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"The future belongs to those who believe in the beauty of their dreams." - Eleanor Roosevelt

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he City of Denton is committed to improving quality of life, protecting the environment, and creating economic opportunities for its citizens, businesses and institutions. "Simply Sustainable — A Strategic Plan for Denton's Future" is the result of a collaborative effort with our citizens, workforce, business owners, institutional leaders, and elected officials working to improve our environment, economy, and community. It is a plan developed by the community and for the community.

Provided herein is an executive summary of the Plan, 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 and key stakeholders, 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 Plan.
- 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.

Focus Areas and Sustainability Goals

Advancing our vision for a sustainable Denton will involve innovation and collaboration across many sectors of the community. To facilitate these actions, the Plan is organized into eight focus areas, each accompanied by goals, strategies, and actions to achieve results.



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





- 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
- Invest in renewable energy generation

Energy Efficiency and Conservation

- 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 and Open/Natural Space



- Promote 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
- Promote redevelopment of infill areas and brownfield sites

Transportation

Education, Communication and Community Involvement

Material Resources Management

Local Food Production



- 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



- Develop and promote city government and community sustainability programs
- Encourage and promote citizen involvement
- Increase sustainability education, awareness and personal responsibility
- 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

- - Encourage local food production and distribution

Strategies for a More Sustainable Denton

The Plan includes 30 strategies across the eight focus areas, which were selected through a rigorous public involvement and prioritization process. These strategies include recommendations for policies, community programs, outreach and education, and capital improvements. Implementation actions are 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.

WATER

Minimize Wastewater Impacts on the Environment

Rewrite and Adopt Changes to the Drainage Design Criteria Manual

Maintain High Quality Drinking Water

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

AIR QUALITY & GHG MANAGEMENT

Develop and Implement a Sustainable Municipal Fleet Program

Develop a GHG Program for Municipal Operations

ENERGY EFFICIENCY & CONSERVATION

Expand Commercial and Industrial Energy Efficiency Program

Adopt the Most Current Building Codes in a Timely Manner and Continue to Exceed Current International Energy Conservation Code (IECC) Minimum Requirements

Consider Developing a Sustainable Building Rating Program for New and Existing Facilities, Commercial and Residential Single Family, Multi-family and Neighborhood Development

Improve the Energy Efficiency of Existing Homes and Buildings

LAND USE & OPEN/NATURAL SPACE

Promote Infill Incentives

Evaluate Available Affordable Housing Programs/Incentives and Implement as Feasible

Revise and Implement Subchapter 17 of the Denton Development Code Regarding Environmentally Sensitive Areas

Implement a Program to Cleanup, Redevelop and Reuse Brownfield Sites

Implement Code Changes so that Landscape Requirements are Based on Concept of Multiple Uses (Stormwater, Shading, Drought Tolerance)

Promote Mixed-use, Compact Development in Targeted Areas

Complete and Implement Tree Code

Complete and Implement Subchapter 22 and Related Code Changes Concerning Gas Well Drilling and Regulation

TRANSPORTATION

Revise Current Parking Standards to Provide Flexibility and Reduce Environmental Impacts

Improve and Promote Pedestrian Opportunities

Implement the Bicycle Master Plan

EDUCATION, COMMUNICATION & COMMUNITY INVOLVEMENT

Create a Sustainability Advisory Council

Create a Green Business Program to Identify and Recognize Sustainable Businesses

Develop a Section in the Chamber of Commerce Newsletter to Highlight Sustainable Businesses

MATERIAL RESOURCES MANAGEMENT

Promote Clean-up Events

Establish Formal Environmentally Preferred Purchasing Policy

Divert Solid Waste from Landfills Through Recycling

LOCAL FOOD PRODUCTION

Encourage Community Gardens Within City Limits Evaluate Opportunities to Increase Access and Availability of Local Food

Availability of Local Food Including Backyard Urban Gardens, Backyard Urban Chickens and Food Cooperatives

Increase Number of Vendors Participating at Farmer's Markets and Craft Fairs in the Community



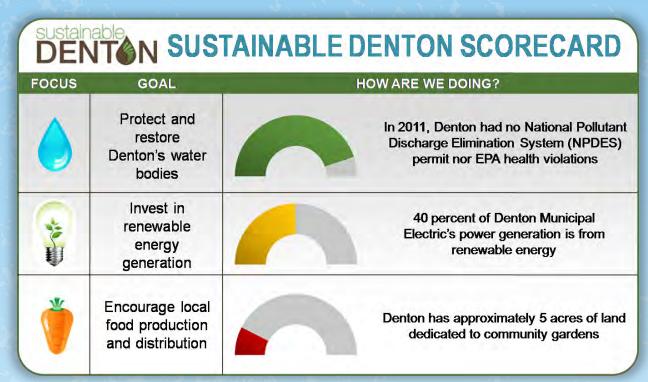
Measuring and Communicating Progress

Sustainability can be difficult to measure. Throughout the planning process, Denton has focused on quantitative and representative metrics that are already tracked or easily available at the city scale. The Plan 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 Plan.

Ongoing Implementation and Continual Improvement

The Plan is a living document that will be updated on a regular basis. The selection of strategies for future implementation will be based on the current and projected status of the City's budget, external partnerships and funding sources, emerging City activities, and stakeholder input.

In future sustainability planning updates, the City will consider lessons learned from the successes and challenges of implementation. In effect, this Plan will serve as a mechanism for continual improvement and help to inspire an increasingly more sustainable Denton.





Message From the Mayor

Together we are working to make Denton one of the most sustainable cities in the nation. "Simply Sustainable – A Strategic Plan for Denton's Future" is a citywide action plan focused on improving quality of life, protecting our environment, and creating economic opportunities for our citizens. The Plan is a product of the collaborative efforts of our residents, workforce, business and institutional leaders, and our elected officials. I am proud to see the progress we have made to date.

This Plan was developed as a living document. It not only looks at the future, but also at our ongoing programs and sustainability successes to date. As stated in our vision statement, we all need to work in a leadership role to protect and restore our environment, create economic value, and support and strengthen our community.

The City is serious about sustainable energy production and consumption and this is reflected through the number and variety of programs we have enacted. Recently, our great City received an **Outstanding Achievement Award for our Sustainable Energy Program** from the U.S. Conference of Mayors. Water is also one of our most valuable natural resources, and is an integral part of our community. As our City grows and water demands increase, we must be proactive about protecting our water infrastructure. Denton is ranked as one of the top five cities with the best tasting drinking water in the country, as recently acknowledged by the U.S. Conference of Mayors. We should also invest resources to mitigate air pollution, encourage the construction of buildings that use resources as efficiently as possible, and take actions to minimize urban sprawl in Denton. These are a few examples of why the City is committed to "meeting today's needs without compromising the ability of future generations to meet those same needs."

"Simply Sustainable – A Strategic Plan for Denton's Future" provides the framework to advance our vision for a Sustainable Denton through innovation and collaboration across all sectors of our community.

My sincere thanks to our Community Partners, the Interdepartmental Advisory Group, and the citizens who have been actively involved throughout. I appreciate their significant input and leadership.

Mail Queroy

Mayor Mark Burroughs





Message From the City Manager

I proudly recognize the efforts of City employees, community partners, and Denton residents for their involvement and commitment to developing "Simply Sustainable – A Strategic Plan for Denton's Future." This collaborative effort exemplifies the dedication our employees and citizens have to our wonderful City.

Simply Sustainable is a step to preserving our natural resources, protecting our environment, and improving quality of life for all. The City currently has many successful programs that support our vision of making Denton a sustainable community. This plan outlines these successes and suggests ways we can work together to address the challenges we face as our City continues to grow. I am proud of the example Denton is setting in environmental leadership. Our efforts demonstrate that embracing sustainable practices allows us to be fiscally responsible while protecting our environment and creating a better quality of life for our citizens.

Simply Sustainable provides guiding principles for sustainability initiatives. The guiding principles outlined in the plan are:

- Involve the community in developing and implementing the Plan,
- Develop partnerships that encourage collaboration,
- 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 sustainable for current and future customers,
- Conduct all of the activities above with a focus on inclusiveness, equity, and social responsibility.

I thank all those involved for their leadership and guidance that led to Simply Sustainable. By enacting this plan, Denton can be a model for how a city can exist in harmony with its environment and as a result, be a better place for all its residents.

Juga Campber

City Manager - George C. Campbell



chapter 1: Introduction

"People acting together as a group can accomplish things that no individual acting alone can ever hope to bring about." — Franklin D. Roosevelt

The City of Denton (City) is committed to improving quality of life, protecting the environment, and creating economic opportunities for its citizens, businesses, and institutions. This Plan is the result of a collaborative effort with our citizens, workers, business owners, institutional leaders and elected officials working to improve our environment, economy, and community. It is a Plan developed by the community for the community.

Sustainability is defined as "meeting today's needs without compromising the ability of future generations to meet those same needs." Environmental, social, and economic realities have prompted many communities to assess and consider plans for long-term sustainability. By supporting healthy air and water, transportation alternatives, local food options, economic development opportunities, and safe places to live, work, and play, sustainability planning can help Denton attract and retain residents, businesses, and investments.

Sustainability planning is a long-term, comprehensive approach to decision making that addresses economic, environmental, and social impacts. Sustainability planning aims to build stronger ties throughout the community by addressing multiple issues simultaneously instead of in isolation. Success is measured not only by financial performance (the traditional bottom line) but also by environmental benefit and social responsibility.

Background

While Denton has embraced sustainability concepts for decades, this Plan is the City's first systematic and comprehensive approach to implementing sustainability improvements throughout the community. Long before sustainability became a current issue, the City worked to protect the environment and enhance citizens' lives. 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 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, and energy issues. While the impetus 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 directive of the City Council and has been incorporated into all levels of the City's strategic planning efforts. This directive continues with the creation and implementation of this Plan.

Vision and Guiding Principles

The City worked with the community to develop a collective vision for a Sustainable Denton to "improve our environment, create economic value, and support and strengthen our community." The vision forms the foundation of the Plan. Guiding principles were established to support the community's vision for sustainability:

- Involve the community in developing and implementing the Plan.
- 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.

Vision for a Sustainable Denton

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. Conduct all of the activities above with a focus on inclusiveness, equity, and social responsibility.

Focus Areas and Sustainability Goals

The Plan is organized by eight strategic focus areas: Water, Air Quality and GHG Management, Energy Efficiency and Conservation, Land Use and Open Space, Transportation, Education, Communication and Community Involvement, Material Resources Management, and Local Food Production.

In support of the eight focus areas, sustainability goals were developed to achieve the Vision for a Sustainable Denton. The sustainability strategies and actions identified by the community in the following chapters align with these goals. The goals are listed in terms of priority as indicated by community stakeholders.

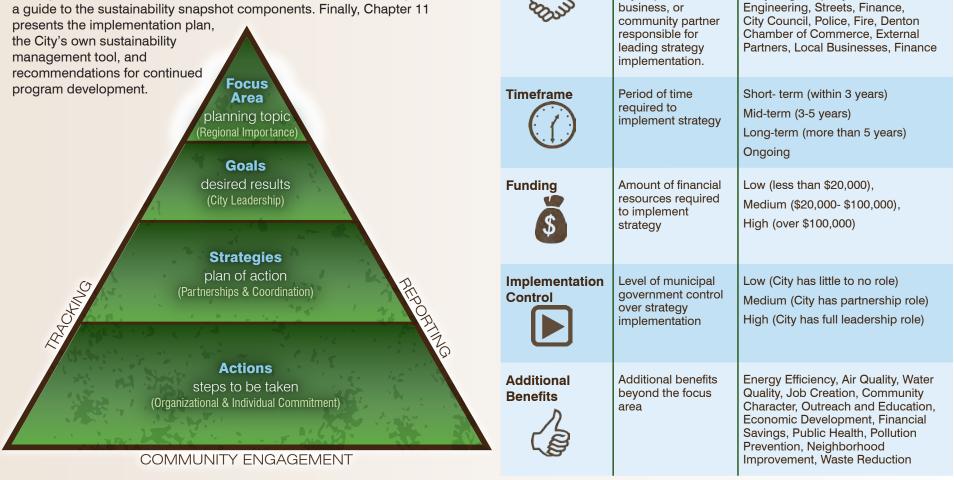
Plan Structure

This Plan lays out the steps to a more sustainable Denton. It articulates a collective vision, identifies priority goals, sets ambitious targets to measure progress, and recommends initial strategies and actions on how to accomplish the City's vision and sustainability goals. In this chapter, the vision, guiding principles, focus areas and strategic sustainability goals are presented.

	Quatainahility Caala
Focus Area	Sustainability Goals
Water	 Protect and restore Denton's water bodies Maintain high level of drinking water quality Invest in sustainable stormwater and watershed infrastructure and management 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 and GHG Management	 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
Energy Efficiency and Conservation	 Invest in renewable energy generation 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 and Open Space	 Promote 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 Promote redevelopment of infill areas and brownfield sites
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
Education, Communication and Community Involvement	 Develop and promote city government and community sustainability programs Encourage and promote citizen involvement Increase sustainability education, awareness, and personal responsibility
Material Resources 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
Local Food Production	Encourage local food production and distribution

Chapter 2 describes the public engagement process that helped to shape this Plan. Chapters 3 through 10 present each of the focus areas. Each chapter outlines strategies to support focus area goals. Successes to date and ongoing initiatives are also described for each focus area. The Plan identifies 30 strategies; ten additional strategies are identified to be considered for further analysis as funding permits and priorities change.

Each strategy summary includes actions 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 strategy or action level. Each strategy is summarized in a "Sustainability Snapshot" to provide a quick overview of the implementation, costs, and benefits involved. The table below provides a guide to the sustainability snapshot components. Finally, Chapter 11



Snapshot

Component

Strategy Type

Lead Partners

SUSTAINABILITY SNAPSHOT GUIDE

Snapshot Options

Maintenance

Policy, Research/Study, Program,

Planning, Environmental Services,

Recycling, Property Maintenance,

Water Utilities, DME, Solid Waste and

Outreach/Education, Capital

Investment, Operations and

Description

Type of strategy

proposed for implementation

Governmental

organization.

city department.

chapter 2: Public Engagement

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AND DESCRIPTION OF TAXABLE PARTY.

"If you do not think about the future, you cannot have one." — John Galsworthy This chapter describes the process and results of an extensive public engagement process and how information gathered from this process has helped to shape the Plan. 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.

Working Groups

Three working groups were used to gather information about existing programs, identify focus areas and goals, and evaluate sustainability strategies for implementation. The three groups of teams include: the Sustainability Partners Group, the Interdepartmental Team and the Committee on the Environment.

Sustainability Partners Group The Sustainability Partners Group (Partners) is comprised of 14 stakeholders representing local



organizations, businesses, and institutions. The Partners were tasked with developing sustainability strategies and priorities, assisting in development of key performance indicators, and serving as representatives, educators, and motivators for their business sector or organization. Meeting summaries from the four Partners Group meetings can be found in **Appendix A**.

Interdepartmental Team

The City also organized a team of city employees representing a diverse group of departments, including Purchasing, Solid Waste, Economic Development, Planning, Facilities, 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 to the full Council. During development of the Plan, the COE provided guidance and feedback on the planning process, goal identification and strategy prioritization and selection.



Community Meetings

In addition to the working group meetings, community meetings were held in April of 2011. 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. The meetings engaged over 80 citizens. Community meeting summaries are provided in **Appendix A**.

Sustainability Survey

A public survey was conducted to gather and prioritize sustainability strategies. The survey was provided online and on paper during public meetings, and throughout the spring of 2011 to gather additional input from the community. A detailed report on the survey results can be found in **Appendix B**.

What We Learned From Public Engagement

The public engagement process was a significant step in introducing the broader community to the development of this Plan. The process was also valuable for gathering information about community priorities and building relationships between diverse groups of stakeholders and City departments.

Ideas generated from the working groups, community meetings, and survey produced a list of 500+ recommendations. Feedback from the working groups and staff was used to convert the recommendations into strategies, and then analyze and rank these strategies. Strategies were ranked using

a variety of criteria, including financial, implementation, environmental, and social considerations. These criteria were used to identify strategies that are financially viable, able to be implemented in a reasonable timeframe, offer sustainability benefits, and are feasible for local government implementation. A full description of the strategy prioritization and selection process is located in **Appendix C**. It includes summary of the strategies organized by focus area and identifies how each strategy is included in the Plan.

The public engagement process also highlighted the need for more effective communication, and identified opportunities to create vehicles for ongoing dialogue, engagement and collaboration. The City responded quickly to feedback. In response to multiple requests for additional bike racks at the first community meeting on April 6th, the City installed additional bike racks on April 7th before the next community meeting that evening. The fact that many of the recommendations received during these meetings reflected activities that were already being conducted by the City highlighted the need for the City to better communicate these activities to the public.



chapter 3: Water

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

Goals

- **1.** Protect and restore Denton's water bodies.
- 2. Maintain high level of drinking water quality.
- 3. Invest in sustainable stormwater and watershed infrastructure and management.
- 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.

Why Water Management Matters for a Sustainable Denton

Water is an integral part of our community. The 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 Lake Ray Roberts. Water use relies on the availability of freshwater supplies and requires a significant amount of energy to power



Lake Lewisville & Lake Ray Roberts

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.

Successes to Date and Ongoing Initiatives

The City commits substantial resources towards drinking water quality, stormwater management, and wastewater treatment, including investments in innovative treatment technologies. For example, in 2003, the City completed construction of the Ray Roberts Production Plant, which uses the latest ozone disinfection technology. Upgrades to the Pecan Creek Water Reclamation Facility were recently completed, and the Lake Lewisville Water Treatment Plant is currently undergoing major renovation and process improvements. Effective stormwater and waste water management helps minimize pollutant impacts to drinking water sources, reduce flooding impacts, and maintain regulatory compliance. Although successes are evident, additional measures are needed to more effectively manage our systems.

In addition to improvements to the City's water and wastewater facilities, the City is adopting changes to the Drainage Development Code and Drainage Design Criteria Manual to maintain and improve stormwater infrastructure. The City also completed a watershed protection plan to identify actions to

Implementing the Hickory Creek Watershed Protection Plan Hickory Creek is a predominately rural watershed that is currently meeting designated uses, but is under significant development pressures and shows signs of nutrient concerns. Sub-watershed level modeling and associated research indicates that future development in the Hickory Creek Watershed may cause further degradation in water quality, threaten designated uses, and possibly result in a future impaired water designation and associated Total Maximum Daily Load (TMDL) implementation for Hickory Creek. The City is working with the Texas Commission on Environment Quality (TCEQ) to address goals of the Hickory Creek Watershed Protection Plan (WPP).

The City and TCEQ obtained a \$675,485 grant to address the goals of the Hickory Creek WPP. The grant will fund Best Management Practices (BMPs) to implement a combination of natural treatment techniques with proven nutrient and sediment removal abilities. The BMPs are intended to support water quality protection for years to come. reduce pollutants and improve water quality. Additional City programs include regulatory compliance for municipal stormwater permits, a comprehensive wastewater pretreatment program, extensive watershed monitoring, and successful implementation of several innovative grant projects. The City is using a proactive approach to watershed management with a

Water quality is of the utmost importance to Denton. The City is proud to be a top five finalist in the 2011 Best Tasting City Water in America contest, and, in the past, received a "Superior Rating" from the State of Texas and was awarded for the "Best Tasting Water in Texas" in 1993 and 1994.

focus not only on water quantity but water quality. Additionally, Denton promotes water conservation through education and identifies water reuse opportunities through its water reuse program.

Sustainability Metrics

Key Performance Indicators	Baseline/Current Status	Targets
Number of National Pollutant Discharge Elimination System (NPDES)permit violations	2011 - Zero	Maintain no violations
Compliance with water quality standards; Number of EPA health violations	2011 - Zero	Maintain compliance with minimum standards; Maintain no violations
Volume and number of sanitary sewer overflows (SSOs)	2011 - 38 overflows. Total volume - 110,000 gallons (most from 3 forced main breaks)	Minimize volume and number of SSOs

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 in waterways poses a risk to water quality and species habitats. Monitoring and minimizing sanitary sewer overflows (SSOs), that is, 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 should be minimized. Tracking the rate and the location of SSOs can help direct efforts to improve sewers and address point source pollution concerns.



Implementation Actions

- Continue to track and monitor SSOs.
- Implement fats, oils, and grease program and line flushing program to ensure dry weather overflows are minimized.
- Assess water quality from targeted dischargers and adjust surcharges and / or pretreatment requirements accordingly.

Strategy #2 Rewrite and Adopt 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 stormwater ordinance is to maintain predevelopment runoff characteristics of a site as much as possible. Wherever possible, 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 street plantings 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.

Implementation Actions

- Continue revision of Drainage Design Criteria Manual and Denton Development Code.
- Continue to implement integrated stormwater design BMPs.
- Continue to explore sustainable stormwater practices and identify the top five techniques that could be applied in Denton.
- Make use of currently implemented stormwater demonstration projects as an educational tool and identify opportunities for additional demonstration / pilot projects.

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.

Implementation Actions

 Continue to monitor, track, and report water quality.
 Report on city scorecard and in annual water quality report



as well as to regulatory agencies as required by state and federal regulations.

• Continue to exceed established state and federal standards.



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. For example, the activities described in Strategy #2 can help facilitate implementation of stormwater BMPs to help meet these higher goals.

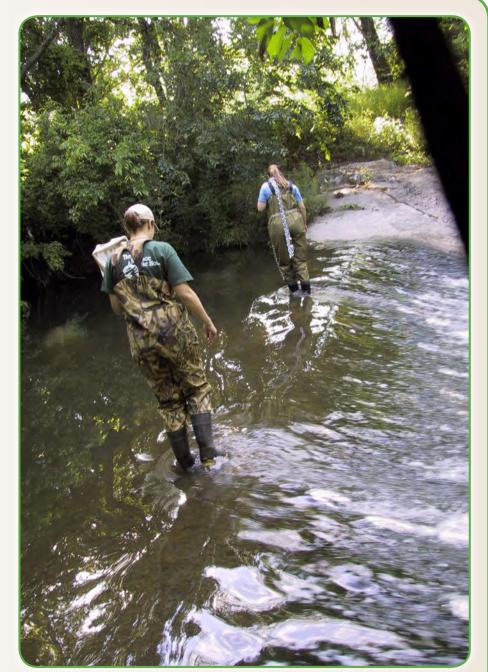


Implementation Actions

- Ensure requirements of current TCEQ permit are being addressed.
- Utilize Hickory Creek Watershed Protection Plan, the North Central Texas Council of Governments integrated Stormwater Management manual (iSWM) and watershed monitoring information to determine viable stormwater management approaches.
- Implement public and private demonstration projects.
- Report progress.

Additional Strategies for Consideration

- 1. Minimize sewage impacts to the environment from on-site septic facilities (OSSF).
- 2. Implement programs to reduce water loss, including water conservation and maintenance to existing water lines.
- 3. Ensure that water, wastewater, and stormwater infrastructure is managed and maintained so that it meets current and future needs.



chapter 4: Air Quality and Greenhouse Gas Management

GREATNES

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

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.

Why Air Quality and Greenhouse Gas Management Matters for a Sustainable Denton

Air quality impacts our health and our environment. Denton is located in a nonattainment 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.

The main sources of ozone-forming emissions include mobile sources (cars, trucks, and equipment), point sources (power generation, industrial boilers) and area sources (solvent use, agriculture). On-road vehicles cause approximately half of the ozone-forming emissions.

Climate change is the rise in global temperatures resulting in part from increased levels of greenhouse gases (GHG). Air quality and climate change can potentially affect the overall health of Denton's citizens, communities, environment, and economy. Recognizing the importance of these issues to the health of our citizens, Denton signed the U.S. Conference of Mayors Climate Change Protection Agreement and is taking action to improve air quality and reduce GHG emissions.

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 October), when ozone levels tend to be highest, employees and residents are encouraged to make clean air choices such as fueling in the evening, postponing use of gasoline powered lawn equipment, using fuel efficient transportation options—carpooling, riding public transportation, biking/walking and, when personal vehicle trips cannot be eliminated, idling less and ensuring vehicle emissions inspections are up-to-date.

Recently the City completed a 2002 and 2006 GHG emissions inventory for municipal operations and the community-at-large. The inventory provides a baseline assessment for establishing GHG emissions reduction targets and developing action plans to achieve those targets.

Sustainability Metrics

Key Performance Indicators	Baseline/Current Status	Targets
Air Quality Index (AQI)	2011 - 42	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)	2002 - 138,419 MTCO ₂ e 2006 - 162,410 MTCO ₂ e	Reduce GHG emissions
GHG Emissions- Community-wide per capita (Metric Tons of Carbon Dioxide Equivalent)	2002 - 19.6 MTCO ₂ e per capita 2006 - 18.4 MTCO ₂ e per capita	Reduce GHG emissions per capita
Annual Municipal Fleet Fuel Consumption	2011 - 415,884 gallons of diesel & 273,415 gallons of unleaded	Reduce use of traditional fuels; Increase alternative fuel consumption as percentage of total fuel consumption

Key Performance Indicators	Baseline/Current Status	Targets
Number of Alternative Fuel Vehicles (AFV) (Hybrids, CNG, Electric, etc.) in Municipal Vehicle Fleet	2011 - 7 hybrid vehicles 2011 - 375 Diesel (on and off road which can use biodiesel) 2011 - 52 Flex Fuel 2011 - 19 Hybrid Electric	Increase number of AFVs

Strategy #1

Develop and Implement a Sustainable Municipal Fleet Program

The City has recently enacted a "sustainable fleet policy." The policy requires increased attention to fleet operations from cradle to grave. Purchases, operations, efficiency, and necessity are some of the criteria used to evaluate the efficiency of the City's vehicle fleet. The City will develop 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. A comprehensive program includes both low-cost and higher cost measures. Low-cost measures include the following:

- Route-planning and departmental trip coordination.
- "Right-sizing" vehicles appropriate to the task, including downsizing or eliminating vehicles.
- Preventative maintenance to ensure optimal vehicle performance.
- Reducing vehicle idling.
- Educating drivers to improve driving habits and vehicle performance.

The City currently owns 19 hybrid vehicles and will evaluate purchasing additional fuel efficient, alternative fuel vehicles. Fuels such as compressed natural gas, liquid natural gas and propane emit fewer emissions than diesel and gasoline. Electric vehicles and hybrids are also available and can result in substantial reduction in emissions.

Implementation Actions

- Schedule travel efficiently to combine or eliminate unnecessary trips.
- Eliminate excess and inefficient vehicles.
- Continue regular vehicle maintenance (oil changes, tire pressure).
- Replace aging vehicles with fuel efficient and/or alternative fuel vehicles.



Strategy #2 Develop a GHG Program for **Municipal Operations**

As a member of ICLEI-Local Governments for Sustainability and signatory to the U.S. Conference of Mayors Climate Change Protection Agreement, the City is committed to addressing GHG emissions from its own facilities and operations. The City completed a GHG emissions inventory for municipal operations and forecasted 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 to set a feasible emissions reduction target and timeline.

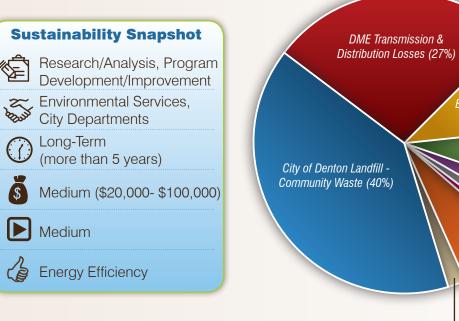
Implementation Actions

 Set GHG emissions reduction targets for municipal operations and the community-at-large.

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Medium

- Identify and prioritize GHG emissions reduction strategies that may include energy efficient buildings, renewable energy sources, improved transportation, reduced waste and DME energy efficiency programs.
- Track GHG emissions over time (every 3-5 years).
- Monitor and adjust action plan over time.



Building Electricity - Employee Commute (3%) Fleet (7%) Streetlights (2%) Wastewater Treatment Electricity (1%) Water Supply Electricity (7%)

2006 Municipal Government Operations GHG Emissions (Metric Tons of CO₂e)

Municipal Operations Solid Waste (2%)

Additional Strategies for Consideration

1. Continue to evaluate new emissions reduction technologies and programs.

City of Denton GHG Emissions Inventory

The City of Denton conducted a baseline study of GHG emissions for the year 2006 for both city government sources and community sources. GHG emissions from city government operations totaled approximately 162,410 metric tons of carbon dioxide equivalents (MTCO2E), equivalent to the annual GHG emissions of approximately 32,000 vehicles. As shown in the pie chart, the City of Denton landfill is the largest source of emissions, accounting for 40 percent. Denton Municipal Electric's transmission and distribution lines account for 27 percent and building electricity account for 11 percent of municipal operations emissions. City-wide, GHG emissions totaled approximately 2,018,000 MTCO2e or 18.4 MTCO2e per capita in 2006. This is equivalent to the annual GHG emissions of nearly 400,000 vehicles. The transportation sector is the largest source of emissions (39 percent), followed by emissions from industrial electricity consumption and residential electricity consumption each accounting for 20 percent of city-wide emissions.

chapter 5: Energy Conservation and Efficiency

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

Goals

- **1.** Invest in renewable energy generation.
- 2. Encourage energy conservation and efficiency in new and existing homes and businesses.
- 3. Ensure efficient energy use in city government facilities in both new construction and building retrofits.
- 4. Continue to require exceptional energy efficiency building standards for new construction.

Why Energy Conservation and Efficiency Matters for a Sustainable Denton

The current emphasis on improving energy efficiency is a result of several dynamics—rising energy costs, initiatives to reduce dependence on foreign oil, and air quality improvements from reducing combustion of fossil fuels. 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 2010 produced by the U.S. Energy Information Administration , buildings and transportation sectors led increases in primary energy use. Because buildings require the most energy in the United States, understanding the distribution of building energy consumption is an important step in setting goals for energy reduction.

In addition to buildings, water systems are a significant source of energy consumption for municipalities that own and operate their own water utilities. Denton is taking steps to decrease the amount of energy needed to collect, treat, and distribute water and wastewater.

Successes to Date and Ongoing Initiatives

The City and its community-owned power company, Denton Municipal Electric

(DME), 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.

Denton completed a landfill gas-to-energy project in 2008, which provides renewable energy to DME. DME's agreement to purchase renewable energy from NextEra Energy Resources, LLC ensures that 40 percent of electricity distributed to DME customers is generated using renewable technologies. DME also launched a pilot automated meter reading program, or Smart Meter Program, in 2011. The program automatically collects electricity consumption data, saving DME the expense of trips to meter locations and vehicle miles traveled.

Sustainability Metrics

Key Performance Indicators	Baseline/ Current Status	Targets
Total municipal government energy consumption	2011 - 32,159,066 kWh	Reduce municipal facility energy consumption
Number of participants in energy rebate and audit programs	220 audit & 245 rebate participants	Increase number of participants
Renewable percent of DME's electric power generation	2010 - 40%	Continue to evaluate options for renewable energy generation
Number and size of private renewable energy systems installed throughout community	2011 - One 1.6 MW system	Continue to evaluate options for renewable energy generation

Strategy #1

Expand Commercial and Industrial Energy Efficiency Program

DME has a variety of tools available to commercial 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.

Implementation Actions

- Provide rebates to customers that meet specific criteria.
- Provide technical information about the newest and most energy-efficient technologies.
- Market new programs to new and existing customers.



Strategy #2

Adopt the Most Current Building Codes in a Timely Manner and Continue to Exceed Current International Energy Conservation Code (IECC) Minimum Requirements

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. Building energy codes provide minimum building energy requirements, increase energy efficiency, and provide cost savings in utilities. Energy codes may include insulation requirements, window requirements, mechanical controls for off-hours, wattage requirements, and other standards to raise building energy efficiency beyond minimum requirements.



The International Energy Conservation Code (IECC) 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. The City of Denton's building codes currently meet the IEEC 2009 standards for commercial buildings and exceed the standards by 10 percent for residential buildings. 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.

Implementation Actions

- Work with the Building Official, the COE and Environmental Services to develop building energy requirements.
- Ensure IECC, as adopted, covers new construction, additions, remodeling, window replacement and repairs of specified buildings. Track updates to the IECC and adopt most recent code within 12-18 months. Adopting the code should include discussions about exceeding the IECC by a defined percentage (currently 10%).
- Assess and consider additional building energy efficiency guidelines or incentives programs as optional additions to the minimum building requirements.

Strategy #3

Consider Developing a Sustainable Building Rating Program for New and Existing Facilities, Commercial and Residential Single Family, Multi-Family and Neighborhood Development

The sustainable building rating program would rate new and existing buildings and developments according to established sustainable performance standards, including energy and water efficiency and sustainable materials management.

Implementation Actions

- Convene group of stakeholders to determine interest in developing sustainable building rating program.
- If interest exists, review existing building rating programs to find appropriate type of program for Denton.
- Select green building rating program to serve as model for City's rating program. Potential green building programs include Leadership in Energy and Environmental Design (LEED[®]) for New Construction, LEED[®] for Existing Buildings, LEED[®] for Neighborhood Development, LEED[®] for Homes, GreenPoint Rated, Green Communities and Green Built North Texas.
- Implement voluntary pilot program for one year to gauge developer interest and city staff workload.
- Move forward with full program or reevaluate.

٢Ê	Research/Analysis, Policy
2 ARDIN	Planning, Environmental Services
$\langle \rangle$	Medium (3 - 5 years)
Ś	Low (less than \$20,000)
	High
4	Air Quality, Water Quality, Waste Reduction

Sustainability Snapshot

Strategy #4

Improve the Energy Efficiency of Existing Homes and Buildings

To reduce community energy consumption, the City is evaluating 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.

Implementation Actions

- Continue to provide energy efficiency and conservation information through education and outreach.
- Continue to promote low-cost, "do-it-yourself" activities or no-cost behavioral steps to save energy in homes and businesses.
- Continue to work with contractors to market, deliver, and install energy-saving improvements.
- Track and evaluate the success of programs.

Additional Strategies for Consideration

- 1. Continue to research and pursue opportunities for methane capture, on-site power generation, and other renewable technologies.
- 2. Consider increasing renewable energy portfolio from Denton Municipal Electric as opportunities allow.
- 3. Expand the DME Smart Meter program.
- 4. Pursue district heating and cooling opportunities where technically and economically feasible.

Education, Program Development Planning, Environmental Services, Denton Municipal Electric Medium (3 - 5 years) Medium (\$20,000-\$100,000) High Air Quality, Job Creation, Economic Development

Sustainability Snapshot



chapter 6: Land Use and Open/Natural Space

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

Goals

- 1. Promote 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. Promote redevelopment of infill areas and brownfield sites.

Why Land Use and Open/Natural Space Matters for a Sustainable Denton

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. Sprawl can be energy intensive, requiring substantial infrastructure costs and maintenance, and can increase traffic congestion due to longer commute times.

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 our town's open space. 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 has recently completed a comprehensive tree inventory, and new codes are being developed to help protect and increase the City's urban trees.

Sustainability Metrics

Key Performance Indicators	Baseline/ Current Status	Targets
Square feet of new infill development buildings and acreage impacted	Currently not tracked	Continue to increase infill development and track progress
Acres of protected open space and environmentally sensitive areas (ESAs)	2010 - 12,005 acres	Continue to increase percentage of open space and protected areas.
Percent of city area currently covered by tree canopy	2011 - 19%	Increase tree canopy coverage
Acres of brownfield sites redeveloped	2011 - 1.9 acres	Pursue additional brownfield redevelopment



Strategy #1 Promote 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 resourceefficient. Transportation, water, and energy infrastructure are often already present for existing buildings, and the cost of hooking up new development to existing infrastructure is usually a fraction of the cost of extending infrastructure to entirely undeveloped areas.

Denton currently offers a downtown incentive grant program and tax increment

financing to encourage downtown development. The City is interested in developing incentives to encourage further infill development.

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Sustainability Snapshot

Research/Analysis, Policy,

Program Development/

Neighborhood Services,

Short-term (within 3 years)

Low (less than \$20,000)

Job Creation, Community

Improvement

Planning, Downtown

Development

Medium

Character

Implementation Actions

- Assess existing infill incentive programs.
- · Evaluate which incentives are underutilized and why.
- Promote most effective incentives programs.
- Evaluate expedited development review process for infill development.
- Evaluate modifying zoning restrictions on use, density, and dimensions to promote development in infill areas.



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. Currently the City offers a Minor Repair Program, a Home Improvement Program and a Homebuyer Assistance Program. The Minor Repair Program provides assistance to low-income homeowners to make essential repairs or add accessibility modifications (such as ramps) when the owner-occupant lacks sufficient resources. The Home Improvement Program provides assistance to low and moderate income homeowners for major



repairs, including both rehabilitation and reconstruction. The Homebuyer Assistance Program provides assistance to first-time homebuyer to purchase an affordable house. The City will evaluate existing and other available affordable housing programs to increase participation.

Implementation Actions

- Analyze census data and population projections to determine projected gap in affordable housing.
- Collect regional and national examples of best practices for affordable housing development programs and incentives and evaluate the best program options for Denton.
- Meet with focus group of developers to provide education regarding benefits of affordable development, gauge interest in pursuing projects, and identify obstacles to affordable development.

Revise and Implement Subchapter 17 of the Denton

Development Code Regarding Environmentally

Sensitive Areas Subchapter 17 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 (ESAs). Riparian 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



Sustainability Snapshot

habitats, and often serve as treasured recreational areas.

Implementation Actions

- Research other municipal codes regarding ESAs to identify best practices.
- Identify obstacles and opportunities in existing codes and regulations for preserving and managing ESAs.
- Revise DDC (Subchapter 17 and related) and implement.
- Educate citizens and stakeholders about management and preservation of ESAs.
- Capitalize opportunities for the preservation of natural corridors.

Strategy #4 Implement a Program to Clean Up, Redevelop, and Reuse Brownfield Sites

Brownfield sites are areas with past development and/or environmental contamination that must be remediated before redevelopment can take place. The clean-up and redevelopment of these sites is critical to environmental and economic sustainability – in many cases without reuse of these sites, they remain environmentally hazardous and sources of community blight.

The City of Denton is already remediating and reusing brownfield sites, with the twoacre Transit Park project at 121 Exposition Street as an example.



Additional funding for brownfield activities is currently available through state and federal programs. Having identified brownfield sites most suitable



The parking lot shown here for City Hall and DCTA sits on what was the first brownfield redevelopment site in Denton.

for redevelopment and preliminary plans can help facilitate funding of these projects under future grant cycles.

Implementation Actions

- Catalog existing potential brownfield sites and gather information about former and possible future uses.
- Research latest availability of federal and state funding for brownfield remediation.
- · Set targets for inventory, assessment, remediation, and redevelopment.

A Hallmark Redevelopment Project for Denton

The Transit Parking Site is the City's first brownfield redevelopment project. The site will provide parking for the Downtown Transit Station and City Hall East and is expected to include trail connections to the Trinity Trail and City Hike and Bike Trail Systems. The site is located just east of Downtown, bordered by industrial and municipal uses and a neighborhood community. Pecan Creek, the main stream flowing through town, flows along the eastern edge of the property. A hike and bike trail is planned along the stream to link the community and provides direct access to the immediate neighborhood and its associated park, the Carl Young, Sr. Park.

Historically, the site was used for a variety of light industrial, commercial and automotive repair purposes, and once housed a facility that was listed as a small quantity generator of hazardous wastes. Environmental investigations concluded that small amounts of asbestos were present in the buildings on the site, and that arsenic and lead might be present in the groundwater. The U.S. EPA provided funding for asbestos collection and disposal during demolition of the buildings. The EPA also provided funding for Denton to enroll the site in the State of Texas Voluntary Cleanup Program. Once the site was enrolled, the TCEQ provided funding for extensive soil and groundwater sampling at the site. Based on sampling results and subsequent risk analyses, the site was able to receive a Certificate of Completion from the Texas Voluntary Cleanup Program in November 2011. The Certificate of Completion ensures that all response actions required by the TCEQ have been completed and that human and environmental risks are at safe levels.

Strategy #5

Implement Code Changes so that Landscape Requirements are Based on the Concept of Multiples Uses (Stormwater, Shading, Drought Tolerance)

The City will evaluate the to address the 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 fullscale integrated stormwater plan that uses natural elements, such as vegetated swales to capture stormwater, to guidelines that recommend local plants that require less watering. It is also important to emphasize planting during dormant season

Sustainability SnapshotImage: Sustainability Sustainability SnapshotImage: Sustainability Sustainability SnapshotImage: Sustainability Sustainability SnapshotImage: Sustainability Sustainability

and effectively address irrigation. Denton's code should strike a balance between key design features/practices and should provide a menu of different options that leave ample room for the creativity of the designer and property owner.

- Conduct assessment of current regulations and identify opportunities for revision or need for additional code language.
- Ensure landscaping recommendations are tailored to the local climate and environment and can perform multiple functions.
- Collect best practices of landscaping codes and ordinances.
- Study feasibility and costs of implementing code requirements.
- If code revisions are adopted, create educational materials and events to promote use of new landscaping practices and code compliance.

Promote Mixed-Use, Compact Development in Targeted Areas

Communities such as Denton are realizing that there are 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.

Implementation Actions

- Analyze zoning and current land use plans to identify top areas to study.
- Set minimum density requirements for target areas.



Strategy #7 Complete and Implement Tree Code

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 Draft Tree Code advances the objectives of retaining existing trees, replacing and replanting trees, increasing the urban tree canopy, and planting native plants, among others. The tree code is still moving forward through Planning and Zoning and should be approved in 2012.

Implementation Actions

- Set targets for tree canopy cover.
- Partner with city departments and local organizations to implement tree planting goals to increase canopy coverage.

Medium

Air Quality

Sustainability Snapshot

Program Development/

Planning, Environmental Services

Improvement, Event, Policy

Short-term (within 3 years)

Low (less than \$20,000)

Energy Efficiency,

• Continue to hold informational events and workshops on importance of conservation and how to plant and care for trees.



Complete and Implement Subchapter 22 and Related Code Changes Concerning Gas Well Drilling and Regulation

Sustainability Snapshot

Short-term (within 3 years)

Low (less than \$20,000)

Air Quality, Public Health,

Policy

Medium

Water Quality

Planning- Gas Well Inspections Division

Subchapter 22 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. Amendments are necessary to provide address potential harmful side-effects of natural gas drilling and production. The City will work with stakeholders to determine necessary revisions and implement code changes.

Implementation Actions

• Work with stakeholders, Gas Well Task Force members, and municipal decision

makers to develop draft revisions recommendations.

- Incorporate recommended revisions into the DDC.
- Present new code for recommendations and approval.

Additional Strategies for Consideration

1. Improve park and open space opportunities within walking distance of residents' homes.





chapter 7: 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

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.

Why Transportation Matters for a Sustainable Denton

Our current transportation network is a product of regional development patterns and infrastructure decisions that reflect a time when fuel sources and construction costs were less expensive and when air pollution was less of a concern. Changes to this network are often difficult and expensive. Capital and operating costs for new projects are extremely high, fuel costs continue to rise, 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.

Successes to Date and Ongoing Initiatives

The City is taking 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	Baseline/ Current Status	Targets
Number of miles for bike lanes	2011 - 3.85 miles (including single lanes)	Increase number of bike lane miles (see Bike Master Plan)
Number of miles for walking paths/ sidewalks	2011 - Approximately 350 miles of walking path/sidewalks	Increase miles of walking paths/ sidewalks
Public transit ridership within the City of Denton	2011 - 2.4 million rides (UNT accounts for 1.8 million rides)	Increase public transit ridership



Revise Current Parking Standards to Provide Flexibility and

Reduce Environmental Impacts

Excessive parking and impervious surfaces - artificial structures such as pavements that are covered by impenetrable materials - negatively impact the built environment and threaten groundwater and surface water resources. The City will revise its current parking standards to reflect local conditions and parking demand. The parking standards will 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.

Implementation Actions

- Review existing parking standards, identify goals and priorities and develop a list of strategies for reducing environmental impacts.
- Revise parking standards in accordance with other actions, including investments in alternative transportation infrastructure, transportation demand management programs, low impact development (LID) and transit-oriented development (TOD).



Strategy #2

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, convenient opportunities for walking. Improving pedestrian opportunities may include sidewalks, walkways, and amenities such as lighting and landscaping to encourage physical activity. The City is evaluating opportunities to increase miles of sidewalks as compared with miles of streets.

Implementation Actions

- Emphasize pedestrian opportunities in revisions to the Comprehensive Plan.
- Air Quality, Community Character. Public Health Upon completion of the Comprehensive Plan, review sidewalks and similar pedestrian requirements of the DDC and Bicycle Master Plan

High

Sustainability Snapshot

Policy, Physical Investment/

Maintenance, Capital

Control, PD, Engineering,

External Partners

(more than 5 years

Energy Efficiency,

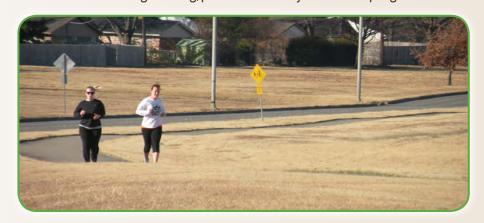
Planning, Streets and Traffic

High (more than \$100,000)

Investment

Long-term

and recommend changes. · Consider offering walking/pedestrian safety education programs.



Implement the Bicycle Master Plan

In 2011, The City of Denton completed a Bicycle Master Plan. The primary goal of the plan is to create an integrated transportation and recreation framework to facilitate biking as a viable transportation alternative throughout Denton. The plan gathered data on existing conditions and infrastructure for bicycle travel, prepared design guidelines for constructing facilities for cyclists, identified supporting programs and policies, and estimated construction and implementation costs. As funding and resources permit, the City will work to implement the strategies identified in the plan.

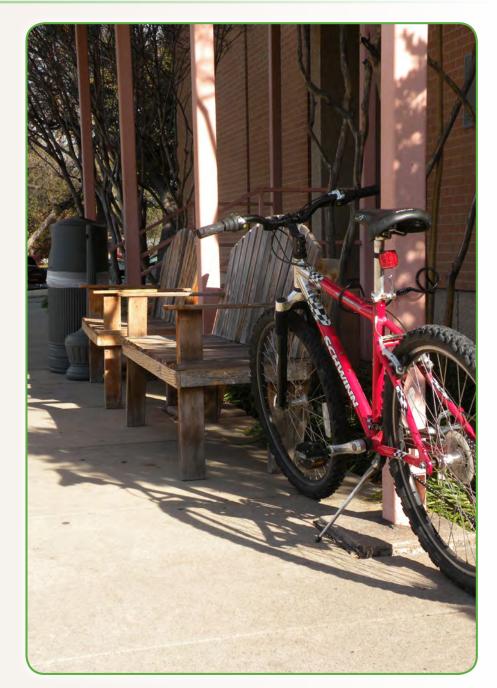


Implementation Actions

- To the extent possible, integrate pedestrian and bike facilities, services and programs into both city-wide and regional transportation systems.
- Examine opportunities to link bike routes with bike trails to provide paths between residential, recreational, employment, and shopping areas, and implement as resources allow.
- Research and secure funding for plan implementation.
- Expand opportunities for bicycle safety education and promote non-vehicle modes of travel as healthy and environmentally friendly alternatives to the automobile.

Additional Strategies for Consideration

- 1. Encourage sustainable modes of transportation including carpooling options, electric vehicle charging stations infrastructure, and public transportation.
- 2. Evaluate traffic signalization to improve safety and mobility and implement as funding allows.



chapter 8: Education, Communication & Community Involvement

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

Goals

- 1. Develop and promote city government and community sustainability programs.
- 2. Encourage and promote citizen involvement.
- 3. Increase sustainability education, awareness, and personal responsibility.

Why Education, Communication and Community Involvement Matters for a Sustainable Denton

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 Plan 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.

Successes to Date and Ongoing Initiatives

In 2011, the City launched a sustainability website and education seminar series in response to community requests. The website and education program aim to raise awareness about sustainability in the community and prompt individuals to act. The website provides information to citizens of all ages, including interactive coloring pages for kids and tips for adults to learn how to integrate sustainability into daily lives.

The City also 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. Examples of environmental events include: Earth Day (April 22 annually); Earth Hour (last Saturday of March annually – the event involves households and businesses turning off their non-essential lights for one hour); clean air action days organized by the City and North Texas Clean Air Coalition (NTCAC); and municipal clean-up events. These events raise awareness and encourage individuals to take personal actions to improve community sustainability.

Sustainability Metrics

Key Performance Indicators	Baseline/Current Status	Targets
Number of visits to City's sustainability website monthly	December 2011; Sustainable Denton - 241 Environmental Services - 91 Kids Corner - 32	Increase number of visits
Monthly number of people attending sustainability workshops and education sessions	November 2011 - 17	Average attendance of 25 or more
Number of sustainable businesses involved in the Green Business Program	Program under development	Enroll 10 businesses by 2015



Strategy #1 Create a Sustainability Advisory Council

The proposed Sustainability Advisory Council (SAC) is a committee of community stakeholders selected by City Council and other City officials to represent and serve the community on sustainability initiatives. The SAC will be responsible for advising city decision-makers on sustainability initiatives and engaging the public and other community stakeholders in the implementation of the Plan. The SAC may assist with development of the sustainability education program and will provide guidance concerning sustainability strategies.

Implementation Actions

- Identify a diverse group of community stakeholders to participate in the Sustainability Advisory Council.
- Develop guidelines on SAC's roles and responsibilities.
- Set recurring meeting dates and assign City staff to participate in regular meetings of the SAC.

Sustainability Snapshot Education/Communication Environmental Services, Sustainability Advisory Council Short-term (within 3 years) Low (less than \$20,000) High **Community Character**

Strategy #2

Create a Green Business Program to Identify and Recognize

Sustainability Snapshot

Education/Communication

Environmental Services,

Short-term (within 3 years)

Low (less than \$20,000)

Economic Development,

Community Character

Economic Development,

Denton Chamber of

Commerce

High

Sustainable Businesses A green business program is intended to provide recognition to Denton businesses for their commitment to sustainability. The City will establish criteria for verifying that businesses meet sustainability standards including energy and water conservation, waste reduction, and pollution prevention. Businesses that meet the standards will be officially recognized by the City.

To recognize green businesses, the City will post the names of green businesses on the City's website. Additionally, a program logo will be created to identify participating businesses. Green businesses can advertise the logo

on business websites or post decal on storefront windows.

- Establish selection criteria for recognizing green businesses.
- Develop an application and evaluation process.
- Develop a logo and decal for businesses to display and communicate recognition to citizens.
- Partner with Denton Chamber of Commerce to identify green businesses.



Develop a Section in the Chamber of Commerce Newsletter to Highlight Sustainable Businesses

The City will work with the Denton Chamber of Commerce to develop a section in the newsletter that highlights sustainable businesses. The section will provide positive advertisement for environmentally and socially responsible businesses. It will also highlight sustainability trends and educate other businesses on ways to integrate sustainability principles into their business operations.

- Partner with the Denton Chamber of Commerce to identify sustainable businesses.
- Assign staff to conduct research and writing of sustainability section newsletter.
- Determine appropriate and cost-effective distribution mechanism.





chapter 9: Material Resources Management

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

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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.

RAW MATERIALS

PRODUCT DESIGN

FINAL DISPOSAL

Why Material Resources Management Matters for a Sustainable Denton

The City of Denton contributes to 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.

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 recycling, composting, source reduction, and energy recovery from waste.

Successes to Date and Ongoing Initiatives

The City has an active recycling program both for citizens and within its governmental and public facilities. Denton offers innovative programs, including a home chemical collection program, award-winning pharmaceutical disposal events, successful community clean-up events, and yard waste composting.

Through the Home Chemical Collection (HCC) program, the City provides at-home collection 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. In partnership with Denton Municipal Electric, residents may also exchange incandescent bulbs for compact fluorescent (CFL) bulbs during DME's sponsored CFL exchange program. The City wants to expand the success of the HCC program and increase household participation. The goal is to publicize the service to encourage residents

to participate and prevent HHW from being disposed of in the City's landfill.

MANUKRCIURING To help dispose of pharmaceutical products, the City offers residents the opportunity to dispose of unwanted and expired medicines during Denton Drug Disposal Days (D4). The City-sponsored pharmaceutical disposal event was the first pharmaceutical collection event in Texas approved by the TCEQ and the Drug Enforcement Agency (DEA). In 2011, D4 won "Outstanding Recycling Special Event" at the Greater Dallas Fort-Worth Recycling Alliance DISTRIBUT Recycling Leadership Awards. As funding permits, D4 events are held each year to provide citizens with an opportunity to dispose of pharmaceutical waste. In addition to collection events, the City is evaluating a permanent collection location. The permanent location will provide a secure collection container for routine disposal of these materials.

Lastly, the City's Solid Waste Department collects municipal yard waste (bagged 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 Dyno Dirt, compost made and sold by the Water Utilities Beneficial Reuse Division.

Sustainability Metrics

Key Performance Indicators	Baseline/ Current Status	Targets
Quantity and type of HHW collected	2010 - 41,125 lbs collected	Maintain or increase collection amounts
Quantity of pharmaceutical waste collected annually	2010 - 883 lbs collected and disposed	Increase annually
Quantity of yard waste collected annually	2010 - 15,505 tons	Continue to collect and increase where possible
Quantity of Dyno products sold annually	2011 - 26,307 cubic yards	Increase quantity of Dyno products sold annually
Number of commercial recycling containers	2011 - 339 commercial recycling containers	Increase annually by 2%
Residential recycling diversion rate	2011 - 57%	Increase beyond 60% by 2020

Strategy #1

Promote Clean-up Events

Through its partnership with Keep Denton Beautiful and other community organizations, the City promotes and sponsors cleanup events by providing supplies and recruiting volunteers. During clean-up events, volunteers collect trash from streets, waterways, and neighborhoods. Clean-up sites often include parks, business grounds, school grounds, and nature trails. Through its relationships with local businesses and organizations, the City can request donations, supplies, or inkind support.



- Partner with community organizations to sponsor clean-up events.
- Educate citizens on ways to keep neighborhoods clean.
- Work with community organizations to promote existing events
- Advertise date and location of scheduled events via the city's website, email notifications, newspaper advertisement, mailings, and flyers.

Strategy #2 Establish Formal Environmentally Preferred Purchasing Policy

Sustainability Snapshot

Purchasing, Environmental Services

Short-term (within 3 years)

Low (less than \$20,000)

Pollution Prevention, Energy

Efficiency, Air Quality

Policy

Medium

The City is establishing a formal **Environmentally Preferred** Purchasing Policy 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.

Implementation Actions

- Evaluate the environmental impacts of products and services.
- Track and report environmentally preferred purchases (product type and quantity) by department, if feasible.

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Strategy #3 Divert Solid Waste from Landfills Through Recycling

Denton is continually expanding its recycling program to increase and improve citizen access to recycling opportunities. The City currently provides curbside single stream recycling services to single-family residences and the opportunity for recycling for all multi-family residences and businesses. To increase recycling participation in multifamily residential units, the City offers free waste audits and employee education to multifamily complexes that would like to recycle. Commercial recycling services currently include cardboard, office/mixed paper, or single-stream (comingled)



recycling. Denton recently introduced a recycling pilot program for businesses located downtown in the Square District to study opportunities to increase recycling effectiveness. The recent opening of a Materials Recycling Facility at the municipal landfill will improve recycling efficiency. This facility will help to minimize trips to deliver recyclables for sorting and allows better tracking of recycling participation in Denton.

The City also operates four municipal drop-off centers. Recycling at the drop-off centers recently expanded to include wax-coated food and beverage containers such as milk cartons or juice containers. The City of Denton landfill collects electronic materials, including televisions, computers, and other small household electronics.

- Continue to educate the community on what and how to recycle.
- Continue to identify materials and products used by the community that can be recycled.
- Promote the use and re-use of non-toxic, recycled building materials and recycling of appropriate construction / demolition wastes.

chapter 10: Local Food Production

"When we heal the Earth, we heal ourselves." — David Orr

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1. Encourage local food production and distribution.

Goal

Why Local Food Production Matters for a Sustainable Denton

Food plays a critical role in community health, economy, environment, and culture. By supporting local farmers, urban agriculture, and community gardens, the City supports local businesses, facilitates public access to local food, and helps decrease air pollution and fossil fuel consumption by reducing the distance food travels.

Successes to Date and Ongoing Initiatives

Every April through September, local food businesses and artists participate in the Denton Community Market held at the corner of Mulberry Boulevard and Carroll Street. The market is a community gathering space for locally produced foods and locally produced arts and crafts. The City is evaluating opportunities to expand local food production including urban gardens, food cooperatives, backyard chickens, and Community-Supported Agriculture (CSA).

Sustainability Metrics

Key Performance Indicators	Baseline/ Current Status	Targets
Number of permits issued to local food businesses/artists to participate at Denton Community Market	2011 - 13 consumer health permits issued	Increase 5% by 2020
Number/acreage of community gardens	2011 - Approximately 5 acres	10 acres by 2020

Strategy #1 Encourage Community Gardens Within City Limits

To support consumption and production of local food, the City of Denton is evaluating measures to promote 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.

- Research level of citizen interest in participating in community gardens.
- Identify land available for community gardens.
- Provide education to citizens on community gardens.





Evaluate Opportunities to Increase Access and Availability of Locally Produced Food Including Backyard Urban Gardens, Backyard Urban Chickens, and Food Cooperatives

To increase access and availability of local food, the City is evaluating the promotion of backyard urban gardening, backyard urban chickens, and food cooperatives. Unlike a community garden, a backyard urban garden is not shared collectively among citizens and managed solely by homeowners in backyards. The City's role would be to educate and promote backyard urban gardens.

Similarly, allowing backyard urban-raised chickens for noncommercial uses supports the City's goal of local food production and consumption. The City is considering passing an ordinance



Sustainability Snapshot

to allow residents to raise chickens in their backyard to feed their families. Advocates of backyard urban chickens are motivated by a desire for selfsufficiency, humane animal treatment, and possible health benefits. Lastly, the City will research opportunities to increase food cooperatives and CSAs. A food cooperative is a grocery store owned by consumer members that make decisions on the type of foods sold, typically more natural and local food as compared to conventional grocery stores. Community supported agriculture is a farming operation where the growers and consumers share the risks and benefits of food production. Food is typically distributed to members via a weekly delivery or pick-up system.

Implementation Actions

- Provide education to citizens on how to start backyard urban gardens.
- Draft a municipal ordinance concerning regulations and restrictions for backyard chickens and bring to City Council for recommendation.
- Research level of citizen interest in food cooperatives and CSAs and identify opportunities.

Strategy #3

Increase Number of Vendors Participating at Farmer's Markets and Craft Fairs in the Community

Farmers markets and craft markets provide venues for local businesses to

promote their goods and services, encourage local production and consumption, and promote community through organized events. The City will work with community organizations to increase the number of vendors providing local food and crafts at community events and markets.

- Partner with Chamber of Commerce to promote community events.
- Educate local businesses and farms on permit application process to participate at farmer's markets.
- Evaluate feasibility of dedicating permanent space/structure and infrastructure for farmers' markets and other community events.





chapter 11: Implementation

"The activist is not the man who says the river is dirty. The activist is the man who cleans up the river." — Ross Perot This Plan was developed to communicate Denton's commitment to sustainability, identify strategies for moving forward, and inform all interested stakeholders of the City's progress. The next step – and the true measure of success – is to implement the selected strategies.

Selection of Strategies for Implementation

The Plan includes 30 strategies across the eight focus areas, which were selected through a rigorous public involvement and prioritization process. These strategies include recommendations for policies, community programs, outreach and education, and capital improvements. 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.

Strategies will "ripen" at different rates and for different reasons. Accordingly, the Plan provides a flexible approach for implementation and recognizes that opportunity is based on a variety of logistical, financial, technical, and other variables that change over time. The selection of strategies for future implementation will be based on the current and projected status of the City's budget, external partnerships and funding sources, emerging City activities, stakeholder input, and contribution towards achieving the sustainability goals.

Focus Area	Strategy	Strategy Type	Lead Partner	Timing	Funding	Implementation Control	Additional Benefits
	Minimize Wastewater Impacts on the Environment	Research/Analysis, Coordination	Water Utilities, Environmental Services	Short-term (within 3 years)	Low (less than \$20,000)	Medium	Pollution Prevention
	Rewrite and Adopt Changes to the Drainage Design Criteria Manual	Research/Analysis, Policy	Water Utilities, Environmental Services	"Code revisions- Short-term (within 3 years) Implementation- Mid-term (3-5 years)	High (over \$100,000)	Medium	Neighborhood Improvement, Pollution Prevention
WATER	Maintain High Quality Drinking Water	Research/Analysis, Coordination	Water Utilities	Short-term (within 3 years)	Low (less than \$20,000)	High	Public Health
	Exceed Minimum Regulatory Compliance with Texas Commission on Environmental Quality (TCEQ) Municipal Stormwater Permit	Research/Analysis, Policy	Water Utilities, Environmental Services	Short-term (within 3 years)	Low (less than \$20,000)	High	Neighborhood Improvement
AIR QUALITY & GHG MANAGEMENT	Develop and Implement a Sustainable Municipal Fleet Program	Program Development/ Improvement, Capital Investment	Fleet Services, Finance, City Departments	Short-term (within 3 years)	Medium (\$20,000-\$100,000)	High	Financial Savings
AIR G 8.6 MANA6	Develop a GHG program for Municipal Operations	Research/ Analysis, Program Development/ Improvement	Environmental Services, City Departments	Long-term (more than 5 years)	Medium (\$20,000-\$100,000)	Medium	Energy Efficiency

Focus Area	Strategy	Strategy Type	Lead Partner	Timing	Funding	Implementation Control	Additional Benefits
	Expand Commercial and Industrial Energy Efficiency Program	Program Development/ Improvement	Denton Municipal Electric	Short-term (within 3 years)	Medium (\$20,000-\$100,000)	High	Air Quality
ND CONSERVATION	Adopt the Most Current Building Codes in a Timely Manner and Continue to Exceed Current International Energy Conservation Code (IECC) Minimum Requirements	Research/Analysis, Policy	Planning, Environmental Services	Ongoing	Medium (\$20,000-\$100,000)	High	Air Quality, Water Quality
ENERGY EFFICIENCY AND CONSERVATION	Consider Developing a Sustainable Building Rating Program for New and Existing Facilities, Commercial and Residential Single Family, Multi-family and Neighborhood Development	Planning, Environmental Services	Mid-term (3-5 years)	Low (less than \$20,000)	High	Air Quality, Water Quality, Waste Reduction	
	Improve the Energy Efficiency of Existing Homes and Buildings	Education, Program Development	Planning, Environmental Services, Denton Municipal Electric	Mid-term (3-5 years)	Medium (\$20,000-\$100,000)	High	Air Quality, Job Creation, Economic Development
ND OPEN/ SPACE	Promote Infill Incentives	Research/Analysis, Policy, Program Development/ Improvement	Neighborhood Services, Planning, Downtown Development	Short-term (within 3 years)	Low (less than \$20,000)	Medium	Job Creation, Community Character
LAND USE AND OPEN/ NATURAL SPACE	Evaluate Available Affordable Housing Programs/Incentives and Implement as Feasible	Research/Analysis, Coordination	Community Development, Denton Housing Authority, Planning	Short-term (within 3 years)	Low (less than \$20,000)	High	Job Creation

Focus Area	Strategy	Strategy Type	Lead Partner	Timing	Funding	Implementation Control	Additional Benefits
	Revise and Implement Subchapter 17 of the Denton Development Code Regarding Environmentally Sensitive Areas	Research/Analysis, Policy	Planning, Environmental Services	Code Revision- Short-term (within 3 years) Implementation- Long-term (more than 5 years)	Low (less than \$20,000)	High	Pollution Prevention
CE	Implement a Program to Cleanup, Redevelop and Reuse Brownfield Sites	Research/ Analysis, Program Development/ Improvement	Environmental Services, Economic Development	Short-term (within 3 years)	High (over \$100,000)	High	Neighborhood Improvement, Economic Development
LAND USE AND OPEN/NATURAL SPACE	Implement Code Changes so that Landscape Requirements are Based on Concept of Multiple Uses (Stormwater, Shading, Drought Tolerance)	Research/ Analysis, Program Development/ Improvement	Planning, Urban Forester, Environmental Services	Code Revision- Short-term (within 3 years) Implementation- Mid-term (more than 5 years)	Medium (\$20,000-\$100,000)	High	Water Quality
ND USE ANI	Promote Mixed- use, Compact Development in Targeted Areas	Research/Analysis, Coordination, Policy	Planning	Mid-term (3-5 years)	Medium (\$20,000-\$100,000)	High	Energy Efficiency, Air Quality, Community Character
۲	Complete and Implement Tree Code	Program Development/ Improvement, Event, Policy	Planning, Environmental Services	Short-term (within 3 years)	Low (less than \$20,000)	Medium	Energy Efficiency, Air Quality
	Complete and Implement Subchapter 22 and Related Code Changes Concerning Gas Well Drilling and Regulation	Policy	Planning - Gas Well Inspection Division	Short-term (within 3 years)	Low (less than \$20,000)	Medium	Air Quality, Public Health, Water Quality

Focus Area	Strategy	Strategy Type	Lead Partner	Timing	Funding	Implementation Control	Additional Benefits
ATION	Revise Current Parking Standards to Provide Flexibility and Reduce Environmental Impacts	Policy	Planning, Environmental Services	Short-term (within 3 years)	Low (less than \$20,000)	High	Water Quality, Energy Efficiency, Pollution Prevention, Neighborhood Improvement
TRANSPORTATION	Improve and Promote Pedestrian Opportunities	Policy, Physical Investment/ Maintenance, Capital Investment	Planning, Streets and Traffic Control, PD, Engineering, External Partners	Long-term (more than 5 years)	High (over \$100,000)	High	Energy Efficiency, Air Quality, Community Character, Public Health
T	Implement the Bicycle Master Plan	Policy, Physical Investment/ Maintenance	Engineering, Streets and Traffic Control, Planning, External Partners	Long-term (more than 5 years)	High (over \$100,000)	Medium	Energy Efficiency, Air Quality, Community Character, Public Health
CATION	Create a Sustainability Advisory Council	Education/ Communication	Environmental Services, Sustainability Advisory Council	Short-term (within 3 years)	Low (less than \$20,000)	High	Community Character
EDUCATION, COMMUNICATION AND COMMUNITY INVOLVEMENT	Create a Green Business Program to Identify and Recognize Sustainable Businesses	Education/ Communication	Environmental Services, Economic Development, Denton Chamber of Commerce	Short-term (within 3 years)	Low (less than \$20,000)	High	Economic Development, Community Character
EDUCATION AND INV	Develop a Section in the Chamber of Commerce Newsletter to Highlight Sustainable Businesses	Research/Analysis, Education/ Communication	Denton Chamber of Commerce	Short-term (within 3 years)	Low (less than \$20,000)	Medium	Economic Development
E	Promote Clean-up Events	Coordination, Event	External Partners, City Departments	Short-term (within 3 years)	Low (less than \$20,000)	Medium	Pollution Prevention, Community Character
MATERIAL RESOURCES MANAGEMENT	Establish Formal Environmentally Preferred Purchasing Policy	Policy	Purchasing, Environmental Services	Short-term (within 3 years)	Low (less than \$20,000)	Medium	Pollution Prevention, Energy Efficiency, Air Quality
MAI	Divert Solid Waste from Landfills Through Recycling	Program Improvement, Education/ Communication	Solid Waste and Recycling, Finance	Mid-term (3-5 years)	Low (less than \$20,000)	Low	Pollution Prevention, Air Quality,

Focus Area	Strategy	Strategy Type	Lead Partner	Timing	Funding	Implementation Control	Additional Benefits
	Encourage Community Gardens Within City Limits	Program Development, Capital Investment	Environmental Services	Short-term (within 3 years)	Low (less than \$20,000)	High	Community Character
AL FOOD PRODUCTION	Evaluate Opportunities to Increase Access and Availability of Local Food Including Backyard Urban Gardens, Backyard Urban Chickens and Food Cooperatives	Research/Analysis, Policy	Animal Control, Code Enforcement, Economic Development	Mid-term (3-5 years)	Low (less than \$20,000)	Medium	Community Character
LOCAL	Increase Number of Vendors Participating at Farmer's Markets and Craft Fairs in the Community	Coordination, Event	External Partners	Short-term (within 3 years)	Low (less than \$20,000)	Low	Job Creation, Community Character

Resources Needed for Implementation

This Plan will require a significant budgetary commitment by the City. While financial considerations were a deciding factor in selecting the strategies for inclusion in the Plan, the City will need to continually assess the financial requirements of sustainability strategies and consider those requirements against other budgetary needs.

Implementation strategies will also require participation of individuals and organizations across City departments and in the community. The City will actively research and apply for national, state, and local competitive grants to support the selected sustainability initiatives as well as leverage partner organizations when possible.

Measuring and Communicating Progress

Sustainability can be measured through a variety of quantitative and qualitative indicators and performance metrics. Where possible, quantitative measures are preferred because qualitative measures are typically

subjective and can be difficult to define. In each focus area chapter, KPIs were identified. For each KPI, meaningful and achievable targets were set and the baseline value, or current status of the KPI was determined. The established KPIs, targets, and baseline values will be used to measure and communicate progress. A summary of the current KPI, targets, and baseline values is provided in the following table. KPIs will be revisited, revised, and adjusted throughout plan implementation.

KEY PERFORMANCE INDICATORS	BASELINE/ CURRENT STATUS	TARGET
Chapter 3 Water		
Number of National Pollutant Discharge Elimination System (NPDES)permit violations	2011 - Zero	Maintain no violations
Compliance with water quality standards; Number of EPA health violations	2011 - Zero	Maintain compliance with minimum standards; Maintain no violations
Volume and number of sanitary sewer overflows (SSOs)	2011 - 38 overflows. Total volume -110,000 gallons (most from 3 forced main breaks)	Minimize volume and number of SSOs
Chapter 4 - Air Quality and GHG Management		
Air Quality Index (AQI)	2011 - 42	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)	2002 - 138,419 MTCO ₂ e 2006 - 162,410 MTCO ₂ e	Reduce GHG emissions
GHG Emissions- Community-wide per capita (Metric Tons of Carbon Dioxide Equivalent)	2002 - 19.6 MTCO ₂ e per capita 2006 - 18.4 MTCO ₂ e per capita	Reduce GHG emissions per capita
Annual Municipal Fleet Fuel Consumption	2011 - 415,884 gallons of diesel & 273,415 gallons of unleaded	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	2011 - 7 hybrid vehicles; 2011 - 375 Diesel (on and off road which can use biodiesel); 2011 - 52 Flex Fuel; 2011 - 19 Hybrid Electric	Increase number of AFVs
Chapter 5 - Energy Efficiency and Conservation		
Total municipal government energy consumption	2011 - 32,159,066 kWh	Reduce municipal facility energy consumption
Number of participants in energy rebate and audit programs	2011 - 220 audit & 245 rebate participants	Increase number of participants
Renewable percent of DME's electric power generation	2010 - 40%	Continue to evaluate options for renewable energy generation
Number and size of private renewable energy systems installed throughout community	2011 - One 1.6 MW system	Continue to evaluate options for renewable energy generation

KEY PERFORMANCE INDICATORS	BASELINE/ CURRENT STATUS	TARGET
Chapter 6 - Land Use and Open/Natural Space		
Square feet of new infill development buildings and acreage impacted	Currently not tracked	Continue to increase infill development and track progress
Acres of protected open space and environmentally sensitive areas (ESAs)	2010 - 12,005 acres	Continue to increase percentage of open space and protected areas.
Percent of city area currently covered by tree canopy	2011 - 19%	Increase tree canopy coverage
Acres of brownfield sites redeveloped	2011 - 1.9 acres	Pursue additional brownfield redevelopment
Chapter 7 – Transportation		
Number of miles for bike lanes	2011 - 3.85 miles (including single lanes)	Increase number of bike lane miles (see Bike Master Plan)
Number of miles for walking paths/sidewalks	2011 - Approximately 350 miles of walking path/sidewalks	Increase miles of sidewalk and walking paths
Public transit ridership within the City of Denton	2011 - 2.4 million rides (UNT accounts for 1.8 million rides)	Increase public transit ridership
Chapter 8 - Education, Communication and Community Involveme	nt	
Number of visits to City's sustainability website monthly	December 2011; Sustainable Denton - 241; Environmental Services - 91; Kids Corner - 32	Increase number of visits
Monthly number of people attending sustainability workshops and education sessions	November 2011 - 17	Average attendance of 25 or more
Number of sustainable businesses involved in the Green Business Program	Program under development	Enroll 10 businesses by 2015
Chapter 9 - Material Resources Management		
Quantity and type of HHW collected	2010 - 41,125 lbs collected	Maintain or increase collection amounts
Quantity of a hormocoutical waste collected ensuelly	2010 - 883 lbs collected &	
Quantity of pharmaceutical waste collected annually	disposed	Increase annually

KEY PERFORMANCE INDICATORS	BASELINE/ CURRENT STATUS	TARGET				
Chapter 9 - Material Resources Management Continued						
Quantity of Dyno products sold annually	2011 - 26,307 cubic yards	Increase quantity of Dyno products sold annually				
Number of commercial recycling containers	2011 - 339 commercial recycling containers	Increase annually by 2%				
Residential recycling diversion rate	2011 - 57%	Increase beyond 60% by 2020				
Chapter 10 - Local Food Production						
Number of permits issued to local food businesses/artists to participate at Denton Community Market	2011 - 13 consumer health permits issued	Increase 5% by 2020				
Number/acreage of community gardens	2011 - Approximately 5 acres	10 acres by 2020				

Sustainability Management Tool

The City is developing a tool for tracking progress and communicating results. This tool will provide data management capabilities to track progress on KPIs and provide a dashboard and reporting functions to visually communicate results both internally and externally.

The web-based sustainability management tool is critical in improving communication both internally and externally to City stakeholders. The tool will be updated regularly to track actions and implementation, and when new data on KPIs are available.

Continued Program Development

The Plan is a living document that will be updated on a regular basis. The selection of strategies for future implementation will be based on the current and projected status of the City's budget, external partnerships and funding sources, emerging City activities, and stakeholder input. Monitoring progress is necessary to compare outcomes with the City's objectives and ensure long-term viability of the program. In addition to tracking KPIs, the City will continually communicate with the community about the Plan's programs, projects, and progress. The City will revisit the strategies in the Plan on a regular basis with an extensive review every three to five years. Periodic review is required to determine if strategies and actions are achieving goals and meeting targets. Annual reviews need to include a list of anticipated projects and budget needs and be presented for budget approval. The stakeholder working groups will meet on a quarterly basis to gauge progress and monitor performance to make sure the City is on track for continual sustainability improvement.

In future sustainability planning updates, the City will consider lessons learned from the successes and challenges of implementation. In effect, this Plan will serve as a mechanism for continual improvement and help to inspire an increasingly more sustainable Denton.

City of Denton, 2011 Facts, Water- Facts.

Available at http://www.cityofdenton.com/index.aspx?page=346

City of Denton, 2011 Current Topics-Denton Wins Award. Available at http://www.cityofdenton.com/index.aspx?page=287

Environmental Protection Agency (EPA) 2011, Ground Level Ozone Basic Information, available at http://www.epa.gov/airquality/ozonepollution/basic.html

North Central Texas Council of Governments (NCTCOG) 2011, Air Quality, available at http://nctcog.org/trans/air/

U.S. Department of Energy (DOE), Energy Information Administration (EIA) Energy Outlook 2010

appendix a: Partners & Community Meeting Summaries

Denton Sustainability Partners – Workshop #1 April 7th, 2011, 11:30-1:00pm

Purpose

The first workshop for the Denton Sustainability Partners was held on April 7th, 2011, to introduce the Partners to the Sustainability Plan project and provide an overview the planning process, their respective roles, and to brainstorm sustainability strategies for inclusion in the plan.

Attendees

Attendees included individuals from the following organizations. A few individuals could not attend the workshop but expressed interest in future participation and follow-up.

DCTA • Atmos Energy • UNT • Denton ISD • The Dinerstein Companies • Community Representatives

Presentation

Victoria Venet, Denton Sustainability Coordinator, welcomed attendees. CDM Smith provided a brief presentation on the definition of sustainability, the Partners role in the success of the project, the Vision Statement and Goals for a Sustainable Denton, and an overview of the project and timeline. The bulk of the workshop was spent in discussion about potential sustainability strategies for inclusion in the plan.

Discussion

Most of the workshop was used to engage the group in a brainstorming session to develop strategies for improving sustainability in each of 6 focus areas: transportation, water resources, energy, waste management, products and materials, and green building. Each participant provided input and shared ideas, leading to a very active discussion on what's currently in place and potential sustainability improvements in Denton. The notes on the following pages include the ideas and recommendations as well as comments put forward by the Partners, organized by focus area.

Next Steps

The Partners were encouraged to fill out the Sustainability Survey and encourage others in their organizations and networks to do the same. The City will work with CDM Smith to develop a prioritization framework for ranking strategies for plan inclusion, and gather the Partners back together in June for another workshop to review the sustainability strategies put forward throughout the planning process and help to prioritize them, as well as identify key gaps and opportunities.

Waste Management

- Create opportunities for residential light bulb recycling? HD & Lowes do this, perhaps promote their program.
 - City has a CFL Bulb exchange program that is very active
- Implement a recycling program for apartment houses and multi-family buildings
- Note: Commercial/industrial recycling is difficult because of costs
- · Look at other good programs out there in the community: Peterbilt has a good zero waste program
- Deposit back for recycling (All) waste, San Diego requires this * Bikerack, art partnership

Products and Materials

- Use Xmas trees for compost
- Encourage more community gardens several privately run
 - UNT already has a student plan for community gardens, they need funding
- Encourage local vendors ex: Bloom Dinner
- Expand/promote community market for local arts & crafts, etc.
- Create a Green Directory program for local green businesses

Transportation

- Look into current work of the Bike planning committee
- Support Routes to Schools program Schools and Engineering Department involved
- Tie land use to transportation, private sector and sustainability development → needs to participate
- Look at other cities programs:
 - · Require bike racks for new development
 - Electric vehicle Charging stations infrastructure
 - See company NRG (Lisa has info)
 - Charlotte zero parking areas encourages more pedestrians
- · Consider incentives from City for developers to encourage alternative transportation
- Adv. for bike racks even rent bikes
- CNG vehicles and infrastructure, esp. w/Denton's location @35 split → station could be put here, no cost
- Planning Dept. looking at developing code what's already on the books for new development → look at what's possible for infill
- Traffic signal prioritization/synchronization
- · Develop a map of sidewalk gaps and a plan to address those

Energy

- 100% renewable energy is not feasible need education about why? We need to think 30 yrs. Out community education needed to "connect the dots"
- Revise the goal statement: Maintain a viable & diverse power supply
- Rate structures look out 5-15 years + provide incentives
- · Audits should include residential, commercial and industrial
- · Consider revising rates to avoid "hitting twice" on rates @ schools and homes

Water Resources

- Help people learn how to reduce water use focus on irrigation → connect to development code and Planning Department
- Facilitate development infrastructure for beneficial water reuse
- Storm water require/incentivize developers to treat on site in high density areas
- Improve code for permeable surfaces? Need to review current code language

Green Building

- Review Denton Development Code- many of the recommendations/suggestions are addressed <u>now</u> (new urbanism). Current building code = 10% ↑ 2009 energy code
- Comprehensive Plan to be renewed this year/next → Jane Gurney Planning Rep on Sustainability Comm.
- Denton has great Parks & Recs. Resources but lack of connectivity and awareness → integrate Sustainability Aspect into P&R
- Look at Plainview, Texas example for Parks/Open Space
- Create a sustainability Seminar series (all topics) for adults and children for outreach and education on what is going in Denton

Denton Sustainability Partners – Workshop #2 June 14th, 2011, 11:30-1:00pm

Purpose

The second workshop for the Denton Sustainability Partners was held on June 14th, 2011 to present the Partners with the sustainability strategies generated from Partners Workshop # 1, community meetings and the public survey and discuss strategy prioritization.

Attendees

Attendees included individuals from the following organizations. A few individuals could not attend the workshop but expressed interest in future participation and follow-up.

Atmos Energy • UNT • Denton ISD • Denton Chamber of Commerce • League of Women Voters • Community Representatives

Presentation

The City of Denton welcomed attendees and thanked them for their ongoing participation. CDM Smith provided a brief presentation on the Partners continued role in the success of the project, presented the list of sustainability strategies and discussed strategy prioritization.

Discussion

Most of the workshop was used to engage the group in a brainstorming session to review and prioritize strategies in order to select the top sustainability strategies for inclusion in the final plan. Each participant provided input and shared ideas, leading to a very active discussion on how to prioritize strategies and present the strategies in the plan. The main conclusion drawn from the discussion was the need to categorize the strategies by key focus areas and goals. For example, a key focus area may be "material resources." Goals for "material resources" may include "waste reduction and recycling" and "environmentally preferable purchasing." Specific strategies would fall under applicable goals—"compost yard waste" may be a strategy for the goal of "waste reduction." In addition, the Partners requested that the City identify current initiatives of each strategy and provide examples of progress, if any. Several of the Partners agreed to share their progress on strategies as well.

Next Steps

The City will work with CDM Smith to identify key focus areas and goals. Focus areas and goals will be presented to the Partners for review and comment. The sustainability strategies will be ranked and organized by focus area and goals. The Partners will be given an opportunity to review the draft plan prior to public release.









Denton Sustainability Partners – Workshop #3 September 14th, 2011, 11:30-1:00pm

Purpose

The third workshop for the Denton Sustainability Partners was held on September 14th, 2011 to present the Partners with the list of 58 strategies and to explain the prioritization framework. The main goal was to have the Partners understand the tool that will be used to determine the list of strategies for inclusion in the Draft Plan and to get their support for the process.

Attendees

Attendees included individuals from the following organizations.

Atmos Energy • UNT • Denton ISD • Denton Chamber of Commerce • League of Women Voters • Community Representatives

Presentation

The City of Denton welcomed attendees and thanked them for their continued support and their ongoing participation. CDM Smith provided a brief presentation which reviewed the consolidation of over 500 strategies into a more manageable list of 58 sustainability strategies and explained the prioritization framework in detail.

Discussion

A discussion developed around the prioritization tool. A concern was raised that the tool scores each criterion separately instead of looking at criteria collectively. For example, a strategy with high startup costs and low return-on-investment may rank low based on its high startup costs. The Partners emphasized that if a strategy costs \$500,000 to implement but the payback period is two years that strategy should not be excluded simply because the startup costs are high. The City explained that the tool is not definitive and additional factors will be considered to prevent good strategies from scoring inaccurately.

Most of the discussion that followed focused on understanding the various criteria that were developed to prioritize the list of strategies. The Partners confirmed that the prioritization tool is a good starting point but additional factors should be considered. The participants were enthusiastic and excited that the City is making progress with developing the Draft Sustainability Plan. A request was made to ensure the Draft Plan is emailed to the Partners prior to the meeting so that they have time to provide meaningful input. The discussion included questions about the ongoing monitoring of the program over the long term. Questions about the tracking tool also came up and participants were informed that the tool will be explained to them once it is developed. The Partners recommended the preliminary work be done by other departments before the next budget year to ensure the long term sustainability of the Plan. Specifically the partners stated that the sustainability plan must be funded in the City of Denton's budget both to ensure that strategies can continue to move forward and to allow for flexibility if new opportunities arise through partnerships or grants.

The Partners were asked to reviews the 58 strategies and provided comments to the City by September 23, 2011.

Next Steps

The City will work with CDM Smith to review and address the comments provided by the participants. The 58 strategies will be evaluated using the framework prioritization tool. The Partners will be given an opportunity to review the draft plan prior to public release.

Denton Sustainability Partners – Workshop #4 November 10, 2011, 3:00pm-4:30pm

Purpose

The fourth workshop for the Denton Sustainability Partners was held on November 10, 2011 to discuss the Draft Sustainability Plan. The main goals were to gather input and feedback on the plan content including the sustainability strategies, implementation actions, and key performance indicators and obtain their support for moving forward with the draft plan.

Attendees

Attendees included individuals from the following organizations:

Atmos Energy • UNT • Dinerstein Companies • League of Women Voters • Community Representatives

Presentation

CDM Smith welcomed the Partners and again thanked them for their continued support of the City's efforts. Katherine Barnett conveyed the Mayor Pro Tem's apologies for not being able to attend the Partners meeting.

CDM Smith provided a brief presentation on the general organization and layout of the draft plan, discussed the proposed sustainability strategies, implementation actions and key performance indicators.

Discussion

Overall the Partners are pleased with the progress made by the City. The Partners support the proposed strategies. They provided feedback and updated information on the successes to-date and strategy write-ups. Most of the discussion centered on the implementation actions for specific strategies. The Partners suggested incorporating educational opportunities into several strategies. The Partners also stressed the importance of budgeting and having the Planning Department involved during plan development to avoid duplication of efforts and to ensure up-to-date information (i.e. code regulations).

Next Steps

The City will work with CDM Smith to review and address the Partners comments. The Draft Sustainability Plan will be presented to City Council on December 13, 2011.

Community Meetings – April 6th and 7th, 2011, 6:30PM at Denton Civic Center

Purpose

A series of Community Meetings were held to present the Sustainability Plan project, gather input and feedback from community members on their vision for a Sustainable Denton, and to provide a forum to for the public to discuss and suggest specific strategies for sustainability improvement within the Denton community.

Attendees

Both meetings were very well attended by a diverse group of participants, for a total of over 80 attendees over the two evening meetings. Beyond attendance, the level of engagement in discussing the topic of improving sustainability in Denton was also impressive. The Project Team received many positive comments and gratitude for providing such forums for community members to ask questions and express their ideas.

Presentation

Victoria Venet, Denton Sustainability Coordinator, welcomed attendees. CDM Smith provided a brief presentation on the definition of sustainability, the public's role in the success of the project, the Vision Statement and Goals for a Sustainable Denton, and an overview of the project and timeline. The bulk of the workshop was spent in "open house session" where participants could visit different topical sessions run by the Project Team to ask questions and to provide their input about potential sustainability strategies for inclusion in the plan.

Open House Session

In the large Rotunda Room, six stations were setup, each staffed by a Project Team member, organized by focus area: transportation, water resources, energy, waste management, products and materials, and green building. Participants were free to visit as many of the stations as they saw fit, and many visited all. The discussions were informal and very productive, resulting in over 200 strategies proposed for inclusion in the Sustainability Plan. Both evenings the open house session continued well past 8PM, and many of the participants thanked the Project Team for this forum for being able to share their ideas and ask questions.

Next Steps

All participants were encouraged to fill out the Sustainability Survey and encourage others in their organizations and networks to do the same. To date over 180 surveys have been completed online and on paper. The City will work with CDM Smith

to develop a prioritization framework for ranking strategies for plan inclusion. The Project Team will work with the Interdepartmental Team and the Community Sustainability Partners to refine the strategies for inclusion in the Draft Sustainability Plan, to be released for public comment this fall.









appendix b: Sustainability Survey Summary Report

Sustainable Denton Survey Summary Report

Survey Objective

The City of Denton (City) is developing a Sustainability Plan for City government operations and the community-at-large. A critical component of plan development 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 about and examine sustainability strategy ideas from City stakeholders.

Data Collection Method

Community stakeholders were given an opportunity to complete the Sustainable Denton Survey during public meetings. Public meetings were held on April 6 and April 7, 2011. If community members were unable to attend the meeting, the survey was available online. A total of 199 surveys were completed.

Vision for a Sustainable Denton

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.

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

Survey Questionnaire

Data was collected through the use of a structured questionnaire. The length of time to complete each survey was approximately five minutes. The questionnaire assessed the following three areas:

- 1. Residency and role of survey participants.
- 2. Definition and understanding of sustainability.
- 3. Importance of sustainability strategies.

SUMMARY OF KEY FINDINGS

Residency and Role of Survey Participants

The majority – 67 percent of survey respondents – have resided in Denton for five or more years. Less than a quarter of respondents have resided in Denton for less than five years, and 10 percent of respondents are not Denton residents.

Survey respondents were also asked to choose the role within the Denton Community (resident, business owner, professional) which best identifies their interest in Denton's Sustainability Plan. As illustrated in Table 1, the majority - 65 percent of respondents - were interested in sustainability as a Denton resident. Nearly 11 percent of survey respondents indicated that their interest in Denton's Sustainability Plan stemmed from identification with a role not listed in the survey. Examples of additional roles include students, religious leaders, former Denton residents and people who work in Denton. Education providers and environmental professionals were the next most represented group, with eight percent and seven percent respectively.

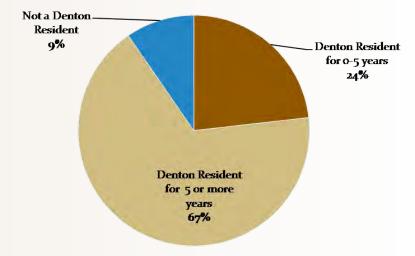


Figure 1: Residency of Survey Respondents

Table 1: Role in Community

Community Role	Percent	Count
Denton Resident	64.6%	144
Other	10.8%	24
Education Provider (K-12 and Higher Ed)	7.6%	17
Environmental Professional	7.2%	16
Business Owner/Representative	4.0%	9
City of Denton Employee/Official	3.6%	8
Health Care Professional	1.3%	3
Developer/Builder	0.4%	1
Transportation Professional	0.4%	1
TOTAL	100%	223

Definition and Understanding of Sustainability

The community was asked to select a definition of sustainability that they identified with the most. As shown in Table 2, the public was divided. The most selected definition obtaining 29 percent of survey responses 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 next most selected responses, "meeting the needs of the present without compromising the ability of future generations to meet their own needs" and "improving the quality of human life while living within the carrying capacity of supporting eco-systems" received 24 percent and 23 percent, respectively. Ten percent of survey respondents did not identify with any of the listed sustainability definitions and offered their own unique definitions. Several of those responses indentified the need for communities to support local businesses and protect the environment. The value of natural resources and sustainable consumption were also identified as important components of sustainable development. A representative definition described sustainable development as "intelligent land use and resource planning that simultaneously promotes economic growth, strong community, and a conservation ethic." Two responses defined sustainable growth as important only if taxpayers were not burdened with increased costs.

Table 2: Definition of Sustainability

Sustainability Definitions	Percent	Count
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	29.4%	57
Meeting the needs of the present without compromising the ability of future generations to meet their own needs	24.2%	47
Improving the quality of human life while living within the carrying capacity of supporting eco-systems	23.2%	45
The use of products in a way that will not permanently destroy them for future use	10.8%	21
Unique definition of survey respondents	9.8%	19
No net per capita loss of natural or human capital	2.6%	5
TOTAL	100%	194

Survey respondents were also asked about their thoughts on the following statement: "I believe sustainable and green technologies are important to the health of our community and planet." A vast majority – 84 percent – passionately agreed with the statement. The statement is believed to be true by 10 percent of survey respondents. A minority, four percent felt that sustainable/green technologies are all hype, and two percent were not familiar with sustainable/green technologies. No survey respondent admitted that he or she did not care about sustainable/green technologies.

Importance of Sustainability Strategies

The City developed focus areas and associated strategies for the Sustainability Plan. Survey questions were organized around the focus areas to identify the most important strategies per focus area.

The focus areas include the following:

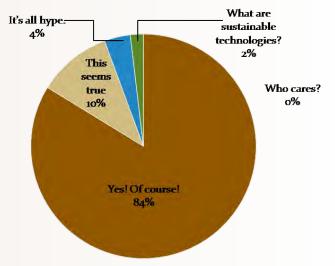
- Purchasing—purchase environmentally and socially responsible materials and products
- Air Quality—ensure the air is healthy and safe for all community members
- Greenhouse Gas (GHG) Management—promote environmentally and economically sound GHG management practices throughout the community
- Green Business Programs—highlight sustainable businesses that 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 educate residents and businesses on energy efficiency improvements
- Ecosystems and Open Space protect and manage open space in the community while protecting existing habitats
- Waste Management—increase diversion, reuse, recycling and energy producing disposal options
- Water—promote water conservation and protect water supply
- Green Building/Sustainable Site Management—support green building and sustainable site management within the community through education, incentives and polices
- **Community Involvement**—involve community and stakeholders in the development and implementation of sustainability activities and develop and nurture partnerships that encourage and support collaboration for sustainability improvements

For each focus area question, survey respondents were asked to select the most important sustainability strategy from a list of options. Respondents were also given an opportunity to specify a strategy not represented on the list.

Purchasing

In regard to sustainable purchasing, the most important strategy identified by survey respondents 49 percent, was the use and purchase of locally produced materials and products. The second most important sustainability strategy, 38 percent was the implementation of an environmentally preferable products purchasing policy for City government operations. Unique purchasing strategies were identified by nine percent of survey respondents as being more important than the ones listed in the survey. Several of the unique responses emphasized the need for the City to take into account both the environmental attributes of products and location of manufacture. Buying locally does not necessarily mean the product was produced in an environmentally sound manner. Likewise, environmentally friendly products may need to travel great distances to reach Denton and consequently emit GHG emissions through increased fuel

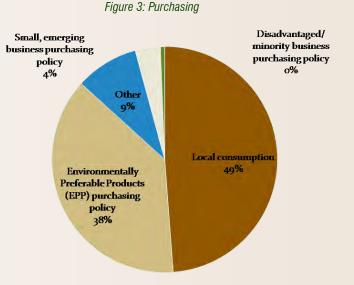
Figure 2: Definition of Sustainability



use. A minority of survey respondents indicated that price is a more important factor than local or environmentally friendly production in making purchasing decisions. Specifically, the least expensive products or services should be purchased regardless of production or transport method.

Table 3: Purchasing

Sustainability Strategies	Percent	Count
Use and purchase locally/regionally (within 500 miles) produced materials and products	48.8%	81
Implementation of an environmentally preferable products (EPP) purchasing policy	38.0%	63
Other	9.0%	15
Development of a Small-Emerging business purchasing policy	3.6%	6
Development of Disadvantaged/minority business purchasing policy	0.6%	1
TOTAL	100%	166



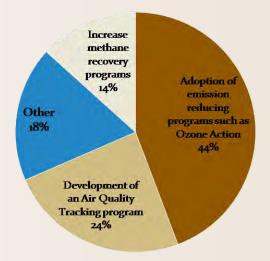
Air Quality

Of all the air quality sustainability strategies, 44 percent of survey respondents identified the need for the City to adopt an emissions reduction program as the most important. As illustrated in Table 4, 24 percent would like to see the development of an air quality tracking program, and only 13 percent would like to see an increase in methane recovery programs. Additional strategies were proposed by 18 percent of *Figure 4: Air Quality* respondents as more important than the strategies provided by the City. Examples of these strategies include:

- renewable energy production;
- · more stringent vehicle emission standards; and
- · improved walking and biking amenities.

Table 4: Air Quality

Sustainability Strategies	Percent	Count
Adoption of emission reducing programs such as Ozone Action	44.2%	73
Development of an Air Quality Tracking program	24.2%	40
Other	18.2%	30
Increase methane recovery programs	13.3%	22
TOTAL	100%	165



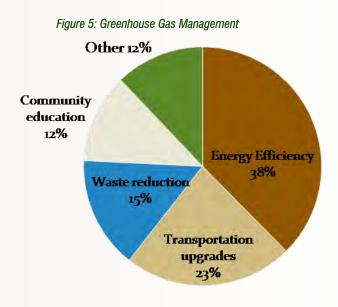
Greenhouse Gas Management

As illustrated in Table 5, 38 percent of survey respondents felt energy efficiency projects are the most important and effective way to reduce GHG emissions. Almost a quarter of respondents indicated the need for transportation upgrades in the City, and 15 percent noted the importance of waste reduction to reduce methane emissions from landfills. The need for community education was emphasized by 12 percent of survey respondents, and another 12 percent offered a different

strategy for reducing GHG emissions. The majority of proposed strategies focused on the need to increase renewable energy production, improve non-automobile infrastructure, and develop public education programs about sustainability and climate change awareness.

	0	
Sustainability Strategies	Percent	Count
Energy Efficiency	37.6%	62
Transportation upgrades	23.0%	38
Waste reduction	15.2%	25
Community education	12.1%	20
Other	12.1%	20
TOTAL	100%	165

Table 5: Greenhouse Gas Management



Green Business Programs

Approximately half of survey respondents support the use of Denton Municipal Electric (DME) rebates to expand local green businesses. DME offers a customer incentive program which provides rebates to customers who perform authorized energy efficiency improvements in their businesses. The development of a green business award program to recognize Denton businesses and organizations for their efforts to preserve the environment and quality

of life in Denton was preferred by 37 percent of survey respondents. Different strategies were preferred by 12 percent of survey respondents. These strategies include mandatory recycling for businesses and the development of a green business assistance program to provide technical and financial assistance for sustainable programs.

Table 6: Green Business Programs

Sustainability Strategies	Percent	Count
Use Denton Municipal Electric rebates to expand local green businesses	50.9%	84
Development of a Green Business award program	37.0%	61
Other	12.1%	20
TOTAL	100%	165



Transportation

The most important transportation strategy identified by survey respondents is an increase in the number of bicycle lanes. Nearly 40 percent of respondents felt bicycle infrastructure should be more available to the community. The next largest share of votes went to strategies not identified in the survey. New ideas generated by survey respondents include:

- expansion of DCTA light rail service;
- improved public transportation facilities;
- incentives for carpooling;
- · economic development to create local jobs and decrease commute distances; and
- anti-idling measures including a "smart" traffic controller.

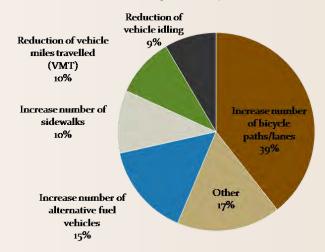
There were a few responses that preferred the absence of government in regulating or promoting certain modes of transportation over others. According to these responses, the City of Denton should avoid implementing strategies that will impose any tax burden on residents.

Table 7: Transportation

Sustainability Strategies	Percent	Count
Increase number of bicycle paths/lanes	39.4%	65
Other	17.0%	28
Increase number of alternative fuel vehicles	15.2%	25
Increase number of sidewalks	10.3%	17
Reduction of vehicle miles travelled (VMT)	9.7%	16
Reduction of vehicle idling	8.5%	14
TOTAL	100%	165

Figure 7: Transportation

Figure 8: Energy Conservation and Efficiency



Energy Conservation and Efficiency

More than half of survey respondents are in favor of increasing the percentage of renewable sources in the overall electricity supply. Nearly a third promotes the expansion of the Denton Municipal Electric's customer incentive program for energy efficiency. Only nine percent of respondents would like to see more energy audits for residential customers. Only eight percent of respondents identified other energy conservation and efficiency strategies. These strategies centered on the need to increase renewable energy production. For example, survey respondents identified the



need for funding and technical assistance to homeowners interested in installing solar panels. One survey respondent would like to see cost premiums for renewable energy disappear. Another respondent proposed that City ordinances allow wind generation in residential areas. While the majority of comments viewed renewable energy favorably, one comment indicated that infrastructure associated with renewable energy, specifically wind turbines, would negatively impact the built environment.

Ecosystems and Open Space

As indicated by 42 percent of survey respondents, the most important ecosystem and open space strategy is increasing parks and natural areas. Also rated as important by 32 percent of respondents is increasing the number of urban trees throughout the City. Improving stormwater quality is less important to survey respondents compared to increasing natural areas and vegetation. Additional strategies were identified by 13 percent of survey respondents including community gardens, a green infrastructure approach to land use management, a tree protection ordinance and increased protection of native ecosystems.

Waste Management

Opinions about waste management strategies were diverse. As illustrated in Table 10, a quarter of survey respondents would like the household hazardous waste curbside pick-up program expanded. A fifth of respondents identified on-site water reuse and treatment as the most important strategy. Increasing recycling collection rates and offering an organics collection program both received 14 percent support. Only eight percent of respondents support an increase in municipal compost diversion rates, while 19 percent of respondents support other waste management strategies. Additional strategies include:

- prohibiting non-recyclable packaging including plastic bags;
- processing the entire waste stream through materials recycling recovery facilities;
- working with Waste Management Inc. to establish wildlife habitat areas at landfills;
- developing recycling education programs; and
- increasing commercial and multifamily residential recycling.

Table 10: Waste Management

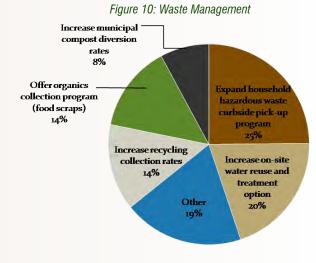
Sustainability Strategies	Percent	Count
Expand household hazardous waste curbside pick-up program	39.4%	65
Increase on-site water reuse and treatment option	17.0%	28
Other	15.2%	25
Increase recycling collection rates	10.3%	17
Offer organics collection program (food scraps)	9.7%	16
Increase municipal compost diversion rates	8.5%	14
TOTAL	100%	165

Figure 9: Ecosystems and Open Space



Table 9: Ecosystems and Open Space

Sustainability Strategies	Percent	Count
Increase park and natural areas	41.8%	69
Increase urban tree canopy	31.5%	52
Improve storm water quality	13.9%	23
Other	12.7%	21
TOTAL	100%	165

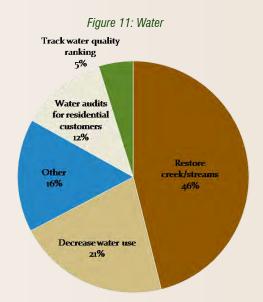


Water

As illustrated in Table 11, almost half of survey respondents felt the most important strategy for water conservation and quality is restoring creeks and streams. Decreasing water consumption is most important to 21 percent of survey respondents. City-sponsored residential water audits were preferred by 12 percent of respondents. Only five percent think the most important action is for the City to track water quality data,

while 16 percent of survey respondents provided ideas for different strategies. Examples of other strategies include promoting rainwater harvesting, xeriscaping, reusing grey water, preventing fracking for natural gas extraction that is both waterintensive and polluting, and providing water rate incentives to reduce consumption. Many respondents identified water conservation education as an important strategy. One response

Sustainability Strategies	Percent	Count
Restore creek/streams	46.1%	76
Decrease water use	21.2%	35
Other	15.8%	26
Water audits for residential customers	12.1%	20
Track water quality ranking	4.8%	8
TOTAL	100%	165



suggested that the City should only plant

trees and vegetation that do not require watering.

Green Building/Sustainable Site Management

More than half of survey respondents identified green construction as the most important strategy for sustainable site management. Increasing green building for existing buildings was preferred by 31 percent whereas 22 percent prefer green building to focus on new construction. Roughly 19 percent of survey respondents want the City to increase the amount of open space acreage. The need to reduce the urban heat island effect was identified by nine percent of respondents as the most important strategy, while eight percent of survey respondents would like to see an increase in downtown development and 10 percent of respondents identified other strategies as most important. One idea favors tear down and rebuild Figure 12: Green Building/Sustainable Site Management

Table 12: Green Building/Sustainable Site Management

Sustainability Strategies	Percent	Count
Expand household hazardous waste curbside pick-up program	39.4%	65
Increase on-site water reuse and treatment option	17.0%	28
Other	15.2%	25
Increase recycling collection rates	10.3%	17
Offer organics collection program (food scraps)	9.7%	16
Increase municipal compost diversion rates	8.5%	14
TOTAL	100%	165

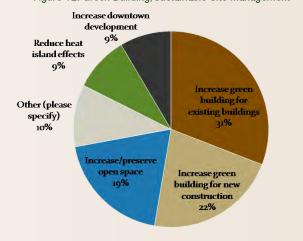


Table 11: Water

projects. Another would like to see expedited permitting and/or other incentives to green developers as a way to promote green construction. One comment rejected the idea of downtown development, and another demanded development be reserved to the private Figure 13: Community Involvement sector.

Involve the Community and Stakeholders

The majority, 55 percent of survey respondents preferred a sustainability education program to sustainability advisory council 34 percent, while 11 percent proposed different strategies to promote community involvement. Strategies include developing a sustainability education program targeted toward youth, hosting public events such as music and art festivals to raise awareness of sustainability, and working with University of North Texas students to develop and test sustainability ideas. Two comments opposed spending tax

payer money on sustainability education and community involvement programs.

In addition to identifying the most important strategy for each focus area, survey respondents were also asked to assign a scale of importance, from 1 to 11, with

Sustainability Strategies	Percent	Count
Develop sustainability education program	54.8%	91
Form a sustainability advisory council	34.3%	57
Other	10.8%	18
TOTAL	100%	166

Table 13: Community Involvement

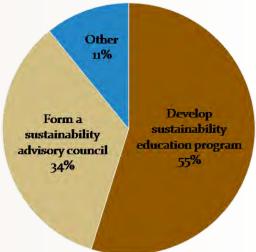


Table 14: Importance of Focus Areas

Focus Areas	1 - Most Important	2	3	4	5	6	7	8	9	10	11 - Least Important
Purchasing	8	4	8	10	13	13	8	9	11	20	52
Air Quality	50	25	10	21	13	9	7	6	8	0	7
GHG Management	18	16	17	12	11	11	17	16	13	12	13
Green Business Programs	14	4	14	10	14	8	12	18	18	28	16
Transportation	26	19	18	14	18	17	13	12	10	3	6
Energy Conservation and Efficiency	37	29	23	15	11	13	5	8	6	6	3
Ecosystems and Open Space	28	21	22	15	15	9	18	8	7	8	5
Waste Management	19	12	14	8	19	19	19	14	13	12	7
Water	39	31	28	16	6	11	6	10	2	4	3
Green Building	12	10	11	18	15	13	13	18	28	8	10
Community Involvement	44	11	10	10	11	10	7	12	10	16	15

one being the most important, to each of the focus areas. As illustrated in Table 13, the focus areas receiving the highest number of most important scores are air quality, community involvement, and water and energy conservation and efficiency. The focus areas identified as least important are purchasing and green business programs.

A ranking of each focus area was determined through a weighted average calculation. For each focus area, a numerical value was assigned to rank the focus areas by level of importance. Although air quality received the highest number of most important scores, water is ranked the highest since it received the highest number of overall scores.

Survey respondents were also given an opportunity to provide comments and suggest additional sustainability strategies. Organized by focus areas, the following is a list of sustainability strategies that were not previously identified.

Purchasing

- Increase the availability of locally grown food
- Purchase healthier foods for school lunches

GHG Management

- Adopt a Citywide goal of climate neutrality
- · Create a center for sustainable jobs
- Harness the small business, local capacity of Denton's highly educated population
- Develop a sustainable business program with a logo where the logo recognizes environmentally responsible businesses

Transportation

- Establish a no idling policy for municipal fleet, specifically police vehicles
- Promote use of car sharing programs

Energy Conservation and Efficiency

- Provide more incentives and rebates for energy efficiency retrofits on existing residential/commercial properties (i.e. property tax exemptions)
- Retrofit municipal facilities with energy efficiency and conservation measures
- Work with Denton Municipal Electric to develop a smart meter program
- Adopt energy efficient building codes
- Install renewable energy technologies on municipal facilities

Ecosystems and Open Space

- Allow more agriculture within City limits
- · Decrease public fees to use parks and lakes

Table 15: Ranking of Focus Areas

Focus Areas	Ranking
Water	1
Air Quality	2
Energy Conservation and Efficiency	3
Ecosystems and Open Space	4
Transportation	5
Community Involvement	6
Waste Management	7
GHG Management	8
Green Building	9
Green Business Programs	10
Purchasing	11

Water

Ban fluoride in City drinking water

Green Building and Sustainable Site Management

- Create restrictions on all new commercial developments to limit amount of parking or require permeable surfaces
- Require a minimum amount of trees per acre in new developments
- Adopt landscaping codes that increase the planting of vegetation requiring minimal watering
- Create a green building ordinance for commercial and residential construction
- Prevent sprawl and big box development

Community Involvement

- Develop a Sustainable Denton website and Facebook account
- Promote farmers markets and community gardens
- Sponsor a City of Denton Home Vegetable/Fruit Growers Association
- Post signs around the city to encourage sustainability practices
- Form an urban sustainability extension office
- Expand horticulture in schools

The majority of comments centered on sustainability education. Stakeholders recognize the need to educate the public on individual actions to advance sustainability in the community. Specifically, survey respondents indicated that the public needs more information on energy efficiency, alternative modes of transportation, and waste reduction.

Survey respondents also recognize that cost, convenience, and education are significant barriers to the adoption of green technologies. Green technologies must be economically viable and easy to understand and implement. According to one comment, sustainability is only achievable if the City "empower[s] community members to make changes that fit within their lifestyle and budget."

Next Steps

This survey provides the City with important feedback to guide the sustainability planning process. Strategies identified as important to stakeholders will be evaluated for cost, sustainability impact, and implementation and technical feasibility among other considerations.

The survey also revealed the importance of creating vehicles for ongoing dialogue, engagement, and collaboration about Denton's sustainability efforts. Many of the sustainability strategies generated from the survey are currently being implemented by the City (e.g. Sustainable Denton Facebook page, No Idle Policy for municipal fleet). Considering that an otherwise engaged public is unaware that many sustainability programs and policies exist, the need for increased public outreach, education, and marketing is apparent.

Continued public engagement and an increased focus on communication will be essential to the successful implementation of the plan. The City will continue to accept stakeholder input throughout the plan development process including strategy prioritization and identification, plan writing, and strategy implementation.

appendix c: Strategy Prioritization and Selection



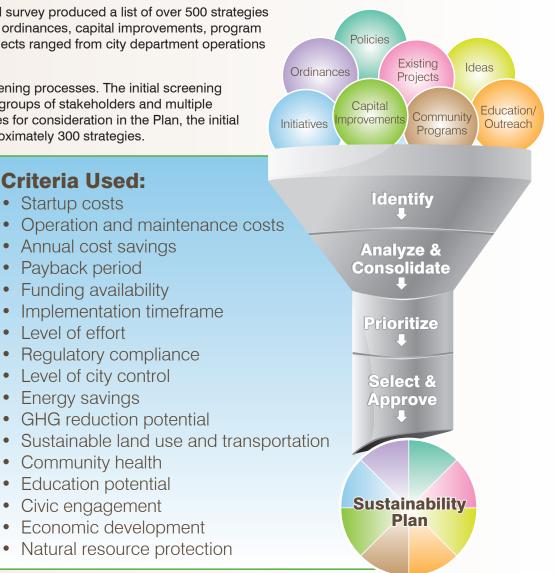
Ideas generated from the working groups, community meetings, and survey produced a list of over 500 strategies for consideration in the Plan. Proposed strategies included policies, ordinances, capital improvements, program development, and community initiatives. Types of programs and projects ranged from city department operations to large infrastructure projects and community education.

The proposed sustainability strategies underwent four separate screening processes. The initial screening process consolidated similar ideas and suggestions. Since different groups of stakeholders and multiple forums for public engagement generated many of the same strategies for consideration in the Plan, the initial screening was able to consolidate the list of 500+ strategies to approximately 300 strategies.

The second screening process filtered the list of 300+ strategies to into the following categories, resulting in approximately 90 strategies for consideration in the plan:

- Completed: current or past initiatives or suggestions that had in fact already been achieved or completed. For example, the City already requires bike racks for new development.
- Not Feasible: strategies are not feasible to implement whether politically, financially, or otherwise. For example, the suggestion to ban non-recyclable packaging including plastic bags is not legally feasible.
- Not applicable: strategies are not relevant for a sustainability plan. For example, the suggestion to eliminate daylight savings time is not a sustainability issue nor is it within municipal government control.
- Prioritized strategies: The 90+ strategies that fell into the "Prioritize" category continued on into the next screening process.

The third screening process incorporated direct feedback from the working groups (Partners and Interdepartmental Team staff). A deeper discussion on strategy applicability and feasibility along with the continued combination of strategies (e.g. one strategy was an action item of another strategy) consolidated the list further to approximately 60 strategies.



Finally, the remaining 60 strategies underwent analyses using a prioritization framework that was designed to serve as a decision-support tool. Feedback from the working groups was used to analyze and rank the strategies according to a variety of criteria, including financial, implementation, and sustainability considerations. These criteria were used to identify the sustainability strategies that are financially viable, able to be implemented in a reasonable timeframe, acceptable to the City, and offer cost savings and sustainability benefits.

The criteria were defined by performance metrics on a scale of one (1) to three (3), with three being a high/positive score and one being a low/negative score. For example, for the financial criterion "estimated strategy startup costs," a score of one is defined as a strategy that costs more than \$500,000. A score of two is defined as a strategy that costs \$50,000 to \$500,000, and a score of three is a strategy that costs less than \$50,000. The intent was that strategies with lower startup costs receive higher financial scores. The list of criteria and corresponding metrics used in the prioritization framework are included in the table below.

SUSTAINABILITY SELE	ECTION CRITERIA		
Financial Consi	derations		
ANALYSIS CRITERIA		PERFORMANCE METRIC	6
	Low (1)	Medium (2)	High (3)
Estimated strategy startup costs	>\$500k	\$50,000-\$500k	< \$50,000
Estimated ongoing operation and maintenance costs	>\$10,000	up to \$10,000	None
Estimated annual cost savings	<\$5,000	\$5,000-\$100,000	>\$100,000
Estimated payback period	>5 years	2-5 years	<2 years
External funding- are other funding sources available outside of municipal budget?	No other \$ available	Potential funds/ Partial \$	Yes - and secured
Funding in municipal budget- is this a budgeted item?	No	Budgeted for single year	Ongoing budgeted item
Implementation Co	onsiderations		
ANALYSIS CRITERIA	F	PERFORMANCE METRIC	S
	Low (1)	Medium (2)	High (3)
Implementation timeframe - time for strategy to be completed	Long - 5+	Medium -3-5 years	Short-term 0-3 years
Level of effort required and number of staff involved	Extensive	Moderate	None
Community Involvement- does the strategy involve the community and stakeholders?	No	Potential	Yes
Impacts to regulatory compliance / permitting requirements - does strategy require extensive additional permitting/NEPA review etc.	Adverse	None	Positive
Level of control/jurisdiction- does the city have control is strategy implementation?	Federal/Private (none)	State/ Regional	Local government controlled

Environmental and Social Considerations										
ANALYSIS CRITERIA	PERFORMANCE METRICS									
	Low (1)	Medium (2)	High (3)							
Energy savings/GHG reduction potential- does the strategy save energy and reduce GHG emissions?	No	Potential	Yes							
Sustainable land use and transportation (mixed use/TOD, alternative modes of transportation)- does the strategy promote sustainable land use and transportation?	No	Potential	Yes							
Natural resource protection (water, energy, ecosystems, products/materials- waste reduction)- does the strategy protect natural resources?	No	Potential	Yes							
Economic development (local sourcing/purchasing, green business development)- does the strategy promote economic development?	No	Potential	Yes							
Civic engagement - does the strategy promote civic participation?	No	Potential	Yes							
Education potential - does the strategy promote public education around sustainability?	No	Potential	Yes							
Community health (ozone, walkability, healthy food) - does the strategy improve public health?	No	Potential	Yes							

The selection criteria and corresponding scores were then used to prioritize the final list of strategies. The criteria were given equal weights to recognize the equal importance of financial, implementation, and sustainability criteria. Each strategy was given a score for each criterion of low, medium, or high. The scores were multiplied by the weight of each criterion, and the multiplied scores were added up for each strategy to provide a total score. The strategies were then ranked from highest to lowest score. For example, if a strategy received a score of two (2) for each criteria and all eighteen strategies were weighted a score of one (1), the total score is equivalent to 2 multiplied by 18, or 36. The 36 score would then be divided by the total potential score of 54 (The highest score possible (3) multiplied by 18), to receive a percent score, 67 percent in this example. This enabled each proposed strategy to receive a numerical score with a maximum of 100.

The prioritization matrix served as a high-level planning tool to guide decision-making. All 60 strategies are written up in the Plan at some level. Strategies that are a continuation of existing programs where extensive analysis has previously been conducted were described as successes to date and ongoing initiatives. The next 30 strategies that ranked highest were provided a full analysis and write-up in the Plan. Ten additional strategies are included to be considered for further analysis as funding permits and priorities changes. The intent is to focus on the strategies with the greatest potential for implementation (i.e., greatest impact, reasonable cost, etc.) without losing valuable feedback from the extensive public engagement process.

The prioritization matrix was a very useful tool in helping to identify the most feasible strategies for the Plan. There were however, some strategies that did not rank the highest in the prioritization matrix but were otherwise considered high priority for the City and provided a full write-up in the Plan. For example, the strategy to implement the Bicycle Master Plan scored low in the prioritization matrix largely because of high capital costs. However, the Bicycle Master Plan was included in the Plan because bicycle transportation is a high priority item for the City. A summary of the strategy prioritization sorted by focus area is provided in the table below.

	FINANCIAL		IMPLEMENTATION		SUSTAINABILITY		TOTAL	TOTAL		WRITE-UP IN
	SCORE	RANK	SCORE	RANK	SCORE	RANK	SCORE	RANK	PRIORITY	PLAN
Chapter 3 - Water									1	1
Minimize wastewater impacts on the environment	78%	29	93%	1	81%	28	84%	17		Full write-up
Promote and track water reuse program	78%	29	87%	11	86%	17	83%	19		Successes to Date/Ongoing Initiatives
Rewrite and adopt changes to the Drainage Design Criteria Manual	83%	16	67%	45	100%	1	83%	20		Full write-up
Maintain high quality drinking water	83%	16	87%	11	76%	40	82%	25		Full write-up
Exceed minimum regulatory compliance with TCEQ municipal stormwater permit	83%	16	73%	41	86%	17	81%	28		Full write-up
Enact programs / code that encourage reductions in average daily water use per capita	72%	37	83%	25	81%	28	79%	32		Successes to Date/Ongoing Initiatives
Complete watershed strategic plan, including restoration plan	56%	49	93%	1	86%	17	78%	37		Successes to Date/Ongoing Initiatives
Minimize sewage impacts to the environment from on-site septic facilities (OSSF)	67%	42	87%	11	81%	28	78%	38		Additional Strategies
Implement programs to reduce water loss, including water conservation and maintenance to existing water lines	67%	42	60%	51	71%	45	66%	53		Additional Strategies

	FINANCIAL SCORE	RANK	IMPLEMENTATION SCORE	RANK	SUSTAINABILITY SCORE	RANK	TOTAL SCORE	TOTAL RANK	PRIORITY	WRITE-UP IN PLAN
Chapter 3 - Water continued										
Ensure that water, wastewater & stormwater infrastructure is managed to meet current & future needs	50%	55	67%	45	81%	28	66%	54	HIGH	Additional Strategies
Chapter 4 - Air Quality & GHG Manage	ement									
Promote ozone action strategies	100%	1	93%	1	90%	7	95%	1		Successes to Date/Ongoing Initiatives
Adopt a municipal fleet anti-idling ordinance	92%	9	92%	6	81%	28	88%	6		Role into sustainable fleet activity. Add "continue to evaluate new emission reduction technologies and programs as additional strategy
Develop a GHG program for municipal operations	83%	16	92%	6	81%	28	85%	10		Full write-up
Develop and implement a sustainable municipal fleet program	72%	37	83%	25	81%	28	79%	32		Full write-up
Partner with NCTCOG	100%	1	80%	29	52%	54	77%	39		Successes to Date / Ongoin Initiatives (combined with 40 & 41)
Partner with ICLEI	100%	1	80%	29	52%	54	77%	39		Successes to Date/Ongoing Initiatives
Partner with NTCAC	100%	1	80%	29	52%	54	77%	39		Successes to Date/Ongoing Initiatives

	FINANCIAL SCORE	RANK	IMPLEMENTATION SCORE	RANK	SUSTAINABILITY SCORE	RANK	TOTAL SCORE	TOTAL RANK	PRIORITY	WRITE-UP IN PLAN
Chapter 5 - Energy Conservation and	Efficiency									
Expand commercial and industrial energy efficiency program	75%	33	92%	6	94%	6	87%	8		Full write-up
Adopt the most current building codes in a timely manner and continue to exceed current IECC minimum requirements	83%	16	83%	25	83%	26	83%	20		Full write-up
Consider developing a sustainable building rating program for new and existing facilities, including commercial and residential single family, multi-family, and neighborhood developments	75%	33	80%	29	81%	28	79%	35		Full write-up
Improve the energy efficiency of existing homes and buildings	72%	37	60%	51	90%	7	74%	44		Full write-up
Consider increasing renewable energy portfolio from Denton Municipal Electric as opportunities allow	56%	49	67%	45	90%	7	71%	49		Additional Strategies
Continue to research and pursue opportunities for methane capture, on-site power generation and other renewable technologies	56%	49	60%	51	86%	17	67%	52		Additional Strategies
Expand the DME Smart Meter program	56%	49	67%	45	71%	45	65%	55		Additional Strategies

	FINANCIAL SCORE	RANK	IMPLEMENTATION SCORE	RANK	SUSTAINABILITY SCORE	RANK	TOTAL SCORE	TOTAL RANK	PRIORITY	WRITE-UP IN PLAN
Chapter 5 - Energy Conservation and	Efficiency con	tinued								
Pursue district heating and cooling opportunities where technically and economically feasible	44%	56	47%	56	86%	17	59%	56		Additional Strategies
Promote/ advertise Green Sense Program for residential and commercial programs	94%	7	87%	11	71%	45	84%	15		Successes to Date/Ongoing Initiatives
Chapter 6 - Land Use and Open/Natur	al Space									
Promote infill incentives	83%	16	92%	6	90%	7	88%	5		Full write-up
Evaluate available affordable housing programs/ incentives and implement as feasible	89%	12	92%	6	83%	26	88%	7		Full write-up
Revise and implement Subchapter 17 of the Denton Development Code regarding Environmentally Sensitive Areas	94%	7	73%	41	90%	7	86%	9		Full write-up
Implement a program to cleanup, redevelop and reuse brownfield sites	92%	9	73%	41	90%	7	85%	13		Full write-up
Implement code changes so that landscape requirements are based on concept of multiple uses (stormwater, shading, drought tolerance)	67%	42	80%	29	95%	4	81%	30		Full write-up

	FINANCIAL SCORE	RANK	IMPLEMENTATION SCORE	RANK	SUSTAINABILITY SCORE	RANK	TOTAL SCORE	TOTAL RANK	PRIORITY	WRITE-UP IN PLAN
Chapter 6 - Land Use and Open/Natur	al Space conti	nued								
Promote mixed-use, compact development in targeted areas	73%	36	75%	40	90%	7	80%	31		Full write-up
Complete and implement tree code	83%	16	67%	45	81%	28	77%	42	HIGH	Full write-up
Improve park and open space opportunities within walking distance of residents' homes	72%	37	80%	29	67%	51	73%	45		Additional Strategies
Complete and implement Subchapter 22 and related code changes concerning gas well drilling and regulation	58%	46	67%	45	86%	17	70%	50		Full write-up
Chapter 7 - Transportation										
Promote alternative transportation strategies	100%	1	87%	11	90%	7	92%	2		Successes to Date/Ongoing Initiatives
Revise current parking standards to provide flexibility and reduce environmental impacts	78%	29	80%	29	71%	45	76%	43		Full write-up
Improve and promote pedestrian opportunities	58%	46	60%	51	100%	1	73%	46	HIGH	Full write-up
Implement the Bicycle Master Plan	58%	46	80%	29	76%	40	72%	47	HIGH	Full write-up
Encourage sustainable modes of transportation including carpooling, electric vehicle charging stations, & public transportation	53%	54	60%	51	100%	1	71%	48		Additional Strategies

	FINANCIAL SCORE	RANK	IMPLEMENTATION SCORE	RANK	SUSTAINABILITY SCORE	RANK	TOTAL SCORE	TOTAL RANK	PRIORITY	WRITE-UP IN PLAN
Chapter 7 - Transportation continued										
Evaluate traffic signalization to improve safety and mobility and implement as funding allows	56%	49	80%	29	67%	51	67%	51		Additional Strategies
Chapter 8 - Community Education and	l Involvement									
Create a Sustainability Advisory Council	89%	12	87%	11	90%	7	89%	4		Full write-up
Continue to promote participation in national and local environmental events	92%	9	87%	11	76%	40	85%	14		Successes to Date/Ongoing Initiatives
Develop a section in the Chamber of Commerce newsletter to highlight sustainable businesses	89%	12	87%	11	71%	45	82%	23		Full write-up
Create a green business program to identify and recognize sustainable businesses	78%	29	87%	11	81%	28	82%	26		Full write-up
Create a sustainability website for all ages, including interactive coloring pages for kids and tips for adults	89%	12	87%	11	67%	51	81%	29		Successes to Date/Ongoing Initiatives
Create a Sustainability Seminar series for adults and children	83%	16	80%	29	71%	45	78%	36		Successes to Date/Ongoing Initiatives

							_			
	FINANCIAL SCORE	RANK	IMPLEMENTATION SCORE	RANK	SUSTAINABILITY SCORE	RANK	TOTAL SCORE	TOTAL RANK	PRIORITY	WRITE-UP IN PLAN
Chapter 9 - Material Resources										
Offer pharmaceutical disposal events and permanent kiosk	83%	16	87%	11	86%	17	85%	11		Successes to Date/Ongoing Initiatives
Promote clean-up events	80%	28	87%	11	86%	17	84%	16		Full write-up
Promote and track home chemical collection participation	75%	33	80%	29	95%	4	83%	18		Successes to Date/Ongoing Initiatives
Establish formal environmentally preferred purchasing policy	72%	37	93%	1	81%	28	82%	24		Full write-up
Compost municipal yard waste and sludge	83%	16	83%	25	76%	40	81%	27		Successes to Date/Ongoing Initiatives
Divert solid waste from landfill through recycling	67%	42	93%	1	76%	40	79%	34		Full write-up
Chapter 9 - Material Resources										
Encourage community gardens within city limits	100%	1	87%	11	81%	28	89%	3		Full write-up
Increase number of vendors participating at farmer's markets and crafts fairs in the community	83%	16	87%	11	86%	17	85%	11		Full write-up
Evaluate opportunities to increase access and availability of local food including backyard urban gardens, backyard urban chickens, and food cooperatives	83%	16	73%	41	90%	7	82%	22		Full write-up

Acknowledgements



This project receives funding from the U.S. Department of Energy's Energy Efficiency and Conservation Block Grant Program, which is helping local communities to develop, promote and implement energy efficiency and renewable energy projects. More information about the Energy Efficiency and Conservation Block Grant Program is available at: www.eere.energy.gov/wip/eecbg.html.



CDM Smith was contracted by the City of Denton to assist in the preparation of this sustainability plan and development of the sustainability implementation and tracking tool. CDM Smith provides lasting and integrated solutions in water, environment, transportation, energy and facilities to public and private clients worldwide. As a full-service consulting, engineering, construction and operations firm, we deliver exceptional client service, quality results and enduring value across the entire project life cycle. CDM Smith is committed to continually improving environmental value, quality of life, and economic prosperity—for the firm, our clients, and the communities in which we live and work.



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John Denver



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