# City of Knoxville
# Energy & Sustainability Initiative

CITY OF KNOXVILLE

## 2017 Work Plan & Emissions Inventory Update

# Table of Contents


INTRODUCTION..... Page 3

COMMUNITY ENGAGEMENT..... Page 4

ENERGY..... Page 6

GOODS AND SERVICES..... Page 8

ENERGY & EMISSIONS INVENTORY..... Page 10

SUSTAINABLE LANDSCAPES ..... Page 12

INFRASTRUCTURE..... Page 14

TRANSPORTATION..... Page 16

SUSTAINABLE GROWTH..... Page 18



**Photo Credits:**

**Cover photo provided by Visit Knoxville**
Photo of LED lightbulb giveaway on page 4 provided by Knoxville-Knox County Community Action Committee. Community outreach photo on page 5 provided by SEEED. Photo of gardener on page 12 provided by Abbey Fields. Photo of quarry on page 13 provided by Legacy Parks Foundation. Photo of permeable pavement on page 14 provided by Adam Taylor Gash. Community bike ride photo and photo of Olli bus on page 17 provided by Jim Kimble and Inside of Knoxville, respectively. All other photos provided by City of Knoxville

# Introduction

Since 2007, the City of Knoxville's Energy & Sustainability Initiative has helped make Knoxville a greener, more sustainable city – one where the economy, environment, and community can thrive today and in the future.

The Knoxville community can be proud of the progress it's made to advance sustainability over the last ten years. City operations are leaner, greener, and saving money while reducing impact on the environment. We have more and better infrastructure for folks who bike, walk, or use public transit to get around our city. As a community, we've dramatically increased renewable energy capacity and invested in energy efficiency projects for our homes and businesses. We've increased the amount of waste that is recycled or mulched instead of sent to a landfill. Jobs in energy and advanced technology sectors are strengthening our region's economy and long-term competitiveness.

This progress means that greenhouse gas emissions are lower in the midst of a growing economy and improving quality of life for our residents. Within City operations, we've reduced greenhouse gas emissions by 15% since 2005. At the community level, greenhouse gas emissions are down 11% from 2005 levels, even while population, economic activity, and property values have increased over the last decade. As we move closer to our goal of reducing municipal- and community-level emissions each 20% by 2020 relative to 2005 levels, our past experience shows that when we advance sustainability, we help make Knoxville an even greater city for local residents, businesses, and visitors.

The Energy & Sustainability Work Plan summarizes the City's strategy for achieving our Sustainability goals. First published in 2011, the Work Plan reflects extensive community input and originally outlined 35 strategic action items through which the City would improve the sustainability of municipal operations and the larger Knoxville community. Today, many of those action items are complete or firmly underway. Designed as both a retrospective report card and a forward-looking planning document, this 2017 Energy and Sustainability Work Plan Update summarizes the City's accomplishments in implementing these projects and identifies next steps for those currently in progress.

*"As Mayor, I'm entrusted with an opportunity and an obligation to leave Knoxville a better place than I found it–a stronger, safer, healthier, and more equitable city that can thrive over the long term. For me, that responsibility includes protecting the environment and addressing climate change, while also strengthening the economy and improving quality of life for local residents.*

*As highlighted in this Work Plan, our Sustainability efforts have succeeded in reducing greenhouse gas emissions while creating many other benefits for Knoxville residents. We can and will continue this progress to make Knoxville an even more sustainable and better home for our citizens and local businesses."* - **Mayor Madeline Rogero**

# Community Engagement

When the City builds bike lanes, improves the efficiency of buildings, or promotes community gardens, we invest in the physical, economic, social, and cultural well-being of the people who live here. The Office of Sustainability aspires to actively listen to ideas and suggestions from residents and businesses for how to improve the environmental, social, and economic health of Knoxville. At the same time, we seek to encourage and celebrate the efforts of the many individuals, businesses, and organizations who are taking action alongside us to advance sustainability projects that benefit our citizens.

Embedded in the ethos of sustainability is a commitment to equity, the principle that all people have fair access to opportunities to improve quality of life, regardless of where you live, the color of your skin, or how much money you make. The Office of Sustainability works to intentionally weave this guiding principle of equity into our work—it influences how we engage with a diversity of resident, and how we design programs to address needs that may vary between neighborhoods.

## In Depth Look: *Savings in the House* Campaign

*Savings in the House* is a project of the Smarter Cities Partnership, which is led by the City of Knoxville (See p. 7). *Savings in the House* is a coordinated, community-wide campaign to teach simple, low-cost ways for Knoxville residents to save money on their utility bill and increase their in-home comfort. Since its launch in 2015, *Savings in the House* has helped educate thousands of residents through workshops and other local outreach efforts led by community partners.

Learn more about *Savings in the House* and how to save money on your bill at savingsinthehouse.com.

# Work Plan

| | | |
|---|---|---|
| **1. Energy & Sustainability Implementation Advisory Board** | Complete | Sustainability staff meets regularly with a variety of municipal and local partners to implement initiatives. The eight-member appointed advisory board formed in May 2013 to help jump-start Work Plan implementation. |
| **2. "How - To" Guide to Sustainability** | Complete | To access the Citizen's How-to Guide to Sustainability, learn more about the City's initiatives, and find other resources about sustainability in the Knoxville community, visit: knoxvilletn.gov/sustainability. |
| **3. Information Sharing: Building Community Support and Political Will** | Active | Efforts to share information and engage stakeholders are responsive to needs of the community. The Citizen's How-to Guide to Sustainability and *Savings in the House* education campaigns both provide information to residents about how to incorporate sustainability principles at home. The Office of Sustainability website provides information about City projects and programs. |
| **4. Information Gathering: Identifying Community Concerns** | Active | The need to gather information from our residents will always be an active priority. Office of Sustainability staff participate in efforts such as the Smarter Cities Partnership and the Food Policy Council and present regularly to community groups. Interested in a presentation? E-mail us at sustainability@knoxvilletn.gov. |
| **5. Neighborhood & Workplace Engagement Programs** | Active | Neighborhoods and workplaces are foundations for community engagement. The City has partnered with a local community group, SEEED, to provide door-to-door outreach to directly engage residents in sustainability actions such as energy efficiency and recycling. |

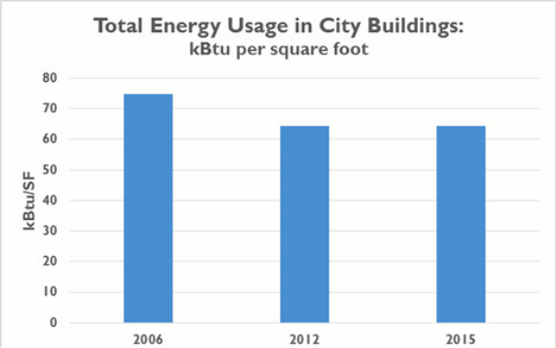
# Energy

Wasting energy means wasting money. Because much of our energy comes from fossil fuels, wasting energy also creates unnecessary negative impact on the environment. To meet our sustainability goals and avoid unnecessary energy expenditures, the City has aggressively pursued energy efficiency projects and supported deployment of renewable energy systems.

Past initiatives such as the Solar America Cities program, our Energy Services Performance Contract, and energy efficiency projects funded by Energy Efficiency & Conservation Block Grants helped the City jump-start efforts to promote efficient energy consumption in the community. The Office of Sustainability continues to champion efforts to reduce energy waste in city facilities, advance clean energy, and promote policies and programs that improve the efficiency of local buildings. A key priority is working through the Smarter Cities Partnership to improve the comfort, quality, and affordability of Knoxville homes through energy efficiency.

## Progress Highlights

Energy consumption across City facilities has fallen 14% per square foot since 2005. In 2015, City-owned buildings were 15.5% below the national average for energy consumed.




Within the community, Knoxville residents and businesses are also saving energy through programs delivered by TVA and KUB. In 2015, over 1,200 Knoxville-area homes saved approximately 1.4 GWh of electricity through the TVA eScore program, which supports residential efficiency investments; local businesses saved nearly 13 GWh of electricity through TVA's Energy Right Solutions® incentive program.

Compared to 2005, total residential, commercial, and industrial energy use in Knoxville is down 17%, even while real property values and local sales tax revenue, which are important indicators of a healthy economy, have increased 43% and 18%, respectively.

### In Depth Look: Knoxville Extreme Energy Makeover

Launched in August 2015, the Knoxville Extreme Energy Makeover program (KEEM) transformed the landscape for energy efficiency in Knoxville. In less than two years, KEEM provided whole-home, direct-install energy upgrades to nearly 1,300 lower-income families and educated more than 1,700 residents on how to take control of their utility bills through energy-saving habits.

Funded by TVA, KEEM was implemented by the Knoxville-Knox County Community Action Committee (CAC) with support from the City of Knoxville, Knoxville Utilities Board, and the Alliance to Save Energy. In total, the upgrades provided by KEEM are expected to save over 6,000,000 kWh each year—with average utility cost savings to families approaching $500 annually. These annual energy savings create greenhouse gas emissions reductions equivalent to taking 900 cars off the road.

KEEM
KNOXVILLE EXTREME ENERGY MAKEOVER

# Work Plan

| | | |
|---|---|---|
| **1. Building Code Updates** | Complete | The City of Knoxville currently enforces the 2012 International Energy Conservation Code. The City is evaluating future code updates to prepare for the next code update. |
| **2. Community Energy and Water Efficiency Programs** | Active | Led by the City of Knoxville in response to a 2013 IBM Smarter Cities Challenge grant, the Knoxville Smarter Cities Partnership is a coalition of 20+ local partners seeking to improve the comfort, quality, and affordability of Knoxville homes through energy efficiency. The Partnership developed the *Savings in the House* education campaign and the Knoxville Extreme Energy Makeover program to help families take control of utility bills., and continues to work together to expand and improve local programs. |
| **3. Energy Management** | Active | The Office of Sustainability tracks energy usage at City facilities using EPA Portfolio Manager and Weidt Group's B3 Benchmarking software. Brian Blackmon, Sustainability Project Manager, achieved Professional Energy Management certification in 2016 and works closely with facilities staff to improve operational efficiency. |
| **4. Ratify Municipal Energy Efficiency Building Policy** | Active | The City considers energy efficiency in all municipal new construction and major retrofit projects. **Next step:** Formalize municipal green building or energy efficiency policy for new and retrofit City buildings. |
| **5. Sustainable Funding for Residential Energy Retrofits** | Active | In 2015, the City helped KUB launch Round It Up, a pilot program that has raised over $1.8 million to help weatherize homes for low income families. Smarter Cities Partners continue to seek additional, sustainable opportunities to help Knoxville families finance energy upgrades. |
| **6. Utility Partnerships to Advance Efficiency** | Active | The City works closely with KUB to advance shared goals for community efficiency, to improve customer understanding of energy and water consumption, and to increase local energy efficiency investments. Sustainability staff sit on TVA's Energy Efficiency Information Exchange stakeholder group. |
| **7. LED Streetlight Retrofit** | Active | In 2017, City contracted with Siemens to convert approximately 30,000 HPS streetlights to modern light emitting diode (LED) technology. This project is expected to achieve over $2 million per year in reduced energy, maintenance, and operating costs. Learn more at: knoxvilletn.gov/led. |

# Goods & Services

Working with Knox County, the Public Building Authority, and other community partners, the City has strengthened its commitment of environmental best practices in how we purchase goods and services and manage waste streams in the community.

In 2017 the City implemented a curbside "Contents of Cart" garbage program, meaning all household trash must fit inside the City-issued garbage cart. This change has led to cleaner and neater neighborhoods and increased participation in the City's curbside recycling program. In the past year, more than 3,800 recycling carts have been delivered to new participants.

## Progress Highlights

As a community over the last 10 years, Knoxville has significantly increased the amount of waste diverted from Class I landfills. The City diverts more than 50% of its waste, with approximately 30% of the City's waste stream recycled or mulched. Much of this progress can be attributed to the more than 26,00 households opting to participate in single-stream recycling collection which makes recycling easy by eliminating the need to separately sort paper, plastics, and metal products.

In 2017, the City's Household Hazardous Waste Facility received a $535,305 grant from the Tennessee Department of Environmental Conservation for capital improvements to the current facility, additional staffing, and a mobile collection unit. The goal is to increase accessibility of safe and responsible disposal of household hazardous wastes to the surrounding areas.

### In Depth Look: Separated Glass Recycling

Beginning in 2017, the City stopped accepting glass in single-stream recycling collection—a change that improves the sustainability of the recycling system. When glass is disposed of in single-stream containers, it often breaks into tiny shards that can't be sold in recycling markets and that contaminate other recycling materials, like paper.

Single stream glass collection means that much of the glass intended for recycling is sent to the landfill instead. To make sure the glass ends up recycled—not landfilled—Knoxville residents should take glass containers to any of the City's recycling centers, where it can be separately collected. The City is exploring options to increase drop-off locations for glass recycling.

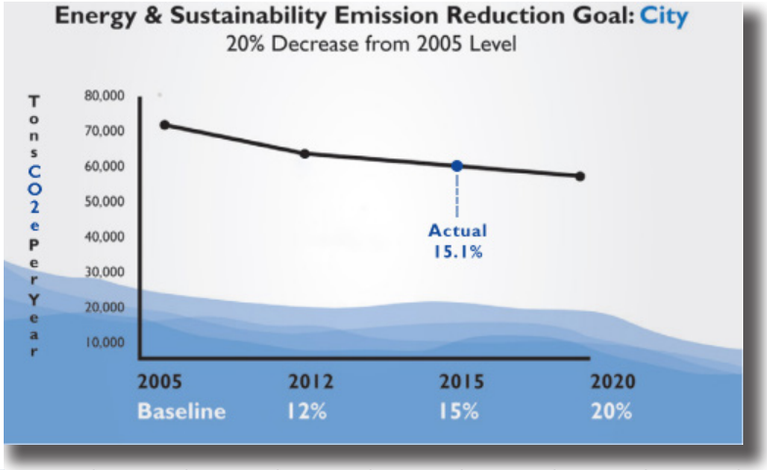
# Work Plan

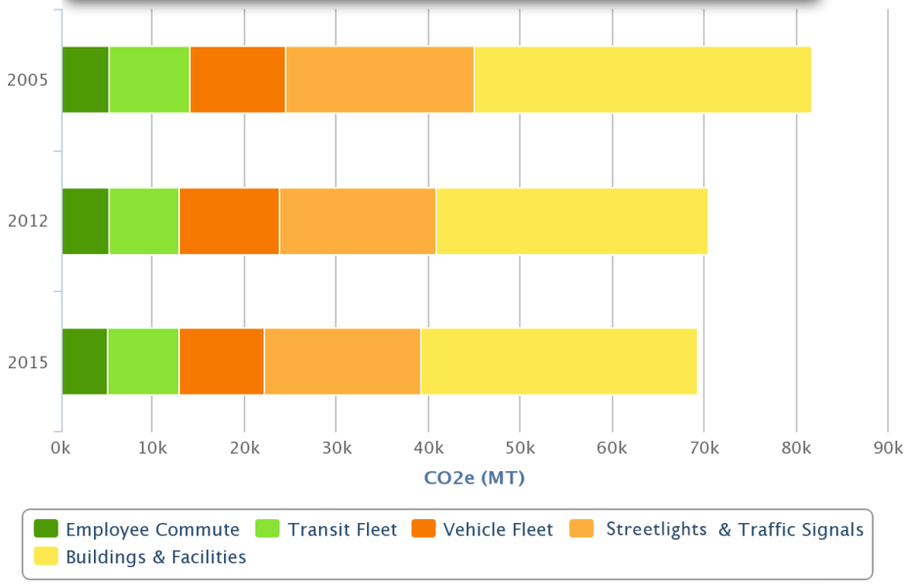
| | | |
|---|---|---|
| **1. Sustainable Purchasing Best Practices** | Complete | The Green Purchasing Guide is available online to City departments, and guidelines are integrated in the official City Procurement Policies & Procedures. Solicitation notices encourage the use of environmentally-preferable products and services. Sustainability staff participate in the City's annual business networking event to brand City bids as promoting |
| **2. Elimination of Unnecessary Disposables** | Complete | Mayor Rogero adopted a Waste Prevention Policy for City administration in 2012. |
| **3. Downtown Permanent Recycling** | Complete | Single-stream recycling bins were placed downtown in 2011 for residents, businesses, and pedestrians. A new City recycling truck will facilitate collection downtown and at City parks. |
| **4. Expand Curbside Recycling & Increase Options for Waste Diversion** | Complete | In January 2017, the City modernized its Solid Waste collection programs by providing standardized garbage carts. The new carts allow for weekly, semi-automated collection, saving the City approximately $2 million each year. Concurrently, the City expanded its recycling program and now has a record 26,000+ households participating in the opt-in recycling program. |
| **5. Commercial Single Stream Recycling Downtown** | Active | The City encourages downtown commercial businesses to use nearby public recycling drop-off centers. The primary constraint to expansion of commercial collection facilities is the limited amount of space available for recycling storage between collections. |
| **6. Recycling at City Facilities** | Active | City facilities managed by PBA are outfitted with single stream recycling options. Varying levels of recycling options are available at other City facilities. **Next step:** Expand employee education on recycling options. Also, expand recycling options at City facilities to include single-stream recycling. |
| **7. Electronic Waste Recycling** | Active | The City collects e-waste at waste collection centers and through special events; all e-waste collected by the City is properly disposed of and processed. City and Knox County Solid Waste Offices maintain knoxecycles.org, a comprehensive web resource for local e-waste recycling. |
| **8. Event Recycling in Public Spaces** | Active | Special events at City facilities are provided clear-stream recycling containers to promote waste diversion. **Next step:** Increase event planner and attendee understanding of recycling options in order to increase recycling participation at special events. |

# Energy & Emissions Inventory Update

The City of Knoxville first began measuring municipal and community energy consumption and related greenhouse gas emissions in 2007. The original Energy & Emissions Inventory was based on 2005 data and allowed the City to understand municipal utility expenditures and identify opportunities to save money and reduce environmental impact. This inventory update, based on 2015 data, quantifies the reductions achieved in energy consumption and greenhouse gas emissions at both the municipal and community levels.

Municipal emissions are driven largely by City buildings and streetlights which make up a combined 68% of the City's emissions. The City has improved its building portfolio by investing in energy efficiency measures and reduced its energy consumption by approximately 28,484 kBtu (15%) over the past decade. Emissions related to City buildings are down 6,500 MT (18%) relative to 2005. The City continues to improve its building portfolio through operating improvements and replacement of older buildings with newer, more efficient facilities like the Public Work Service Center.




## In Depth Look: Public Works Service Center

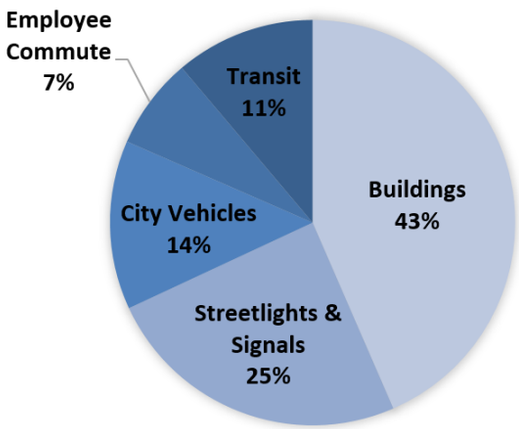
The City of Knoxville's Public Works Service Center, completed September 2016, is a symbol of the City's commitment to environmental stewardship.

On track to receive LEED Silver Certification, the 45,500+ square foot building characterizes innovative environmental design and showcases effective use of natural resources while serving multiple City functions. The building includes floor-to-ceiling windows, a geothermal heating and cooling system, motion sensor lights and a green roof, among other features.

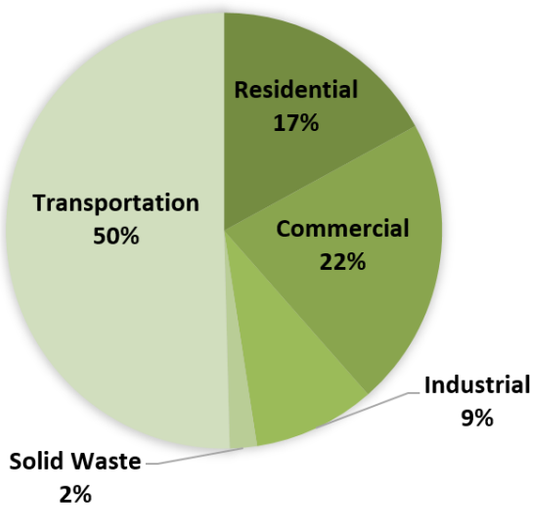
### What is $CO_2e$?

Different greenhouse gases—like carbon dioxide ($CO_2$), methane, and nitrous oxide—warm the atmosphere at different rates. $CO_2e$ is a common unit that accounts for the atmospheric impact of each gas relative to that of carbon dioxide and allows all greenhouse gas emission to be quantified using a single number.

## 2015 MUNICIPAL EMISSIONS

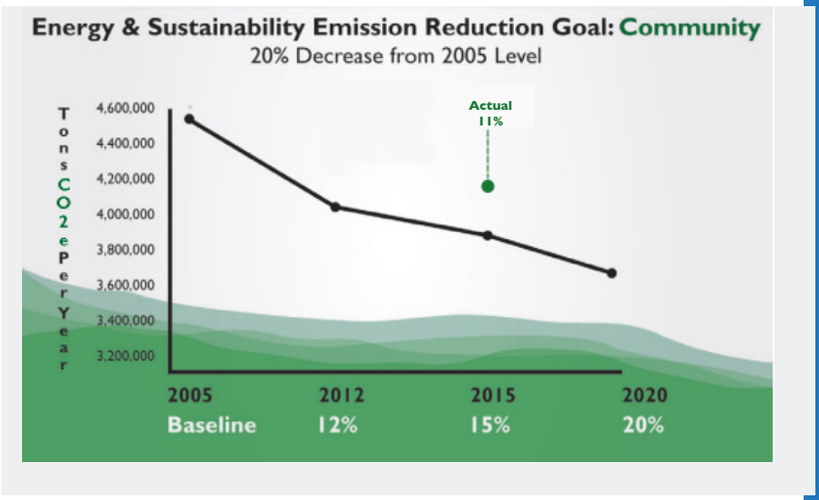



## 2015 COMMUNITY EMISSIONS




Community emissions are affected by a number of factors including regional transportation patterns, energy systems, and individual everyday habits. Since 2005, Community-level emissions are down 11% despite population growth, significant investment throughout the City, and increased local traffic. Reduced energy use and cleaner transportation technologies have driven this progress. Significantly, TVA $CO_2$ emissions have fallen 34% since 2005 due to use of cleaner sources of electricity generation.

Locally, KUB and TVA support renewable energy generation and local solar capacity that doubled in the last two years. There are now more than 120 customer-owned solar systems interconnected to KUB's electric system, with a total capacity of over 7MW. Solar capacity on local government properties (owned by the City, Knox County, and KUB) totals approximately 5.5 MW.




### In Depth Look: Knoxville Utilities Board

The Knoxville Utilities Board (KUB) is an important partner in local efforts to make Knoxville a more sustainable community. With a long history of prioritizing environmental responsibility, KUB supports energy efficiency and renewable energy investments by their customers and has made significant investments in their own operations to help protect the environment. In 2017, KUB opened a new compressed natural gas fueling station, the first station in the City to be open to the public. KUB's leadership in providing this public fueling station will allow local and out-of-town drivers better access to CNG fuel.

# Sustainable Landscapes

The Knoxville and East Tennessee region is known for its rich agricultural history and scenic open space. Knoxville is home to the nationally distinguished Market Square Farmers' Market and the first Food Policy Council in the nation, and our community has rapidly emerged as a leader in outdoor recreation and tourism.

By embedding sustainability principles into how we use our land and how we care for it, the City is protecting the health of our natural systems, increasing access to healthy food and places, and creating economic opportunities.

## Progress Highlights

The City's Urban Forestry Division planted over 3,400 trees on public land and rights-of-way over the last five years and is thorough in selecting diverse species and avoiding over-planting trees if resources are not available to maintain and water them. Tree coverage within the City of Knoxville has remained stable over the last 20 years at approximately 40%, which is nearly twice the average of other cities with similar populations.

The City has several on-going efforts to control invasive species, including the use of goats to control kudzu and other invasive species throughout the City. The City contracts for the goat labor, which has proven to be an effective, non-toxic way to eliminate unwanted vegetation.

### In Depth Look: Trees Knoxville

Trees Knoxville is an organization that works to preserve existing trees, as well as increase the presence of trees in Knox County. It was founded in 2016, as a partner of the City's Urban Forestry program. Knoxville's tree population provides many benefits to the community, including reduced energy consumption, reduced water pollution, temperature moderation, and improved air quality.

The first event by Trees Knoxville was held in December 2016, when volunteers planted 54 trees in an East Knoxville subdivision. That month, Trees Knoxville also gave away 300 trees to people in the community, and donated the remaining 200 trees to Knox County Schools.

Learn more at treesknoxville.org.

# Work Plan

| | | |
|---|---|---|
| **1. Urban Agriculture Zoning Updates** | Complete | In 2015, the City updated its zoning code to remove barriers and better accommodate urban agriculture practices, including community gardens, market gardens, and seasonal produce sales. |
| **2. Encourage Sustainable Home Landscaping** | Active | The City's Urban Forestry Division helps homeowners and businesses understand how to properly care for trees on private property. Urban Forestry provides information about how to protect backyard wildlife, including recommended planting lists. More information is available at knoxvilletn.gov/trees. |
| **3. Promote Community Gardens** | Active | The City is developing a pilot program for allowing community gardens on City-owned properties. An open procurement process will be used to select qualified groups for temporary license agreements to garden on City land. Residents can connect with local community gardens using this map: knoxvilletn.gov/urbanagriculture/. |
| **4. Increase Tree Canopy with Sustainable Plantings** | Active | The City's Urban Forestry Division manages more than 17,000 trees in City rights-of-way and other publicly-owned lands. The Division seeks to enhance Knoxville's tree canopy through the City's tree management program and through partnerships, community education, and other efforts that promote equitable and sustainable plantings on public and private land. |

## In Depth Look: Resilience Through Land Conservation

Knoxville's Urban Wilderness is a major recreational, cultural, and natural infrastructure asset. Encompassing more than 1,000 acres of forested land that includes Knoxville's downtown riverfront, the Urban Wilderness reflects successful efforts by many partners to preserve some of Knoxville's finest recreational and aesthetic assets: parks, trails, a nature education center, a wildlife management area, Civil War sites, incredible views, and unparalleled natural features. The Urban Wilderness also helps protect the many benefits provided by forests and natural open spaces, such as clean water, wildlife habitat, soil stabilization, and urban cooling. These natural resources help increase local resilience to strong rainfall and heat events, which are expected to become more intense and frequent as the climate changes.

# Infrastructure

The City promotes sustainability in the community by embedding support for low-impact design and alternative transportation options into public infrastructure. This section addresses stronger integration of sustainability principles into actions like street design, utility infrastructure planning, and maintenance of City infrastructure. City Engineering, for example, regularly evaluates the feasibility of adding bike lanes and sidewalks to City road projects and looks for opportunities to utilize green infrastructure to manage stormwater. Going forward, the Office of Sustainability will continue to integrate sustainability best practices into infrastructure development, including how to address expected climate changes in infrastructure investment and management plans.

## Progress Highlights

Since 2012, the City has added 13.3 new miles of designated bike lanes, including 2.4 miles of buffered bike lanes. Increasingly, the City is painting bike lanes green in order increase safety and awareness for bicycle commuting in Knoxville; six key intersections will be painted by the end of 2017.

Each year the City replaces and repairs existing sidewalks and adds new sidewalks through the City; in 2016, nearly 20,000 linear feet of sidewalk was replaced or added. The 2017 Capital Budget quadrupled the budget for new sidewalk construction with an additional $2.2 million over previous years.

Dozens of water quality and green infrastructure projects are underway or have been installed in recent years on both public and private property. Examples of public projects include wetland construction at the Fountain City Lake, the permeable parking lot at the City's new Public Works Service Center, and infiltration islands on Dale Avenue near the Sansom Sports Complex.

### In Depth Look: Bicycle Facilities Plan

The Knoxville Bicycle Facilities Plan was developed in 2015 through a collaboration between the City and Knoxville's Regional Transportation Planning Organization (TPO). It was created to design biking facilities that are safe and convenient, and to make biking within the city a more desirable form of transportation. The City is currently making improvements to existing bike infrastructure, including increasing the visibility of bike lanes and increasing the availability of high quality bicycle parking.

Learn more at knoxvilletn.gov/bikeplan/.

# Work Plan

| | | |
|---|---|---|
| **1. Multimodal Accommodation in Rights-of-Way** | Complete | In 2014, City Council approved a Complete Streets Ordinance as part of the City's commitment to advancing safe streets for all modes. Under this policy, the City considers users of all transportation modes when designing road projects. |
| **2. Utility Coordination in Rights-of-Way** | Active | City Engineering and KUB meet monthly to coordinate projects, including an annual assessment to avoid unnecessary costs and delays. Recent City-Utility streetscape collaborations on Cumberland Avenue, Blount and Sevier Avenues, and North Central Street demonstrate how sustainable design can be successfully integrated into public projects. |
| **3. Promote Utilization of Green Infrastructure for Stormwater Management** | Active | The City's Stormwater Engineering division encourages the use of green infrastructure to meet stormwater requirements in many new developments. Staff regularly work with property owners and designers to integrate low-impact and natural stormwater management techniques into both public and private projects. |
| **4. Strengthen Local Climate Resiliency** | Active | The City's infrastructure and disaster plans need to be able to handle future conditions. The City has worked closely with researchers at Oak Ridge National Laboratory to understand specifically how climate change will impact Knoxville. This forward-looking data is being integrated into city-wide planning efforts, including planning to mitigate local hazards. |
| **5. Stormwater Management Strategy Updates** | Evaluation Phase | The Engineering Department manages the City's compliance with EPA stormwater regulations, which encourage on-site capture of rain runoff to avoid pollution of waterways. A recent collaboration with Oak Ridge National Laboratory allows the City to use a sophisticated modeling tool to identify ideal locations for green infrastructure installations based on a variety of factors such as watershed, land use, and climate data. |

# Transportation

The City promotes the use of public transit and has improved and expanded infrastructure for bikes, pedestrians, and other alternatives to single-occupancy vehicles. This section identifies actions to offer Knoxville's residents and workers more options for getting where they need to go. We are working to further diversify the City's fleet and ensure that we're offering safer options for those who want to reduce their driving footprint. The City is also actively exploring options for modernizing transportation infrastructure in order to accommodate new technologies and improve local transportation systems.

## Progress Highlights

Combined emissions from the City's Fleet and KAT vehicles are down 11% relative to 2005. By adding 13 hybrids to its fleet over the past decade, KAT has increased average fuel economy and reduced emissions. KAT service areas have also been expanded, accommodating a 10% increase in ridership since 2012.

The City's Fleet Department has replaced a portion of its fleet with hybrid vehicles, invested in natural gas-fueled trucks, and has replaced 19 gas-burning mowers with cleaner-burning propane.

## In Depth Look: Knoxville Area Transit (KAT)

KAT, which provides about 3 million passenger trips each year, is an integral part of the City's strategy to advance smart and sustainable transportation. KAT ridership is up approximately 10% since 2012, boosted in part by extended service on nights and weekends and frequency increases made over the past three years.

Currently in development the Accelerated Bus Corridor (ABC) project along North Broadway between downtown and Fountain City will use interconnected "smart" traffic control signals to coordinate bus movements with other motorists in real time, and synchronize signals to allow the buses to stay on schedule. This project will improve traffic flow and enhance the transit experience, while also reducing vehicle emissions.

In 2017, thanks in part to its focus on sustainability, innovation, and efficiency, KAT was recognized by the American Public Transportation Association as North America's Outstanding Public Transportation System for small systems.

# Work Plan

| | | |
|---|---|---|
| **1. City Staff Dedication to Promote Alternative Transit** | Complete | The City hired a full-time Alternative Transportation Engineer in 2013 to advance transportation infrastructure for bicyclists, pedestrians, and transit users. |
| **2. Develop a City Green Fleet Policy** | Complete | A City Green Fleet Policy was developed in May 2011. Fleet purchases are evaluated for fuel economy and sized for the job. |
| **3. City Employee Alternative Transportation Benefits** | Complete | In order to increase commuting options, the City launched a new program offering free bus passes to its employees. In 2015, the City was designated a "Best Workplaces for Commuters" by the EPA and the Department of Transportation. |
| **4. City and Community Anti-Idling Policy Implementation** | Active | The City has adopted an anti-idling policy for City vehicles, and an automatic vehicle location system helps the City Fleet department track and avoid unnecessary idling. **Next step:** Develop resources to educate the community on the environmental, economic, and social impacts of vehicle idling. |
| **5. Bike Sharing** | Active | The City contracted with Zagster, Inc. to provide bike sharing services on City-owned property. Privately owned and operated, the new bike share program will provide accessible, short term bike rental options to residents and visitors in downtown and surrounding locations. |
| **6. Promoting Smart & Sustainable Transportation** | New | The City is actively working to modernize transportation infrastructure in the City in order to accommodate new technologies and improve the efficiency and connectedness of local systems. Projects such as the Accelerated Bus Corridor (ABC), the introduction of Olli (a 3D printed autonomous shuttle bus), and the installation of an Advanced Traffic Management System utilize cutting-edge technology to reduce congestion, thereby improving commutes and reducing emissions. |

# Sustainable Growth

During the past 10 to 15 years, the City of Knoxville has experienced significant redevelopment and new development downtown and in many nearby neighborhoods. This economic growth is also sustainable growth: it leverages existing infrastructure, uses land efficiently, and expands opportunities for walking, biking, and taking transit between areas previously connected primarily by cars. Opportunity exists to extend this momentum beyond downtown—to spark sustainable redevelopment of the City's corridors and neighborhoods while protecting the characteristics that define these areas and provide for a sense of place in the community. Working with many partners and stakeholders, the City seeks to catalyze these opportunities and ensure that we promote local values and allow for social and economic vitality over the long-term.

## Progress Highlights

In 2017, the City of Knoxville, working through the Metropolitan Planning Commission (MPC), kicked off Recode Knoxville, a multi-year process to provide comprehensive updates to the City's zoning ordinance. This update, which will incorporate robust public feedback, is rooted in the City's desire to promote development and redevelopment in a manner that uses resources efficiently and builds a strong, sustainable, walkable community. Through these guiding principles, this update will chart a path for decades of sustainable, vibrant growth in our community.

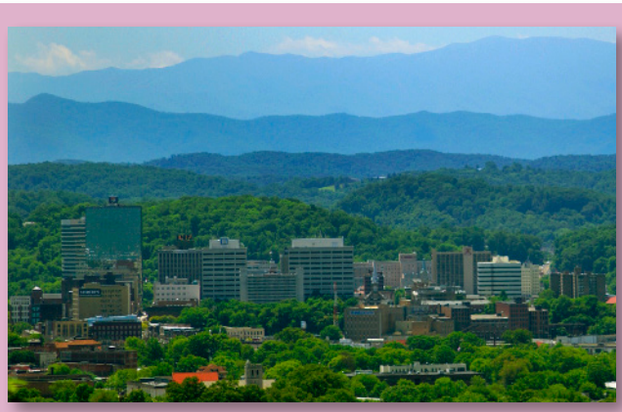
### In Depth Look: Recode Knoxville

Knoxville's zoning ordinance defines how new development and redevelopment happens in the City of Knoxville. Knoxville's zoning code hasn't undergone a thorough review in nearly 60 years, and emphasizes single-use zoning that requires tracts to be segregated by use. For example, it restricts the type of "mixed-use" buildings commonly seen downtown, where residential units are located above a store, restaurant, or office. That model leads to inefficient use of resources and sprawl. The Recode Knoxville project will adopt modern standards to help shape the City for the next 20 to 40 years. The new code will also help protect and enhance Knoxville's sense of place, allowing residents to live, work, shop, and eat within the same neighborhood.

Learn more at recodeknoxville.com.

# Work Plan

| | | |
|---|---|---|
| **1. Metropolitan Planning Commission – City of Knoxville Interaction & Alignment** | Active | MPC plays a vital role in helping the City plan for continued economic and community development while protecting a high quality of life in our neighborhoods. The City and MPC work closely together to align budgets and priorities and collaborate closely on projects that affect development and redevelopment in Knoxville. |
| **2. Green Building Code Incentives** | Active | In 2014, Knoxville City Council adopted the 2012 International Green Construction (IgCC) for voluntary compliance. The City continues to look for opportunities to encourage local projects to voluntarily comply with the code. The Recode Knoxville effort will consider opportunities to encourage a variety of green building strategies in private development. |
| **3. Subdivision Regulation Revision** | Active | MPC and the City continue to work together to revise subdivision regulations. Efforts such as Recode Knoxville and updates to the City's parking ordinances achieve many similar goals while addressing more urgent priorities within city limits. Additional information about active zoning ordinance amendments can be found at knoxmpc.org. |
| **4. Sustainable Code Updates** | Active | In 2014, the Office of Sustainability led efforts to revise zoning ordinances to better accommodate urban agriculture. Sustainability staff serve on the staff advisory committee for Recode Knoxville, which seeks comprehensive updates to the City's zoning ordinances in order to support efficient and sustainable development and redevelopment in the City. |
| **5. Walkability Ordinance** | New | The City and MPC are working on a new ordinance addressing when and where sidewalks will be required as part of a new development construction. In addition to sidewalk improvements, the draft ordinance requires developers to work with KAT to identify potential connections to transit routes. Coordination of sidewalks and public transit will encourage greater use of these facilities and help meet long term sustainability goals. |



**City of Knoxville Energy & Sustainability Initiative:**
**2017 Work Plan and Energy & Emissions Inventory Update**

This report was created by the City of Knoxville Office of Sustainability with analysis, writing, and design by Erin Gill, Brian Blackmon, and Priya Narapareddy. The authors thank the City's Sustainability Advisory Board and our many local partners for their assistance and insight in implementing sustainability efforts in our community.

**www.knoxvilletn.gov/sustainability**