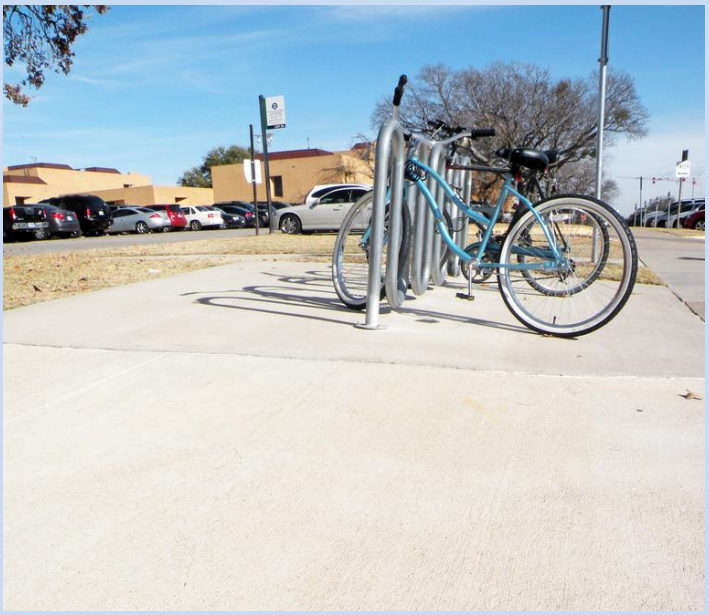
-Albert Einstein

Transportation networks are ever changing, and have a strong influence on the characteristics of a city. The City will consider the adoption of a new Denton Mobility Plan in 2020, that will continue to improve this critical infrastructure. Changes to this network are often difficult and expensive. Capital and operating costs for new projects are extremely high, fuel costs fluctuates, and air quality continues to be a substantial concern for the region.

The benefits of increased mobility need to be weighed against the environmental, economic, and social costs of transport, including traffic congestion, impacts of impervious parking areas to surface water, stormwater and groundwater supply, air pollution, long commute times, physical inactivity, and fuel costs and consumption. Sustainable transportation options can decrease our impact on the environment, reduce the costs of commuting, and improve quality of life for the Denton community.

Goals

1. Expand infrastructure for non-vehicle modes of transportation
2. Promote public transportation ridership and the use of fuel efficient/alternative fuel vehicles
3. Reduce environmental impacts from impervious parking surfaces
4. Increase amount of non-road trail systems

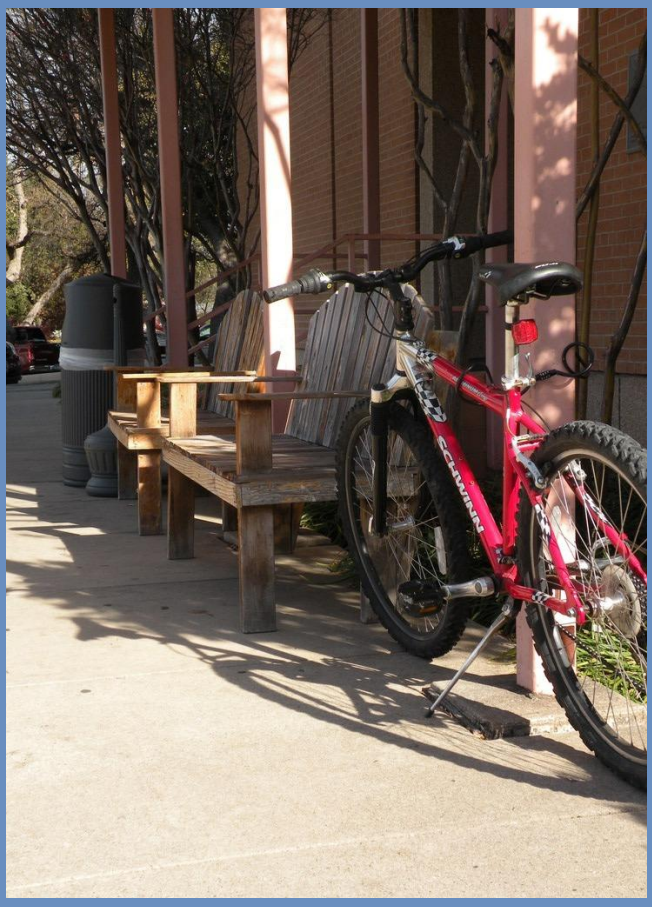


Successes to Date and Ongoing Initiatives

The City of Denton received both silver fleet recognition and the Arlo Ambassador Award for excellence in community education around the topic of air quality from the NCTCOG. The City is also taking additional steps to invest in a more sustainable transportation system. Multiple forms of alternative transportation – bicycling, walking, telecommuting, carpooling, use of high fuel efficiency or alternative fueled vehicles and mass transit—help to protect the environment, reduce traffic congestion, and build active communities. Many initiatives within the City promote the use of alternative transportation, including annual awareness and outreach programs designed to inform citizens about alternative transportation options.

Sustainability Metrics:

Key Performance Indicators	Targets
Number of miles for bike lanes	Increase number of bike lane miles (see Bike Master Plan)
Number of miles for walking paths/ sidewalks	Increase miles of walking paths/ sidewalks
Public transit ridership within the City of Denton	Increase public transit ridership



Strategy #1

Adopt and Implement Mobility Plan

In 2019, the City of Denton conducted a survey and began working with the community to develop a Mobility Plan. This plan would incorporate the results of the study along with strategies to address citywide transportation, including vehicles, transit, bicycles, and pedestrians, for the next 30 years. The objectives include: engage the community to understand mobility issues, build on previous plans, utilize reliable data sources to weigh mobility options; and develop an implementation strategy.

Strategy #2

Ensure Current Parking Standards Provide Flexibility and Reduce Environmental Impacts

Excessive parking and impervious surfaces – artificial structures such as pavement that is covered by impenetrable materials – negatively impact the built environment and threaten groundwater and surface water resources. The City will continue to revise its current parking standards to reflect local conditions and parking demand. The parking standards incorporate flexible methods for reducing the stormwater, surface water, and groundwater impacts from parking areas. Measures may include multiple use landscaping islands, the use of pervious surface paving, and management practices to improve the quantity and quality of stormwater draining from parking lots.

Strategy #3

Improve and promote pedestrian opportunities

The City recognizes the importance of walking and the contribution it makes to personal mobility and the environment. As such, the City will evaluate ways to promote safe, and convenient opportunities for walking. Improving pedestrian opportunities may include sidewalks, walkways, trails, and amenities such as lighting and landscaping to encourage physical activity. The City is evaluating opportunities to increase miles of sidewalk as compared with miles of streets. New development presents an opportunity to install pedestrian transportation and avoid the more costly retrofitting sidewalks to existing roads.

Additional Strategies for Consideration:

1. Evaluate traffic signalization to improve safety and mobility and implement as funding allows.
2. Update and implement idle reduction policy.
3. Update and Implement ADA Transition Plan

Chapter 6: Education, Communication and Community Involvement

"You can never have an impact on society if you have not changed yourself."

-Nelson Mandela

The sustainability challenges of today require global, local, and individual action. Although the City of Denton is implementing many substantial initiatives to improve community sustainability, government actions cannot and should not be the only actions. The success of this Framework depends on the active involvement of city residents, businesses, and institutions.

By providing education and involvement opportunities, regularly tracking successes and acknowledging areas for improvements, the community can understand what the City is doing to lead the way, and can participate in making Denton a more sustainable community.

Goals

1. Develop and promote city government and community sustainability programs to ensure community members of all demographics have access to participate actively and effectively.
2. Encourage and promote involvement of community members of all ages to further understanding of basic principles of sustainability.
3. Increase sustainability education, awareness and personal responsibility

Successes to Date and Ongoing Initiatives

Clear Creek Natural Heritage Center (CCNHC) was selected as the winner of the Government Award from Keep Texas Beautiful for a population between 50,000 and 150,000. This competitive award recognizes outstanding contributions to the Texas environment made by government departments, divisions or agencies. This year marks the 20th anniversary of the City of Denton's management of the Clear Creek Natural Heritage Center (CCNHC). Clear Creek currently has over 7 miles of trails and an education facility on the property. In 2005, the City began working with Denton Independent School District to host field trips for 2nd, 4th and 5th grade classes throughout DISD. This facilitates the education of more than 4,500 school visitors each year at CCNHC.

The City promotes community participation in national, regional, and local environmental events. Denton is working with community organizations and non-profit groups to educate residents and businesses on environmental issues and offer tips to address environmental challenges. During the 2018 -2019 fiscal year, the Sustainability Department participated in 260 events including: workshops, festivals, volunteer events, tours and outreach events. These events raise awareness and encourage individuals to take personal actions to improve community sustainability.

Sustainability Metrics:

Key Performance Indicators	Targets
Social Media Reach and Followers	Increase scope by 5 percent
Monthly number of people attending sustainability workshops and education sessions	Average attendance of 25 or more
Number of sustainable businesses involved in the Green Business Program	Enroll 10 businesses by 2020
Number of visits to City's sustainability website monthly	Increase number of visits

Strategy #1

Evaluate Opportunities for Advisory/Stakeholder Committees

As new projects and strategies form in Sustainability the City may choose different methods to involve citizens. Advisory and Stakeholder committees will be evaluated as opportunities arise. These committees can advise city decision-makers on sustainability initiatives and engaging the public and other community stakeholders.

Strategy #2

Sustainability and Learn 2 Conserve workshops

Sustainability plans to continue providing educational workshops that teach the public about new and successful ways to conserve resources, promote local food production, connect with nature, and divert waste from the landfill. These classes are available to all members of the community and focus on helping people live a more sustainable lifestyle.

Strategy #3

Update and Implement Green Business Program to Identify and Recognize Sustainable Businesses

The Green Business Program is intended to provide recognition to Denton businesses for their commitment to sustainability. The City has established criteria for verifying that businesses meet sustainability standards including energy and water conservation, waste reduction, and pollution prevention. Businesses in the program will be officially recognized by the City.

A program logo is used to identify participating businesses. Green businesses can advertise the logo on business websites or post a decal on storefront windows.

Strategy #4

Develop and increase outreach material made available to the public

The Sustainability Program will work with departments within in the city to develop materials that can be distributed throughout the city that highlight sustainable events and practices. These items, articles, and newsletters will provide more information on environmentally and socially responsible practices that can be implemented within the City of Denton. It will also highlight sustainability trends and educate others on ways to integrate sustainability principles into operations and daily life.

Strategy #5

Expand Denton Sustainable Schools Program

Denton Sustainable Schools encourages students, families, faculty, and staff to improve our environment, create economic value, and support and strengthen sustainable communities through the implementation of comprehensive sustainability education. The program works with participating schools to expand educational opportunities in several focus areas: Water, Air Quality and Greenhouse Gas Management, Transportation, Material Resource Management, and the Environment.

At the end of the year participating schools will turn in points accumulated throughout the year and can potentially win environmental awards based on their performance. Points are earned by recycling, teaching relevant lessons, field trips, civic engagement, maintaining a school garden, hosting sustainable presentation and other engaging educational opportunities.

DENTON sustainable SCHOOLS

Strategy #6

STAR and LEED for Cities

In 2017, the City of Denton became a 3-Star certified community for the STAR Communities framework. Through an extensive reporting process the City was able to accumulate enough points using the STAR Communities metric to qualify as one of only 73 cities to be certified in the Country. In 2018, the STAR Communities program merged with LEED for Cities to form a new program. This program will continue to allow the City of Denton to measure progress in sustainability, as well as, provide direction regarding areas where growth is needed. It showcases how Denton is a leader in the Dallas Fort Worth metroplex.

Strategy #7

Equity and Empowerment

The City of Denton wants to ensure equity in Sustainability by promoting inclusion and access to resources throughout the entire community. Some of the methods by which that the Sustainability Program plans to implement these principles is by working with other departments and outside organizations to better understand the needs of their community. This will help the city understand what sustainable workshops could benefit neighborhoods throughout Denton. The city also intends to distribute resources by working with various organizations throughout the city.

Additional Strategies for Consideration:

1. Expand Green Team programing and encourage sustainable practices within the City.
2. Evaluate education and outreach to ensure content and methods provide equitable engagement opportunities.

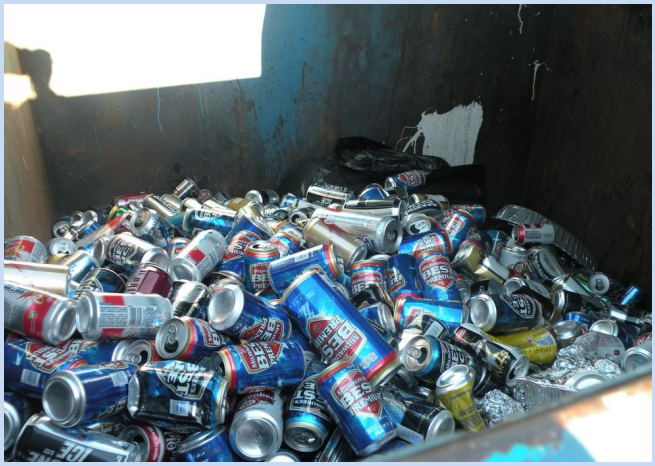
Chapter 7: Material Resource Management

"Til now, man has been up against nature; from now on he will be up against his own nature."

-Dennis Gabar

The City of Denton promotes sustainable materials management through recycling, landfill energy recovery, environmentally preferable purchasing, and litter reduction. Material goods can use energy intensive processes, may contain excessive packaging and may be transported over long distances before they are used once and discarded. The transportation of waste to disposal sites produces air pollutants, as does the decomposition of solid waste at the landfill. The amount of time a landfill can be effectively utilized can also be extended if materials destined for the landfill can be reduced, reused, and / or recycled. Fortunately, there are many local opportunities to manage material resources efficiently and promote economic growth and environmental quality.

At multiple stages of a product's lifecycle — extraction and processing of raw materials, manufacturing, distribution, storage, transport and disposal — innovations in materials management can reduce waste and promote reuse. Examples of strategies include source reduction, composting, and recycling.



Goals

1. **Reduce solid waste generation and divert waste away from landfill disposal through increased recycling and reuse options.**
2. **Leverage city government's purchasing power to procure goods and services that cause less harm to humans and the environment, in accordance with procurement laws and regulations.**

Successes to Date and Ongoing Initiatives

Denton has an active recycling program for citizens, governmental facilities, and public facilities. Denton offers innovative programs, including a home chemical collection program, successful community clean-up events, and yard waste composting.

Through the Home Chemical Collection (HCC) program, the City provides at-home collection and drop off of Household Hazardous Waste (HHW) to all residents. In an effort to reuse materials, the City redistributes HHW material to residents at its ReUse Store.

The City's Solid Waste Department collects municipal yard waste (grass clipping and leaves, brush and tree limbs) for composting. Yard waste and waste activated biosolids recycled from the Pecan Creek Water Reclamation Plant are used to make various Dyno Dirt products, including mulches, STA certified compost, and ready to use soil. All products are produced and sold by the Beneficial Reuse Division.

Sustainability Metrics:

Key Performance Indicators	Targets
Quantity and type of HCC collected	Maintain or increase collection amounts
Quantity of pharmaceutical waste collected annually	Increase annually
Quantity of yard waste collected annually	Continue to collect and increase where possible
Quantity of Dyno products sold annually	Increase quantity of Dyno products sold annually
Number of commercial recycling containers (serviced by the City of Denton)	Increase annually by 2%
Residential waste per capita	Decrease annually

Strategy #1

Promote Clean-up Events

The City of Denton promotes and sponsors clean-up events by providing supplies and recruiting volunteers in partnership with internal departments and external community organizations. During clean-up events, volunteers collect trash from streets, waterways, and neighborhoods. Clean-up sites often include parks, right-of-ways grounds, school grounds, and nature trails. Through its relationships with local businesses and organizations, the City can request donations, supplies, or in- kind support.

Strategy #2

Implement Environmentally Preferred Purchasing Program

The City is establishing a formal Environmentally Preferred Purchasing Program to guide the City's purchasing decisions and promote the use of products and services that best align with the city's sustainability goals.
In making purchasing decisions, certain products and services will be evaluated based on their environmental impact in addition to price and performance.

In evaluating environmental performance, the entire product lifecycle will be considered. The policy will cover office supplies, electronic equipment, cleaning products and food and beverage materials.

Strategy #3

Divert Solid Waste from Landfill through Recycling

Denton is continually expanding its recycling education program to increase and improve community recycling. The City currently provides curbside single stream recycling services to single-family residences and the opportunity for recycling at multi-family residences and businesses. To increase recycling participation in multi- family residential units, the City offers free waste audits and education to multi- family complexes that would like to recycle. Commercial recycling services currently include cardboard, office/mixed paper, or single-stream (commingled) recycling. Denton recently introduced a recycling program for businesses located downtown in the Square District to increase recycling effectiveness.

In addition having a public/private partnership with a Materials Recycling Facility at the municipal landfill improves recycling efficiency. This facility helps to minimize trips to deliver recyclables for sorting and allows better tracking of recycling participation in Denton.

Additional Strategies for Consideration:

1. Incorporate Comprehensive Solid Waste Management Strategy recommendations.
2. Continue to explore additional food waste diversion opportunities.
3. Promote conscious consumerism/waste minimization in the CIty of Denton.

Chapter 8: Resiliency and Public Health

"You can never have an impact on society if you have not changed yourself."

-Nelson Mandela

A resilient community is one that is flexible and continues to function in the face of stressors. Through holistic actions such as supporting pollinators, local farmers, urban agriculture, and community gardens, the City can establish a healthier more resilient community. Proper assessment and adaptations to climate stressors also provide the community with a level of preparedness that will benefit both the environment and public health.

Goals

1. Increase consumption of fresh, locally produced, organic produce to promote public health and to minimize resource consumption and negative environmental impacts
2. Ensure that no one geographic or socioeconomic group in the city is being unfairly impacted by environmental hazards
3. Incorporate Resiliency into City of Denton planning efforts

Successes to Date and Ongoing Initiatives

The Sustainability Office started the journey towards community resilience through a grant from the National League of Cities. After one year of working with the organization, as well as other cities around the United States, the Sustainability team gained valuable insights that will aid the Denton Community moving forward. The first internal resilience meeting was held in November of 2019, to encourage all departments to view decision making through the lens of community resilience. These meetings and discussions in the community will be a primary focus of the Sustainability Office moving forward.

The City of Denton is focused on supporting pollinators and has shown their continued support by participating in programs like Bee City USA and Monarch City USA. These programs require annual activities and reporting. The City of Denton currently maintains three pollinator gardens at Clear Creek Natural Heritage Center along with three more native plant beds. These gardens can be used to educate the public and students that visit Clear Creek on how to properly develop and maintain their own gardens. Denton also hosts annual events that aid in supporting local pollinators such as the Honey Run and a Pollinator Celebration that takes place during Pollinator Week each year.

Sustainability Metrics:

Key Performance Indicators	Targets
Resiliency Planning	2030
Number of permits issued to local food businesses/artists to participate at Denton Community Market	Increase 5% by 2020
Number/acreage of community gardens	10 acres by 2020

Strategy #1

Bee City USA and Monarch City USA

In 2016 the City of Denton joined Bee City USA and developed an urban beekeeping policy that was adopted for the City of Denton. Since then Denton has become the first city in the State of Texas to become a member of the Monarch City USA program with the intention of increasing our support for local pollinators within the community. Denton is also proud to be a part of the Mayors' Monarch Pledge.

Strategy #2

Complete the National Wildlife Federation's Community Wildlife Habitat Certification

Denton is committed to the restoration and creation of wildlife habitats within our community and is working towards becoming a certified Wildlife Habitat Community through the National Wildlife Federation. This program will be a collaborative effect between the community and various programs that are already taking place at the City of Denton. The City plans to obtain enough points to get certified and maintain their certification within the program.

Strategy #3

Assess and strengthen Denton's resilience through community and municipal planning

Resilience planning ensures vulnerabilities are met where possible, and adaptations are implemented when current strategies no longer function. This strategy will ensure Denton is becoming more resilient by building a sustainable city, mobilizing volunteers, engaging partners, and creating a vibrant workforce. Through public engagement and research we plan to identify strengths and weaknesses in social, economic and government resilience, and identify practical steps for improvements.

Strategy #4

Encourage Backyard and Community Gardening within City Limits

To support consumption and production of local food, the City of Denton is implementing measures to promote backyard and community gardens. A community garden is land used collectively by a group of people to grow fresh produce and plants. Community gardens can promote healthier eating and transform unused land into productive and attractive spaces that demonstrate the benefits of local food production. Backyard gardens are located and maintained by an individual on their property. This enables a person to be able to produce their own source of food.

To increase access and availability of local food, the City provides education on various topics such as beekeeping, backyard urban chickens, gardening, seed starting, composting, and forms of permaculture. Many of these classes are taught by local farmers and experts in the agricultural industry. By partnering with local experts we are able to connect members in the community with one another to build support around local food production.

Denton will continue to partner with various organization to provide gardening resources such as the Emily Fowler Seed Library which provides free seeds to local residents.

Appendix a: Public Engagement

This section describes the process and results of an extensive public engagement process and how the information gathered has helped to shape the Framework. The planning process was designed to give citizens, businesses, and institutions multiple opportunities to participate and provide input to the Plan.

The public engagement process included key stakeholders, city staff, and community members in identifying and analyzing ideas, studying existing policies and programs, and developing a list of actions and opportunities for meeting the City's sustainability goals. The City received input from over 300 citizens, educators, environmentalists, sustainability experts, business leaders, homeowners, city officials, and staff throughout this process via multiple avenues, including working groups, community meetings, and a sustainability survey.

Framework Development

Staff gathered information about existing programs, identified focus areas and goals, and evaluated sustainability strategies for implementation. Three distinct groups of influenced the development of the document.

Interdepartmental Team

The City organized a team of employees representing a diverse group of departments, including Purchasing, Solid Waste, Economic Development, Planning, Facilities, Community Development, Water and Wastewater, Communications, Transportation, Building Inspections, Environmental Services, and Parks. The Interdepartmental Team was tasked with gathering data, providing recommendations, and refining and evaluating sustainability strategies. The team's knowledge of government operations and existing programs and policies was essential in identifying realistic and actionable strategies.

Committee on the Environment

The Committee on the Environment (COE) consists of three City Council members dedicated to advancing the City's commitment to environmental protection. The COE provides expertise and recommendations during the update. COE was able to provide guidance and feedback on the planning process, goal identification and strategy prioritization and selection.

Sustainability Survey

A public survey was conducted to gather and prioritize sustainability strategies. The survey was provided online from Fall 2017 through Spring 2018 to gather additional input from the community. A detailed report on the survey results can be found below.

Community Meetings

The community meetings enabled citizens to discuss sustainability in ways that relate to their everyday lives. Participants were asked to generate ideas for advancing sustainability in each of the focus areas, and were encouraged to ask questions of city staff present for clarification as needed.

Sustainability Community Meeting #1 - March 21, 2018, 6:30-8:00 PM:
Purpose:
The first community meeting for citizens was held on March 21st, 2018, to introduce the citizens to the Simply Sustainable Plan updates and provide an overview of the planning process, their respective roles, receive feedback regarding sustainable strategies they would like to include.

Attendees:
Attendees included individuals from the community.

Presentation:
Sarah Luxton, Denton Sustainability Coordinator, welcomed attendees. Luxton provided a brief presentation on the definition of sustainability, the Vision Statement and Goals for Sustainable Denton, and an overview of the project and timeline. The bulk of the workshop was spent in allowing citizens to provide feedback in each of the eight focus areas.

Community Meetings Continued

Sustainability Community Meeting #2 - March 22, 2018, 6:00-8:00 PM:
Purpose:
The second community meeting for citizens was held on March 22, 2018, to introduce the citizens to the Simply Sustainable Plan updates and
provide an overview of the planning process, their respective roles, receive feedback regarding sustainable strategies they would like to include.

Attendees:
Attendees included individuals from the community.

Presentation:
Sarah Luxton, Denton Sustainability Coordinator, welcomed attendees. Luxton provided a brief presentation on the definition of sustainability, the Vision Statement and Goals for Sustainable Denton, and an overview of the project and timeline. The bulk of the workshop was spent in allowing citizens to provide feedback in each of the eight focus areas.

Sustainability Community Meeting #3 – May 6, 2018, 5:00-7:00 PM:
Purpose:
The third community meeting for citizens was held on May 6, 2018, to present the feedback collected from the previous community meetings, as well as, all of the information collected from the online surveys and discuss strategy prioritization.

Attendees:
Attendees included individuals from the community.

Presentation:
Sarah Luxton, Denton Sustainability Coordinator, welcomed attendees. Luxton provided a brief presentation on the definition of sustainability, the Vision Statement and Goals for Sustainable Denton, and an overview of the project and timeline. Next, we spoke about the feedback that had been collected in each of the eight focus areas and how we would implement this feedback into the updated version of the Simply Sustainable Plan.

Appendix b: Sustainability Survey Results

Survey Objectives

The City of Denton (City) has updated the Simply Sustainability for City government operations and the community-at-large. A critical component of a successful updated plan is stakeholder participation. The City employed various methods of community outreach and participation, including the Sustainable Denton Survey. The purpose of the survey was to gather input from City stakeholders about sustainability strategy ideas, as well as to document how City stakeholders prioritize the strategies and focus areas of sustainability.

Data Collection Method

Denton Sustainability employees informed City stakeholders of the Sustainable Denton Survey during public meetings. Public meetings were held on March 21, March 22, and May 9, 2018. The survey was also publicized on the City website, the Denton Sustainability website and Facebook page, a City email list, and at City outreach events. The number of completed surveys for Version 1 and Version 2 was 287 and 264, respectively. These surveys are thus an important source of data from hundreds of stakeholders within Denton.

It is important to note, the potential voluntary response bias inherent to this non-random survey collection method. People with strong opinions about sustainability were potentially more likely to respond to the survey. Therefore, the survey results do not necessarily reflect the opinions of the entire City population. Nonetheless, the survey results are useful in gauging public opinion about sustainability.

Survey Questionnaire

Data was collected through the use of a semi-structured questionnaire. The average amount of time to complete both versions of the survey was four minutes each. The questionnaire assessed the following three areas:

- Residency and role of survey participants
- Definition and conceptualization of sustainability
- Prioritization of sustainability strategies and focus areas

Sustainable Denton Survey

Version 1

Summary of Key Findings

Residency and Role of Survey Participants

As illustrated in Figure 1, the majority of survey respondents – 72 percent – have resided in Denton for five or more years. Respondents residing in Denton for less than five years made up 15 percent of surveys. The remaining 13 percent of respondents who were not Denton residents identified their role in the community as an education provider, business owner/representative, health care professional, City of Denton employee/official, environmental professional, or as a role not identified in the survey, as demonstrated in Table 1.

Community Role	Percent	Number
Denton Resident for 5 or more years	71.93%	205
Denton Resident for 0-5 years	15.09%	43
Education Provider (K-12 and Higher Ed)	4.56%	13
Business Owner/Representative	3.86%	11
Environmental Professional	1.40%	4
Other	1.40%	4
Health Care Professional	1.05%	3
City of Denton Employee/Official	0.70%	2
TOTAL	100%	285

Table 1: Role in Community

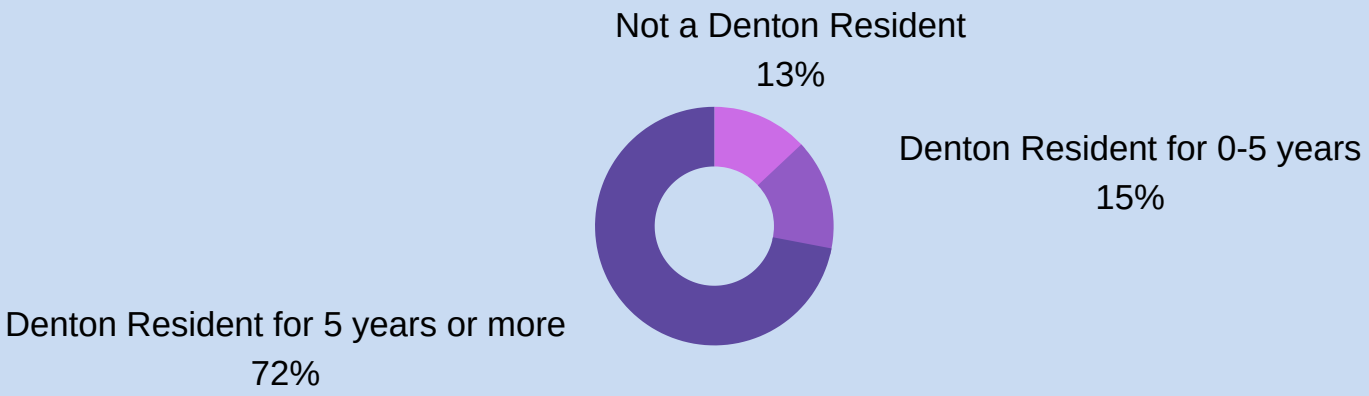


Figure 1: Residency of Survey Respondents

Definition and Understanding of Sustainability

The community was asked to select a definition of sustainability they identified with most. As shown in Table 2, no definition received a majority of votes. However, the most popular definition among respondents by a significant margin – receiving 41 percent of votes – was the following: "Using, developing, and protecting resources at a rate and in a manner that enables people to meet their current needs and also provides that future generations can meet their own needs." The second most selected definition – comprising 29 percent of survey responses was "Improving the quality of human life while living within the carrying capacity of supporting eco-systems." Obtaining 20 percent of survey responses, the third most popular definition was "Meeting the needs of the present without compromising the ability of future generations to meet their own needs." Unique definitions of sustainability that were not offered as choices in the survey were provided by seven percent of respondents. A representative definition described sustainability as "Using only the resources we currently need while taking actions to enhance future availability of resources including the environment." Just three percent of respondents chose the definition "No net per capita loss of natural or human capital."

Sustainability Definition	Percent	Number
Using, developing, and protecting resources at a rate and in a manner that enables people to meet their current needs and also provides that future generations can meet their own needs	40.91%	117
Improving the quality of human life while living within the carrying capacity of supporting eco-systems	29.37%	84
Meeting the needs of the present without compromising the ability of future generations to meet their own needs	20.28%	58
Unique definition from survey respondents	6.64%	19
No net per capita loss of natural or human capital	2.80%	8
TOTAL	100%	286

Table 2: Definitions of Sustainability

Importance of Focus Areas

The City developed ten focus areas for the updated Simply Sustainability. Respondents were asked to rank each of the focus areas on a scale from one to five, with one being the least important and five being the most important. Focus areas included the following:

- Purchasing – Use and purchase of environmentally and socially responsible materials and products.
- Air Quality – Making sure the air is healthy and safe for all community members. Programs with emission reducing initiatives like ozone action, transportation reduction and efficiency, and air quality tracking.
- Greenhouse Gas (GHG) management – Promote environmentally and economically sound GHG management practices throughout the community. GHG management includes energy efficiency, waste reduction, transportation upgrades, and community education.
- Green Business Programs – Programs that highlight existing businesses going a step beyond to reduce their footprint and make a positive impact on the community.
- Transportation – Enhance and implement strategies that reduce air pollution and increase alternative transportation choices.
- Energy Conservation and Efficiency – Promote energy conservation techniques and help educate and facilitate residents and businesses in energy efficiency improvements.
- Ecosystems and Open Space – Protect and manage open space in the community while taking precautions to protect existing habitats.

Importance of Focus Areas Continued

- Waste Management – Further strategies including diversion, reuse, recycling and energy producing disposal options.Involvement of the Community and
- Stakeholders – Involve community and stakeholders in development and implementation of sustainability planning and activities.

As demonstrated in Table 3, every focus area scored above a four out of five, based on the weighted average score for each focus area. Respondents identified Air Quality as the most important, followed by Ecosystems and Open Space, Greenhouse Gas Management, Waste Management, Transportation, Energy Conservation and Efficiency, Involvement of Community and Stakeholders, Purchasing, Green Building/Sustainable Site Management, and Green Business Programs, as illustrated in Figure 2.

Focus Area	Not Important	Minimally Important	Neutral	Somewhat Important	Very Important	TOTAL	Weighted Average
Air Quality	3	3	9	28	244	287	4.77
Ecosystems and Open Space	2	0	8	56	221	287	4.72
Greenhouse Gas Management	2	7	14	68	193	284	4.56
Waste Management	1	4	16	78	187	286	4.56
Transportation	2	7	20	70	187	286	4.51
Energy Conservation and Efficiency	2	6	15	112	152	287	4.41
Involvement of Community and Stakeholders	4	5	36	92	149	286	4.32
Purchasing	3	7	29	104	142	285	4.32
Green Building/Sustainable Site Management	2	13	40	91	140	286	4.24
Green Business Programs	5	20	32	109	120	286	4.12

Table 3: Importance of Focus Areas

Sustainability Strategies

Respondents were shown six sustainability strategies and asked to choose the strategy they would most like to see improved in the upcoming three years. Additionally, respondents had the option of providing their own unique strategy. As shown in Table 4, 28 percent of respondents would like to see more availability of recycling for businesses, apartments, and other commercial properties. This was followed by 21 percent of respondents who opted for more access to public transportation and bike/pedestrian opportunities. Fifteen percent of respondents hope to see more City policies promoting sustainable building and development. Twelve percent of respondents would like more availability of rebates and other measures encouraging conservation of water and energy at home. Ten percent of respondents want to see more availability of local food and community garden access. An additional ten percent of respondents provided their own unique strategy they hope to see in the next three years. Finally, four percent of respondents would like to see more implementation of a Green Business Program recognizing and rating local businesses. Some examples of unique strategies offered by respondents include:

- Investing in renewable energy sources such as wind and solar over natural gas
- Preserving green spaces
- Improving upkeep of sidewalks and parks
- Educating businesses and citizens on their role in becoming a sustainable community

Figure 2: Importance of Focus Areas (weighted average score from 1-5)

Sustainability Strategy	Percentage	Number
Availability of recycling for businesses, apartments, and other commercial properties	28.22%	81
Access to public transportation and bike/pedestrian opportunities	20.56%	59
City policies promoting sustainable building and development	14.98%	43
Availability of rebates and other measures encouraging conservation of water and energy at home	12.20%	35
Availability of local food and community garden access	10.45%	30
Unique strategy provided by survey respondents	9.76%	28
Implementation of a Green Business Program recognizing and rating local businesses	3.83%	11
TOTAL	100%	287

Table 2: Definitions of Sustainability

Additional Ideas:

In concluding the survey, respondents were given the opportunity to provide additional ideas for sustainability strategies that were not previously discussed. Contact information for the City of Denton Sustainability was provided and respondents were encouraged to reach out with their ideas over specific projects, community programs, policy changes, educational initiatives, and any other ideas.

Sustainable Denton Survey

Version 2

Summary of Key Findings

Residency and Role of Survey Participants

In this version of the survey respondents were shown various roles within the community and were asked to select all which applied to them. Many respondents chose more than one role within the community. As demonstrated in Table 5, a majority – 74 percent – of respondents identified themselves as Denton residents. City of Denton employees and officials made up 22 percent of respondents. Eleven percent of respondents identified themselves by providing their own role which was not offered as an option in the survey. Eight percent of respondents indicated that they were business owners or representatives. An additional eight percent of respondents were students, while six percent of respondents classified their role in the community as education providers. Environmental professionals and health care providers were the least common roles of respondents, making up just four percent and three percent of the surveyed population, respectively.

Community Role	Percent	Number
Denton Resident for 5 or more years	71.93%	205
Denton Resident for 0-5 years	15.09%	43
Education Provider (K-12 and Higher Ed)	4.56%	13
Business Owner/Representative	3.86%	11
Environmental Professional	1.40%	4
Other	1.40%	4
Health Care Professional	1.05%	3
City of Denton Employee/Official	0.70%	2
TOTAL	100%	285

Table 5: Role in Community

Primary Interest in Sustainability

Respondents were shown six aspects of sustainability and asked to identify their largest concern. Responses are demonstrated in Figure 3 and Table 6. More than one-third – 37 percent – of respondents identified their greatest concern as conservation of resources. More than one-quarter – 27 percent – of respondents were primarily concerned with health and safety. Sixteen percent of respondents selected access to natural spaces as their greatest concern. Respondents who identified their largest concern as air quality and water quality made up 11 and six percent of the surveyed population, respectively. Just three percent of respondents stated that they are most concerned with access to public transit.

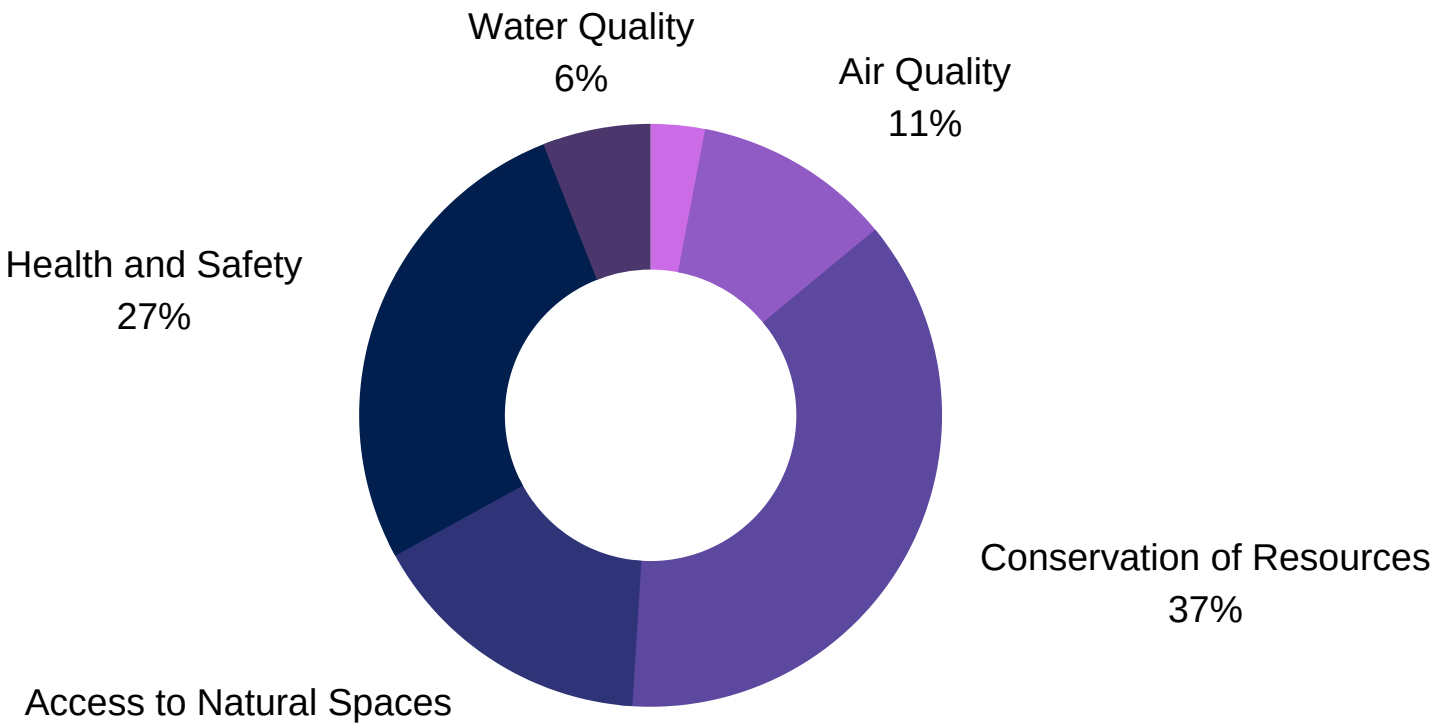


Figure 3: Primary Interest in Sustainability

Interest in Sustainability	Percent	Number
Conservation of Resources	36.74%	97
Health and Safety	26.52%	70
Access to Natural Spaces	16.29%	43
Air Quality	10.98%	29
Water Quality	6.44%	17
Access to Public Transit	3.03%	8
TOTAL	100%	264

Table 6: Primary Interest in Sustainability

Importance of Focus Areas

Respondents were shown seven sustainability categories and asked to rank each category in order of importance with one being the most important and seven being the least important. The categories were taken from the STAR Community Rating System framework for sustainability. Table 7 lists all seven focus areas, and the number of respondents for each rank within each focus area. A score was calculated to determine how respondents, on average, ranked each focus area. The rankings are shown in Table 8 from most important to least important.

Focus Area	1 – Most Important	2	3	4	5	6	7 – Least Important
Health & Safety	83	52	50	30	18	18	6
Climate & Energy	55	58	37	29	35	27	15
Natural Systems	46	49	40	43	26	25	30
Economy & Jobs	41	27	42	31	38	50	28
Education, Arts, & Community	17	37	37	52	46	40	27
Built Environment	15	20	22	32	35	45	83
Equity & Empowerment	4	15	29	38	54	49	66

Table 7: Ranking of Focus Areas

Sustainability Strategy	Percent	Number
Availability of recycling for businesses, apartments, and other commercial properties	30.62%	79
Availability of local food and community garden access	21.71%	56
Access to public transportation and bike/pedestrian opportunities	21.71%	56
Greenhouse gas reporting and climate adaptation planning	15.12%	39
Resources for energy efficiency in low income housing	10.85%	28
TOTAL	100%	258

Table 8: Ranking of Focus Areas

Sustainability Strategies to be Improved

Respondents were presented with five sustainability strategies and asked to choose the strategy they would most like to see improved in the City. Responses are shown in Table 9. Nearly one-third of respondents – 31 percent – identified that they would like to see more availability of recycling for businesses, apartments, and other commercial properties, mirroring the findings from Survey 1. The next most preferred strategies for improvement – both receiving 22% of votes – were availability of local food and community garden access, and access to public transportation and bike/pedestrian opportunities. Fifteen percent of respondents identified Greenhouse gas reporting and climate adaptation planning as the strategy they would most like to see improved. Finally, 11 percent of respondents selected resources for energy efficiency in low income housing as the sustainability strategy they would most prefer to be improved.

Preferred Method for Addressing Sustainability Strategies

As a final survey question, respondents were asked how they thought the City should address strategies in sustainability from a choice of three options. Additionally, respondents were given the option of providing their own method which was not listed as an option on the survey. As shown in Table 10 and Figure 4, both policy change and community programs received more than one-third – 35 percent – of the votes each. Educational outreach was preferred by 21 percent of respondents, while nine percent identified their own unique method for addressing sustainability strategies. It is significant to note that the respondents were nearly evenly split on the best approach to achieving sustainability, with a slight preference towards policy changes and City programs.

Focus Area	Ranking
Health & Safety	1
Climate & Energy	2
Natural Systems	3
Economy & Jobs	4
Education, Arts, & Community	5
Built Environment	6
Equity & Empowerment	7

Table 9: Perferred Sustainability Strategies

Method	Percent	Number
Policy Changes	35.11%	92
Community Programs	34.73%	91
Educational Outreach	21.37%	56
Other	8.78%	23
TOTAL	100%	262

Table 10: Preferred Method for Addressing Sustainability Strategies

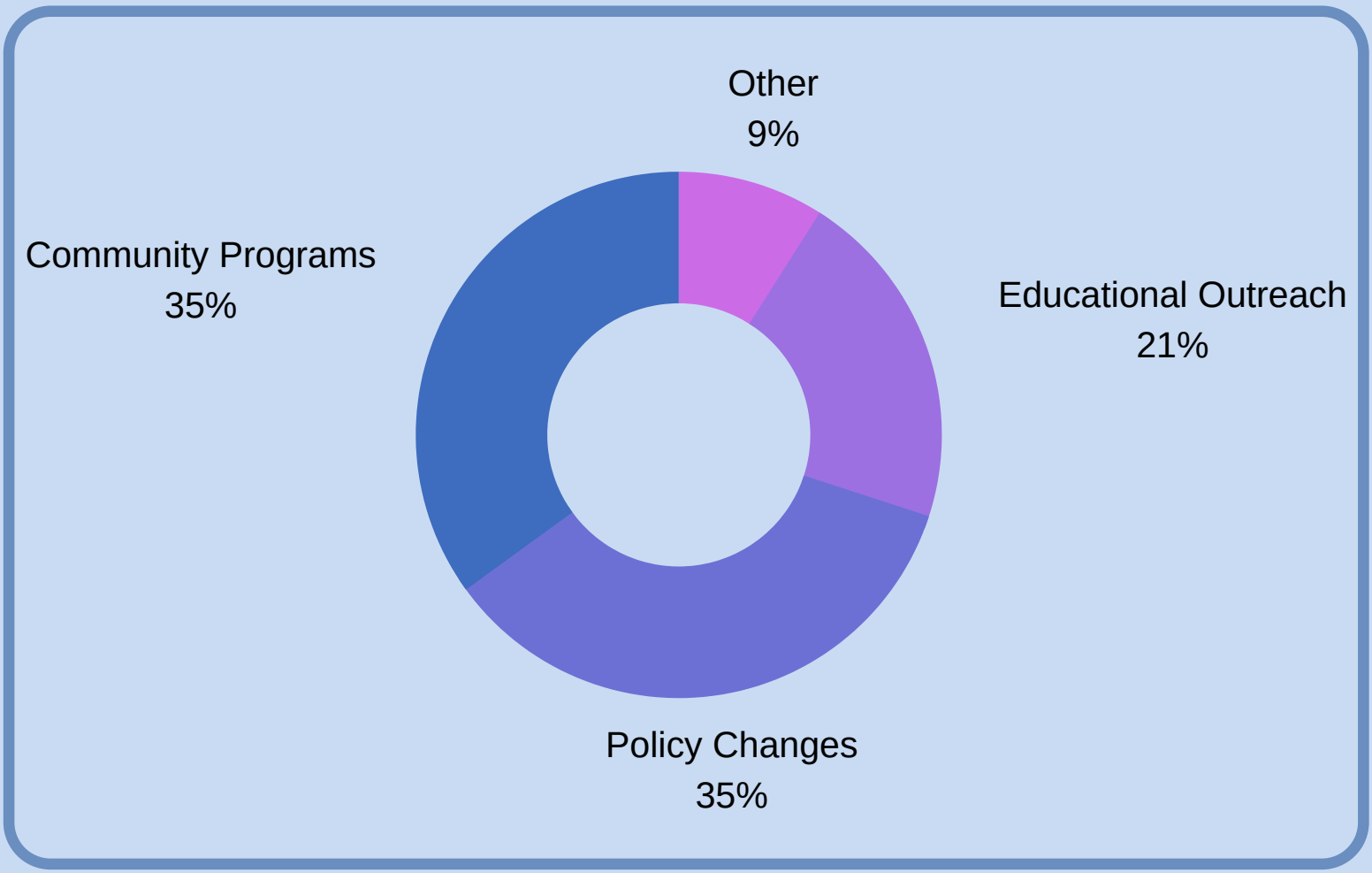


Figure 4: Preferred Method for Addressing Sustainability Strategies

Conclusion

A majority of survey respondents perceive a sustainable community as one that is primarily focused on the well-being of future generations while meeting current needs. One of the ways a community can protect future generations is through the conservation of resources, which was identified by 37 percent of respondents as their greatest concern with sustainability, as illustrated in Figure 3. This concern was echoed in Version 1 of the survey when respondents were asked which sustainability strategy they would like to see improved over the next three years. As shown in Table 4, 28 percent of respondents identified more availability of recycling programs as their preferred strategy. Similarly, in Version 2 of the survey, respondents were asked which sustainability strategy they would like to see improved. Again, the most popular strategy – chosen by 31 percent of respondents – was an increase in the availability of recycling programs, as demonstrated in Table 9.

A second major theme is that respondents seem most interested in strategies which give them more control over their individual impact. This interest is for infrastructure to be enhanced in ways that provide them with greater options to reduce their own personal amount of pollution and waste, for example, through more public transit and, again, recycling.

In conclusion, respondents see importance in protecting the well-being of future generations, and believe this can be done by conserving resources and taking actions to reduce their personal impact on the environment. Thus, respondents place a higher value on recycling programs over other strategies for sustainability.

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The photograph on the cover of the Simply Sustainability was taken by Candace Moon of the City of Denton. Several of the photographs throughout the document were provided by Stuart Birdseye of the CIty of Denton.

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