Clarksville-Montgomery County Sustainability Report

CMC GREEN CERTIFICATION PROGRAM

Air Quality

Education

Energy Conservation and Efficiency

Stormwater Management

Water Quality and Water Conservation

Waste Reduction

Clarksville-Montgomery County Sustainability Report

This report was commissioned by:

CLARKSVILLE
TENNESSEE'S TOP SPOT

MONTGOMERY COUNTY
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Reducing Environmental Impacts:

Since 2011, Clarksville-Montgomery County (CMC) has been fortunate to have more than 100 organizations, including industries, manufacturers, businesses, education, and government departments complete CMC Green Certification. These organizations have voluntarily chosen to be a part of a program that requires the reduction of trash output, recycling, energy and water conservation and encouraging employees to do the same at work and at home.

CMC is thankful for the commitment these organizations have made and continue to make towards the future of our community. For a full listing of these organizations, visit mcgtn.org/green .

Introduction:

In December 2015, Clarksville-Montgomery County (CMC) was recognized as a Tennessee Valley Authority (TVA) Silver Sustainable Community. Local City, County and Economic Developement leaders acknowledged the importance of this recognition and set a goal to move the community forward by developing an environmental sustainability report. For the purpose of this document, *sustainability* means continuing to provide services to the community (Clarksville-Montgomery County) while minimizing or eliminating harmful impacts to people and the environment.

The groundwork for the CMC Sustainability Report began in 2014 with a series of meetings that included City and County department leaders, private industry leaders and Fort Campbell representatives, who represented professions with an expertise in environmental topics. In November 2015, a CMC Sustainability Task Force was formed to develop a foundation environmental report for the community. Based on the meetings in 2014, along with updated information identified by the Sustainability Task Force and the TVA Sustainable Cities summary, it was decided that the following areas would be highlighted in the report:

- Air Quality
- Education
- Energy Conservation
- Stormwater Management
- Water Quality and Water Conservation
- Waste Reduction

The Sustainability Task Force and Sustainability Advisory Committee see this report as a fluid document that will evolve into a holistic community plan for Clarksville-Montgomery County.

Sustainability Task Force: The purpose of this group is to gather the information needed to develop a sustainability report with the assistance of experts in the topic areas outlined. (Members listed in acknowledgements)

Sustainability Advisory Committee: The purpose of this committee is to review, make changes, and approve the sustainability report, as well as meet bi-annually to review the goals and accomplishments referenced in the report. (Members listed in acknowledgements)

Background

Who:
- Those involved include the City and County mayors, select City and County department managers, elected officials, economic development council, Fort Campbell representation and other key members of the community.

Why:
- The report provides an opportunity to position Clarksville-Montgomery County as a progressive, environmentally sustainable community in Tennessee.
- The report can be used to more successfully market and compete for “green” jobs.
- A more holistic approach will further identify how to solicit more businesses focused on environmental sustainability in our community and help develop job creation through existing businesses.
- The report may also provide the community with an advantage when applying for state and federal sustainability related grants and incentives.

How:
- It would be communicated through a comprehensive strategic plan that includes a marketing/public relations effort.
- Feedback was gathered from the municipal departments, elected officials and citizens to develop the report.
- A committe was formed to include key departments heads, community members and elected officials.
- Goals were established with measurable objectives and timelines.
- Policies and stategies will be developed to establish a long-term sustainability plan.

Mission Statement:

The Clarksville-Montgomery County Sustainability Task Force will continually develop and foster a framework of sustainable practices that promote environmental, social, and economic progress for the present and future citizensof Clarksville-Montgomery County.

Guiding Principles:

- Ensure inclusion of all stakeholders of Clarksville-Montgomery County area.
- Develop public outreach opportunities and partnerships to enhance environmental sustainability efforts.
- Adopt a regional perspective with local goals for resource management.
- Cultivate effective aims for environmental stewardship.
- Gain a distinct and competitive advantage to foster economic growth.
- Elevate quality of life standards through responsible environmental practices.
- Promote Clarksville-Montgomery County as a sustainable community.

Imperatives:

- Increase Clarksville-Montgomery County’s participation in environmental sustainability.
- Recognize Clarksville-Montgomery County as a gold level community through TVA Sustainable Communities in October 2017.
- Study the feasibility of hiring a City/County sustainability officer in 2017.
- Achieve sustainability literacy among City/County leaders and department heads.

Community Feedback:

Survey

In April 2016, the Sustainability Task Force conducted a community survey that was posted on all local media outlets, as well as the web sites and social media sites of the City of Clarksville and Montgomery County. There were 692 survey responses. The statistically significant survey revealed what respondents saw as Clarksville-Montgomery County’s strengths and weaknesses in the area of sustainability, what initiatives they knew existed, and what steps they were willing to take to play a role in a more sustainable community.

Survey Highlights:

- Fourty-three percent of respondents rated our current level of sustainability as “average,” while approximately twenty-one percent rated sustainability as good and approximately thirty-six percent felt the community was doing poorly
- Nearly sixty percent of respondents felt that information about sustainability was not easily available

The top responses, in order, of what our community is doing well were:
- Convenience/recycling centers (overwhelmingly number one)
- Household Hazardous Waste (HHW) Days
- CMC Green Certification Program

The leading responses suggesting opportunities for improvement were:
- Recycling throughout the community (more convenient, curbside, single stream)
- Educate the public and promote information about sustainability
- Improve infrastructure and planning
- More than 43% of respondents identified social media as the best way to provide information, followed by direct mail and emails
- For all questions related to what the respondents would be willing to do to meet sustainability goals, only 7% who were not interested in participating
- Of the sustainability efforts listed, knowledge of the Bi-County Convenience Centers, public transportation and HHW Days were above 60%
- The top two areas respondents felt needed to be addressed were waste management and education about sustainability efforts
- 65% of the respondents have lived in Clarksville for more than 10 years
- Nearly 64% of respondents held a bachelor’s degree or higher

Public Forum:
In July 2016, the public was offered an opportunity to provide input through a public forum that was announced in local media and the City of Clarksville, Montgomery County, and Fort Campbell Facebook pages. The Sustainability Task Force and representatives from City and County departments were in attendance to answer questions.

Written Surveys:
In September 2016, Jostens, a publishing company, hosted an Eco Fair for 600 employees and their family members. More than 1,000 people attended the event, 59 survey responses were captured from the event.

The respondents were asked the following questions:
1. “How do you view Clarksville-Montgomery County’s current level of sustainability?” Most respondents wrote that CMC had a moderate level of sustainability. There was an equal amount of outliers who rated CMC well and poorly.
2. “How available is information about sustainability in Clarksville-Montgomery County?” Approximately 87% of responses felt information about sustainability was available while approximately 13% felt information was unavailable.
3. “ What is the best way to share information with you about the Clarksville-Montgomery County Sustainability Plan?” The number one answer with 33 responses was social media, second was radio at 9 responses and third was email with 8 responses.
4. “Which sustainability aspects do you currently practice at home to reduce your environmental impact and support your local community?” The number one answer, with 35 responses, was recycling/waste management; second was energy conservation and air quality was third, followed by education and training and water quality management.
5. “Are you aware of the following sustainability efforts in Clarksville-Montgomery County?” The number one response was the convenience centers with 51 responses, followed by CTS (Clarksville Transit System) with 31 responses, the Clarksville-Montgomery County Green Certification Program at 23, followed by the water quality report (22) and HHW (21). The lowest awareness level was associated with eScore self-audits.
6. “Which focus areas need to be addressed in Clarksville-Montgomery County?” The responses in this area were close with air quality and waste management tied, closely followed by water quality management.

I. Air Quality

Air quality is a measurement of the pollutants in the air; a description of healthiness and safety of the atmosphere. Good air quality refers to clean, clear, unpolluted air. Poor air quality is a result of a number of factors, including emissions from various sources, both natural and “human-caused.” Poor air quality occurs when pollutants reach high enough concentrations to endanger human health and/or the environment.

There are three categories identified by the United States Environmental Protection Agency (EPA) that determine the quality of air in a designated area:

Attainment:
In compliance with state and federal air quality standards
Non-attainment:
Non-compliance with state and federal standards
Maintenance:
Formerly non-attainment but currently meeting air quality standards

Background for Clarksville-Montgomery County, TN:

- In June 2004, the EPA designated the Clarksville Urbanized Area in nonattainment under the 8-hour ozone National Ambient Air Quality Standards Standards (NAAQS). The designated area consists of Christian County, KY and Montgomery County, TN.
- On November 21, 2005, Montgomery County was re-designated as attainment with a maintenance plan for 8-hour ozone standard.
- On October 1, 2015, the U.S. EPA strengthened the NAAQS for ground-level ozone to 70 parts per billion (ppb) from the less stringent 75 ppb.
- Clarksville-Montgomery County continues to be in “attainment” level, maintaining EPA’s National Ambient Air Quality standard for ground-level ozone and no longer must demonstrate conformity with the State Implementation Plan for major transportation improvement projects.
- The updated health standard of 70 ppb will significantly reduce ozone air pollution and provide an adequate margin of safety to protect at-risk groups.
- The new standard is especially important for children and people with asthma, who are at increased risk from ozone exposure, and will prevent hundreds of thousands of asthma attacks nationally. Public health benefits of the updated standards are significant – estimated at $2.9 to $5.9 billion annually in 2025.
- Montgomery County continues to maintain EPA’s standard for primary annual particulate matter (PM) 2.5 of 12 ug/m3 (micrograms per cubic meter). This was revised for the protection of public health and is also the main cause of visibility impairment in the nation’s cities and national parks. Sources of PM include power plants, gasoline and diesel engines, wood combustion/forest fires, high-temperature industrial smelters, and steel mills.

Health Implications

As of 2014, Clarksville-Montgomery County had a total population of 184,119. According to the American Lung Association’s report on Montgomery County, TN, 4,086 children and 10,169 adults have been diagnosed with asthma, 10,909 residents have chronic obstructive pulmonary disease (COPD), 146 have been diagnosed with lung cancer. Source: http://www.lung.org/assets/documents/research/estimated-prevalence.pdf
These diseases are affected by the following air quality challenges:

- Ground level ozone
- Particulate matter
- Carbon monoxide
- Sulfur dioxide
- Nitrogen dioxide

What CMC has done to improve air quality:

- Clarksville Transit System (CTS) replaced nine older, higher mileage buses with new hybrid technology buses between 2010 and 2016.
- Clarksville-Montgomery County School System (CMCSS) is replacing 15 diesel fueled bus engines with propane fueled engines will go into service August 2017.
- Since 2010, several highly congested intersections have been improved throughout the county since to reduce congestion and idling.
- The I-24 Park-and-Ride was relocated to Exit 11 and expanded to accommodate additional riders on the Regional Transit Authority's express buses from Clarksville to Nashville. The number of express bus trips during morning and and evening peak hours expanded from from four to five trips. This has resulted in the reduction of single-occupant commuter trips from Clarksville to Nashville.
- Expenditures by the City of Clarksville of more than $1,000,000 per year over the past decade to replace deteriorated sidewalks; expenditure of $300,000 to $700,000 over the past two years to fill in sidewalk gaps per the Clarksville City Council adopted sidewalk priority system; and the installation of new sidewalks on all new roadways and major widening projects on city arterial streets is an adopted City policy to encourage transportation on foot rather than automobile or school bus.
- Clarksville Academy students secured a grant from the Clarksville Community Health Foundation for a bicycle share program at McGregor and Liberty Parks. The bikes are maintained by Clarksville Parks and Recreation.

Several major roadway improvement projects are underway to relieve traffic congestion and idling vehicles:

- The SR 48/13 major widening from Zinc Plant Road to SR 149, SR 374/ Warfield Boulevard along with major widening from Stokes Road to Dunbar Cave Road.
- The SR237/Rossview Road/Hankook Road major widening from I-24 Exit 8 through International Boulevard.
- US 79/Guthrie Road major widening from I-24 Exit 4 to International Boulevard
- The Northeast Connection on new alignment from Wilma Rudolph Boulevard/US 79 to Trenton Road/SR 48 City of Claksville project.
- The major widening of Rossview Road/SR 237 from I-24 Exit 8 to Cardinal Lane.
- The connection of Professional Park Boulevard to Cardinal Lane, will provide a route from Dunlop Lane where regional medical facilities are located to Cardinal Lane at Rossview Road near I-24 Exit 8, City managed project with 80% Federal and State Funding, 20% City.
- Improvements in energy conservation and energy efficiency have been a focus in City and County departments as well as business and industry.

Future goals:

- CTS's fleet of fixed route buses will emit fewer emissions, consume less diesel fuel to improve air quality.
- CTS is scheduled to replace five more higher mileage buses with new hybrid technology buses in 2018, for a total of 14 hybrid buses out of a 22 bus fleet.
- Additional highly congested intersections have been programmed for improvements to reduce idling in Clarksville.
- The City of Clarksville will implement traffic operations monitoring/control system on Wilma Rudolph Boulevard to improve traffic flow and reduce idling in the regional commercial area between the signalized intersections from I-24 to 101st Parkway, and expand the traffic operations system to other high volume traffic corridors such as New Providence Boulevard/Fort Campbell Boulevard and Madision Street.
- Increase the use of public transportation and encourage carpooling.
- Continued development is planned for major roadway improvement projects to reduce traffic congestion.
- Continued improvements are planned for sidewalks on major commercial arterial and transit corridors.
- Increased opportunities for walking and biking will be made throughout the City of Clarksville to reduce the need for driving.
- A County park scheduled to open in 2018 will expand greenspace in the downtown area.
- Review options for carpooling lanes.
- Review the possibility of local incentives for fuel efficient vehicles.
- Develop no idling policies for non-emergency government vehicles.
- Add no-idling signage to parking lots and other areas where idling is prevalent.
- Continued expansion and connectivity of the Clarksville Greenway from the water treatment center to the walkway behind Two Rivers Mall completed by 2020.

Steps residents can take:

- Use Public Transportation Options (CTS)
- Participate in environmental volunteer opportunities such as tree plantings and stream clean-ups
- Carpool
- Reduce idling where possible
- Drive alternative fuel vehicles
- Walk and bike where and when possible
- Consolidate driving trips

II. Education:

Education is imperative to the success of the community sustainability plan. It will take time and effort to share where Clarksville-Montgomery County is, where the community can go, and how individuals and groups in the community can be contacted and empowered in assisting the community to achieve stated and agreed upon goals.

In the process of initiation and completion efforts of the stated goals of this Sustainability Report, the goals of education and communication are twofold. Initially, to establish contact with the overall community, and at times, with specific groups, to determine present status of awareness and current practices, as well as to seek further participation and involvement. The equally significant task is to establish effective communication with partners and stakeholders of all new targeted initiatives specifically identified in the main category areas of concern in this Report.

In the discussions leading to this Sustainability Report a list of five areas have been identified:

1) Identify and establish the presence and mission of the Sustainability Task Force (STF).
- Attach the presence and mission of the STF to the presently operating CMC Green Certification Program. Doing this has the advantage of gaining a measure of initial credibility and support.
- Use of the Mission Statement of the STF in any publications and forums.

2) Identify partners and stakeholders for stated areas of interest of this Report.
- Air Quality, Education, Energy Conservation, Waste Reduction, Stormwater Management, Water Quality and Water Conservation.

3) Identify core audience groups.
- General public, schools, business and industry, City and County elected officials, civic groups, and defined sub-groups (such as Economic Development Council, Home Builders Association, Board of Realtors, etc.)

4) Establish the means of communication and education.
- Social media, print, public forums and public surveys

5) Establish measurement tools and feedback methods to track results and effectiveness.

Present accomplishments:

- CMCSS Recycling Teams provide students in third through fifth grade an opportunity to lead recycling efforts in their schools.
- CMCSS energy champions encourage energy conservation in all schools.
- Science,Technology, Engeneering, and Math (STEM) Externships with CMCSS teachers provide opportunities to understand environmental sustainability.
- The Clarksville Department of Electricity (CDE) Lightband Safety Demonstration Trailer travels to elementary and middle schools to educate students about how electricity works and how to use it wisely.
- Bi-County Convenience/Recycling Centers are offered in nine locations throughout Montgomery County.
- The Clarksville-Montgomery County Green Certification Program has 104 certified organizations committed to environmental conservation practices.
- Public service announcements about environmental events are shared on the local radio, newspaper and on the Montgomery County Facebook page.

Future goals:

- Expand education opportunities to the public regarding the importance of environmental sustainability, and its impact, socially and economically.
- Provide educational opportunities for City/County elected leaders and department heads to become literate in environmental sustainability.
- Host a community wide sustainability event.

Steps residents can take:

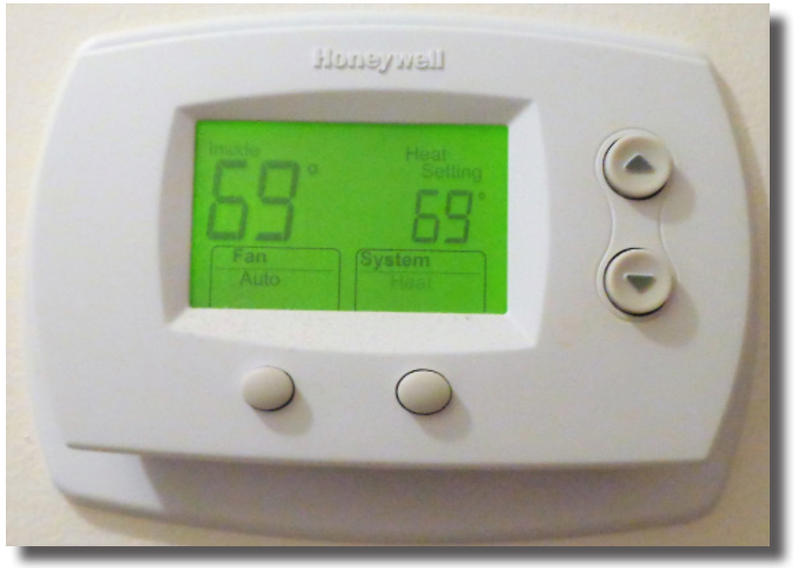
- Promote and support environmental community events
- Become familiar with existing environmental challenges in our community
- Become educated about environmental sustainability, locally, regionally and globally

III. Energy Conservation and Efficiency:

Everyone uses energy. People use energy each day for transportation, cooking, heating and cooling rooms, manufacturing, lighting, entertainment, and many other uses. The choices people make about how they use energy—turning machines off when they're not using them or choosing to buy fuel-efficient vehicles and energy-efficient appliances—affects the environment and everyone's lives.

Efficiency and conservation are different but related. The terms energy conservation and energy efficiency have two distinct meanings. There are many ways people can use less energy (conservation) and many ways people can use energy more wisely (efficiency).

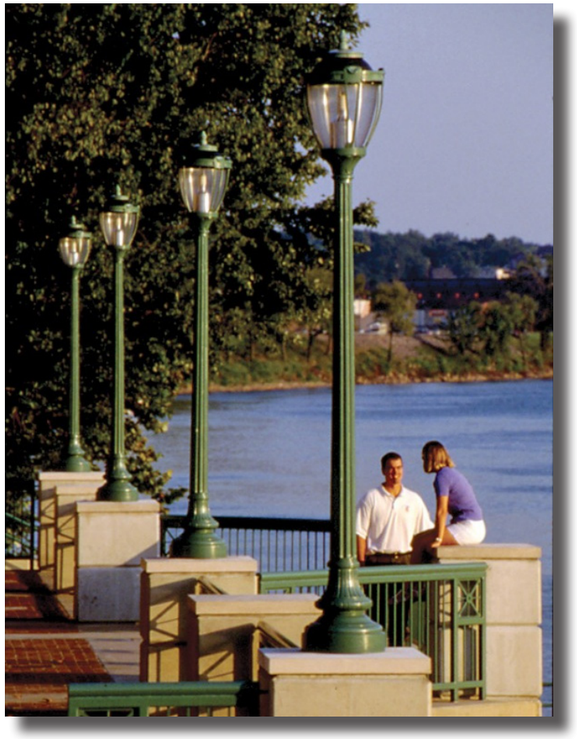
Energy conservation is any behavior that results in the use of less energy. Turning the lights off when leaving the room and recycling aluminum cans are both ways of conserving energy. Source: U.S. Energy Information Administration (EIA)



Conserving energy helps to ensure that CDE and CEMC are able to meet the demand for customer load in Clarksville-Montgomery County. It is important to avoid the expense of an additional energy plant.

What CMC has done to conserve energy:

- Comprehensive Services Program (CSP) energy audits have been conducted for 35 local organizations since 2013.
- Since 2011, 104 business and government involvement in the CMC Green Certification Program have committed to energy efficiency and energy conservation.
- CDE held first of several planned DIY Energy Efficiency workshop for residential customers in February 2016.
- A total of 590 eScore self-audits have been conducted in Clarksville-Montgomery County (475 through CDE and 115 through CEMC).
- Energy efficiency education presentations have been given to civic groups throughout the City and County.
- In-depth energy audits of all City schools are being conducted in phases and will be completed by 2018.
- Conversion of City street lights from 2,600 high pressure sodium fixtures to more energy efficient LED bulbs were done in 2016.
- Montgomery County partnered with Siemens in 2016 for long term energy conservation and efficiency projects.
- Bi-County Solid Waste Management began converting methane gas to energy in 2011 and now supplies enough energy for 3,000 homes.
- Solar panels and electric car charging stations have been strategically added at APSU thoughout campus and in some businesses, City and County locations.

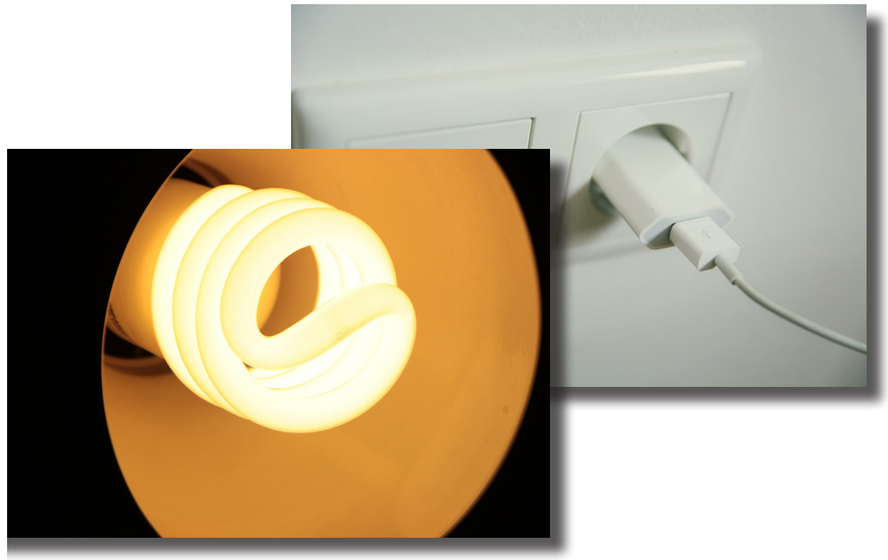


Future goals:

- Host a DIY Workshop for the public January, 2016.
- Increase energy efficiency awareness in the community.
- Increase energy conservation awareness throughout the community.
- Establish a Green Builder Program to encourage the use of energy-conserving building practices.
- Increase key account customer engagement.
- Participate in a community sustainability event, April, 2017.
- Increase the number of eScore self-audits from 590 to 1,000 by June, 2017.
- Host “snack and learns” with city and county departments for DIY classes and to increase the number of eScore participants.
- Work with CMCSS to develop a competition between staff and faculty at the schools beginning January, 2017.

Steps residents can take:

- Participate in an eScore Energy Audit through TVA and encourage others to participate
- Switch to energy efficient appliances and light bulbs
- Adjust thermostat controls to save energy and money
- Unplug items not in use
- Participate in a DIY Workshop
- Update lighting when possible
- Replace old appliances and electronic equipment with Energy Star products.



Energy Conservation and Efficiency

IV. Stormwater Management:

Good water quality is a fundamental building block of a good quality of life. Water quality is an issue that must be addressed. Not only is water a crucial health resource, water is also an economic resource that is vital for food and livelihoods. Water is also a critical ingredient for industry, as almost every manufacturing process needs water to function. Finally, water is intertwined with energy – through hydropower, steam power and as a source of cooling water for power stations.

Water conservation refers to the preservation and protection of both surface and ground water resources.

Water management is the management of water resources to minimize damage to life and property and to maximize beneficial uses while adhering to applicable laws and regulations.

Stormwater Management
Stormwater runoff occurs when precipitation flows over the land surface. Commercial and residential development results in the addition of roads, driveways, parking lots, rooftops and other surfaces that prevent water from soaking into the ground, greatly increasing the runoff volume created during storms. This increased runoff is swiftly carried to local streams, rivers and wetlands and can cause flooding, erosion, and damage to important habitat for wildlife.

Stormwater runoff also transports many different pollutants found in developed areas such as sediment, nitrogen, phosphorus, bacteria, oil and grease, trash, pesticides and metals resulting in degraded water quality and overwhelmed sewage treatment facilities. Stormwater runoff is the number one cause of stream impairment in urban areas. To reduce the impacts of runoff, the U.S. Environmental Protection Agency expanded the Clean Water Act in 1987 to require municipalities to obtain permits for discharges of stormwater runoff.

There are seven streams in Clarksville and 12 streams in Montgomery County that are considered to be “unavailable parameters” waters, or those too polluted to meet their EPA assigned designated uses. These were previously known as “impaired” waters.

Water pollution has cumulative and delayed consequences.

What CMC has done to manage stormwater:

- Clarksville-Montgomery County has adopted regulations requiring developers to install stormwater management practices that remove pollutants and reduce the rate and/or volume of runoff generated on development sites.
- Developers are encouraged to use Low Impact Development (LID) and Green Infrastructure as part of the development process.
- The City and County Stormwater Coordinators spend significant time each year on different venues providing educational opportunites to the public. (Fifteen stormwater management presentations have been provided to organizations in the CMC Green Certification workshops.

Future Goals:

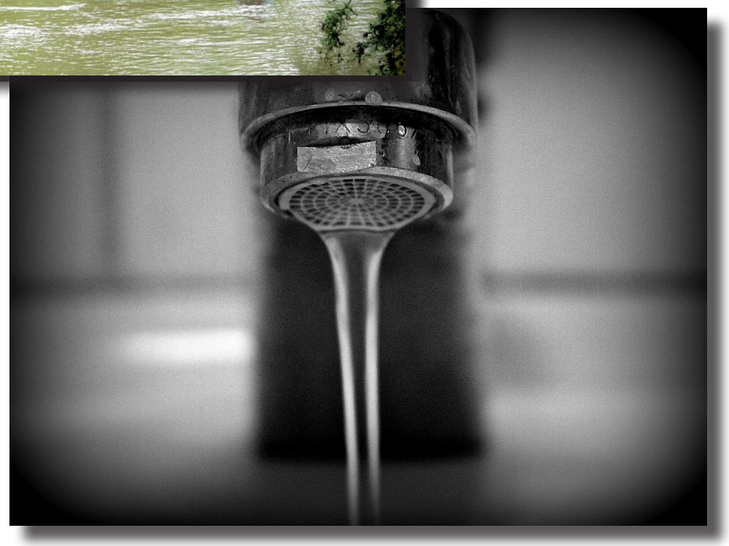
- Review policy changes that will better help Clarksville-Montgomery County meet state and federal requirements.
- Development of tax break or incentives for “Green” building and use of LID methods.
- Expand educational opportunities in schools and during community events.
- Work to build upon existing tools of the planning and development process to support long term decision making. For example, a park can be a sustainable component of the local ecosystem and a community focal point. It can be a catch basin for stormwater runoff, a means to mitigate flooding and pollution, a centerpiece for economic development initiatives, and a showcase and habitat for local plant and animal species.
- Encourage sustainable practices that will mitigate flood damage.
- Install stormwater drain filters on 5% of city stormwater drains by December 2017.
- Minimize polluted run-off from building and industry.
- Develop a stormwater drain maintenance schedule.

Steps residents can take:

- Participate in stream clean-ups and tree plantings
- Keep trash out of storm drains
- Clean up pet waste
- Use the proper amount of pesticides and fertilizers and use it sparingly
- Keep yard clippings away from roads and storm drains
- Plant native, low maintenance grasses
- Spread the message that only rain belongs in the drain
- Properly dispose of motor oil
- Install a rain barrel to capture roof run-off

V. Water Quality and Water Conservation:

Water Quality refers to the chemical, physical, biological, and radiological characteristics of water. It is a measure of the condition of water relative to the requirements of one or more biotic species and or to any human need or purpose. The most common standards used to assess water quality relate to health of ecosystems, safety of human contact, and drinking water. Water quality is fundamental for good health in the waterways. Water quality sustains ecological processes that Clarksville-Montgomery County residents depend on water quality that is suitable for irrigation, drinking, fishing and recreation, and watering stock.



What CMC has done to improve water quality and water conservation:

- Upgraded conventional gravity filtration water treatment to low pressure membrane filtration in 2012.
- Clarksville Gas and Water (CGW) applied water sedimentation basin covers to prevent algae growth.
  which contributes to odor and taste of water. Preventing algae growth also reduces the amount of water used to flush and clean the basins.
- Networked with water industry professionals on water quality issues.
- Provide public distribution of Annual Drinking Water Quality Report and advertisement of its availability and importance.
- Organizations that participate in the CMC Green Certification Program are asked to conserve water through reuse in production processes and water use reduction through hardware installation and identifying unnecessary water loss.
- The Fire Hydrant Flushing Program is done annually to remove sediment that may have accumulated in the pipes.
- CGW improved their current water leak detection program with specialized equipment to systematically work through the water distribution system pinpointing hidden or unknown leaks. This has helped reduce loss of treated drinking water, which reduces costs associated with treating, pumping, and storing drinking water. As a result, the water treatment plant pumps less from the river and provides less impact on natural resources.
- CGW offered workshops and training classes focused on water conservation and water quality improvements.

Future goals:

- Promote the importance of water quality and conservation through partnerships and public education outreach programs.
- Complete a master plan to forecast population growth for sustainability of water distribution system in order to meet delivery demands.
- Reduce excessive water loss in the system by minimizing non-metered water consumption through proactive water distribution leak detection and implementation of infrastructure improvements in order to reduce costs of water system operations. (The goal of actual water loss is to obtain and maintain less than 20% water loss.)

Steps residents can take:

- Participate in Great American Clean-up events to keep trash out of stormwater drains
- Read and share CGW's Annual Drinking Water Quality Report
- Use water sprinklers sparingly and only in the early morning or evening
- Use drip or soaker hose with timer instead of sprinklers
- Properly dispose of hazardous wastes
- Use the least toxic yard chemicals for a given application
- Proper disposal of animal wastes
- Keep debris, trash and junk out of sinkholes
- Establish and/or maintain natural buffer areas along creeks, streams and wetlands
- Reduce the amount of stormwater runoff leaving your property
- Keep anything other than stormwater out of storm drains
- Use rain barrels to capture water
- Take short showers
- Fix leaks immediately
- Turn off the tap when brushing teeth
- Participate in HHW collection events

VI. Waste Reduction:

The Bi-County Landfill, which must have all solid waste disposal areas permitted by Tennessee Department of Environment and Conservation (TDEC), has ample land acreage available to provide the necessary services.

Waste reduction is any action undertaken to eliminate or reduce the amount or toxicity of materials before they enter the municipal solid waste stream. Reuse is a type of waste prevention.

Waste prevention is a type of waste reduction. Waste prevention is also a type of pollution prevention. Basically, it goes back to the three R's – Reduce, Reuse, Recycle. Reducing or eliminating waste at the source is the most effective way to reduce waste and save money, time and space.

It is important to reduce the extraction of natural resources and extend the longevity of the landfill by keeping out unnecessary items. In addition, recycling is beneficial to the economy since it provided four jobs compared to every one job in the trash industry.

What CMC has done to minimize waste:

- Bi-County took a proactive approach by starting recycling at the convenience/recycling centers in 1997, long before most Tennessee counties.
- Nine convenience/recycling centers are open to residents for recycling.
- Recycling efforts expand each year in Montgomery County to service businesses, government offices, and schools.
- In 1994, one school participated in recycling. As of 2016, 36 schools and three additional school facilities participate in recycling which resulted in 180.19 tons of cardboard, 124.27 tons of office paper, 5.81 tons of aluminum cans, 9.3 tons of plastic, and 68.97 tons of newspaper for FY 15/16.
- More than 100 Clarksville and Montgomery County businesses and government buildings receive recycling services through Bi-County.
- Recycling teams are active in 27 CMCSS schools.
- Twelve tons of glass brought in annually to the recycling centers is taken to Florim USA for use in the manufacturing of ceramic tile while 183 tons of glass went to other recycling facilities.
- All City and County departments have been recycling since 2013.
- Since fall 2011, 74 additional organizations began recycling or increased the number of products being recycled.
- Used oil from the convenience/recycling centers is used to heat buildings at the landfill.
- Austin Peay State University has participated in recycling since 2000.

Future goals

- Grow recycling participation by 25% (2014 and prior rates) by December 2017 for a total of 9,980 tons of recyclable materials.
- Decrease the amount of trash going to the landfill by 2%.
- Increase recycling in CMCSS schools.
- Continue to lower CO_2 emissions by producing electricity with methane gas.
- Seek alternative method for disposing of waste such as gasification for getting rid of waste while extending the life of the landfill and producing energy.
- Establish a formal beautification committee by winter 2017 as an extension of the Great American Clean-up event.
- Mandatory recycling of white paper throughout CMCSS.

Steps residents can take:

- Use Bi-County convenience/recycling centers for recycling
- Patronize a paid recycling service
- Bring household hazardous waste in during HHW Waste Collection Days
- Ask employer, civic organization or church to Adopt-A-Street
- Participate in Great American Clean-up event
- Use reusable bags for shopping
- Generate less waste
- Discourage littering
- Compost food waste
- Bring outdated/unused medications to the downtown police station located on Commerce Street.

Closing:

A sustainability plan should bring people, business, industry and development together to work toward the common goals of building an environmentally responsible community while sensitively balancing urban development with environmental enhancement. Ultimately people want to be happy to live in Clarksville-Montgomery County and be proud of their community.

Clarksville-Montgomery County should present itself as a progressive community that encourages growth and development while caring for the environment.

Moving towards a culture that is committed to responsible environmental stewardship will benefit all members of the community, present and future. At stake is the quality of life for ourselves, our children and our grandchildren.

Acknowledgements:

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*Annotates that the individual is also a member of the Sustainability Advisory Committee

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Jason Hodges	County Commissioner and Mayor Designee
Kim McMillan	City of Clarksville Mayor
Charlie Gentry	City of Clarksville Chief of Staff Mayor Designee
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Austin Peay State University

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Sustainability Education Sub-Committee

Definitions:

Carbon Dioxide - A heavy colorless gas that does not support combustion. It is a contributor to climate change.

Carbon monoxide - A colorless, odorless, tasteless toxic air pollutant produced in the incomplete combustion of carbon-containing fuels, like gasoline, natural gas, oil, coal, and wood.

Greenhouse gas - A gas that absorbs infrared radiation (IR) and radiates heat in all directions. This increase in heat is called the greenhouse effect and is a cause of climate change. Common examples of greenhouse gases, listed in order of abundance, include: water vapor, carbon dioxide, methane, nitrous oxide, ozone, and any fluorocarbons.

Green Infrastructure - Natural systems that capture, filter and reduce stormwater runoff using plants, soils and microbes. Regionally, green infrastructure is the interconnected network of open spaces and natural areas that improve water quality while providing recreational opportunities, wildlife habitat, air quality and urban heat island and other community benefits. At the smaller site scale, green infrastructure consists of site-specific management practices such as rain barrels, downspout disconnections and planter boxes interconnected natural areas designed to maintain natural hydrologic functions by absorbing and infiltrating precipitation where it falls.

Ground level ozone - A colorless and highly irritating gas that forms just above the earth's surface. It is called a "secondary" pollutant because it is produced when two primary pollutants react in sunlight and stagnant air. These two primary pollutants are nitrogen oxides (NOx) and volatile organic compounds (VOCs).

Low-Impact Development (LID) - A stormwater management approach that seeks to manage runoff using small-scale landscape practices and design approaches like rain gardens, bio-retention areas and swales that preserve natural drainage features and patterns. The goal of LID is to mimic a site's predevelopment hydrologic conditions by using design techniques that store, infiltrate and evaporate stormwater runoff close to its source. The LID approach addresses stormwater through distributed and decentralized controls, as opposed to conveying and treating stormwater solely in large end-of-pipe facilities located at the bottom of drainage areas.

Methane - A colorless, odorless, flammable gas product of decomposition of organic matter and the carbonization of coal. Methane is used as fuel. It is a contributor to climate change.

Nitrogen dioxide - (NO2) is one of a group of highly reactive gases known as oxides of nitrogen or nitrogen oxides (NOx). NO2 is used as the indicator for the larger group of nitrogen oxides. NO2 primarily gets in the air from the burning of fuel. NO2 forms from emissions from cars, trucks and buses, power plants, and off-road equipment.

Particulate matter - The sum of all solid and liquid particles suspended in air, many of which are hazardous. This complex mixture contains dust, pollen, soot, smoke, and liquid droplets.

Sulfur dioxide - An invisible gas with a nasty smell. It reacts easily with other substances to form harmful compounds, such as sulfuric acid, sulfurous acid and sulfate particles. About 99% of the sulfur dioxide in air comes from human sources. The main source of sulfur dioxide is industrial activity that processes materials containing sulfur, generation of electricity from coal, oil or gas that contains sulfur. Sulfur dioxide is present in motor vehicle emissions, a result of fuel combustion.

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Bikes at McGregor and Liberty Parks - Clarksville Parks and Recreation

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CMCSS Classroom - CMCSS Communications Department

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CDE Outdoor Electricity Classroom - CDE
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City of Clarksville - cityofclarksville.com
Montgomery County Government - mcgtn.com
CMC Green Certification Program - mcgtn.org/green