

CITY OF BATTLE CREEK

ENVIRONMENTAL SUSTAINABILITY PLAN



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Acknowledgements

Sustainable Battle Creek Committee

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- ✚ **Susan Anderson** - Community Rep.
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- ✚ **Tiffany Welsh** – City of Battle Creek DPW

2018 Battle Creek City Commission

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- ✚ **Vice Mayor Sherry Sofia*** (At-large)
- ✚ **Susan Baldwin*** (At-large)
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Message from the Sustainability BC Chair

“This plan has been a long time coming. In fits and starts, the Sustainable BC Committee has been working on it in some form or another for years. Its genesis was a simple question: How do we know anything we do here makes any difference? The answer: We need a plan.

What kind of plan? We didn’t know. We spent time researching best practices, looking at what other municipalities and organizations were doing, and taking an inventory of all the programs and activities related to sustainability that already existed throughout Battle Creek city government. We regularly participated in the Michigan Municipal League’s Green Communities Challenge, earning several awards and laying the groundwork for a larger plan.

We worked through various personnel changes and approaches, and, thanks to some crucial contributions from Commissioner Kate Flores, who stepped into leading the group for a while, and Planning staff, who stepped into corralling our thoughts on paper, a cohesive plan emerged.

The resulting plan may not be perfect, and we expect much of it to change over the coming years. We decided early on that the ultimate goal was just to have a plan where none existed before, and start from there, promising to measure progress as we go, re-evaluate regularly, and improve where necessary. The plan is structured with goals, objectives, and implementing actions on three different time scales (short-, mid-, and long-term). Much of the short-term activity revolves around collecting baseline data on a variety of fronts, which will be critical for the success of the plan in the mid- and long-term.

This is exciting stuff. Never before has the City of Battle Creek crafted such a comprehensive, cross-departmental approach to providing service to the public in ways that are sustainable and protect our environment for future generations. Energy, water, transportation, waste, land use, and our own management practices are all areas that come together within this plan. Importantly, there is also a component of public outreach and education where the City Battle Creek strives to become a community wide leader in sustainability.

Thanks to all of the committee members for their hard work and determination, and special thanks to Tiffany Welsh, whose passion, commitment, and expertise have sustained us all.”

Andy Helmboldt
August 2018

Chapter 1: Plan Overview & Structure

History

In 2007, the City of Battle Creek formed the Environmental Policy Study Committee with a purpose to increase the City's efforts to incorporate environmentally-responsible policies in the management of its facilities and services including the initiatives outlined in the "Climate Protection Act Policy" adopted in August 2006, and 15% by 2015 renewable energy policy. This Committee broadened its environmental approach in 2013, and was renamed Sustainable BC (Battle Creek) Committee and updated their purpose to "increasing the City's efforts to incorporate environmentally-responsible, cost-effective policy in the planning, administration, and economic development of its built infrastructure and natural resources." The Sustainable BC Committee reviews and recommends policies to the City Commission, and serves as a local resource on sustainability issues. The Committee members represent local businesses, policymakers, City staff, and engaged citizens of community.

The creation of this plan pulled together the Sustainable BC Committee, representatives from various City Departments, and City Commissioners. Throughout this plan the Sustainable Battle Creek Committee is referred as Sustainable BC. Also, throughout this plan the City of Battle Creek or City means the City government agency, unless otherwise stated.

The City of Battle Creek provides many community-wide sustainable efforts such as hosting annual rain barrel sales, upgrading external lighting, providing educational events about the importance of drinking water, and facilitating new stormwater infrastructure, to name a few. This plan demonstrates that the City continues to explore new sustainable efforts. Past and ongoing sustainable efforts are listed in the Appendix of this plan.

Vision, Values, & Principles

Vision

The vision of the City of Battle Creek and Sustainable BC drives the effort toward the goals listed throughout the plan. Below are the City's vision and mission statements.

Vision: Battle Creek is an extraordinary community where people choose to live, work, and play.

Mission: The City of Battle Creek is a safe, prosperous, and culturally enriched community.

Statement of Values

The following values are the foundation of this plan:

- Improving quality of life for future generations.
- Providing mitigation and resilience to the effects of climate change.
- Environmental justice, where all people regardless of racial, social or economic backgrounds, have fair and equitable access to environmentally stable conditions.
- Social equity, where we value diversity and equitable distribution of opportunities and environmental privileges.
- A belief system of interdependence, connectedness and integration to each other and our natural surroundings.
- Three pillars of sustainability: A) Social, B) Economic, and C) Environmental - are all overlapping and connected to each other. Decisions that are made, even on the smallest scales regarding people, profit, or the environment, have the ability to impact all three pillars.
- Establishment of a positive and vibrant internal environmental sustainability culture by making all decisions with environmental impacts in mind.

Guiding Principles

The following principles guide the making of this plan and implementation:

- Governing Efficiency: Internal efficiency and operational improvements.
- Quality of Life: meet current environmental, social and economic needs of our community without compromising the ability of future generations to meet their needs'.
- Collaboration: the City will work with interested parties on various elements of the Plan.
- Science-based Research: Goals, Objectives and Actions in this Plan have been developed based on utilizing science-based research and information.

Implementation Directives

- Determine and acquire needed resources (staff, grants, funds, internal systems/ processes, etc.) to develop and implement the subject plan and a future community-wide sustainability plan.
- Determine feasibility of creating a new funding stream (Energy or Sustainability Fund) produced by saving money through implementing goals provided in plan.
- Integrate environmental sustainability into economic and community development.
- Continue the City's participation in the Green Communities Challenge.

Definitions of Sustainability

The Environmental Protection Agency (EPA) defines sustainability as “sustainability is based on a principle that everything we need for survival and well-being depends, either directly or indirectly, on our natural environment”. EPA goes on to say that pursuing sustainability creates and maintains “the conditions under which humans and nature can exist in productive harmony to support present and future generations.” Source: <https://www.epa.gov/sustainability>

The City of Battle Creek Sustainable BC Committee states that ***Sustainability is the ability to meet and balance environmental, social, and economic needs of the community to ensure well-being and quality of life of present and future generations.***

Purpose of this plan

The Sustainability Plan provides direction for current and future City decision-makers and employees on creating a culture and action-oriented framework around sustainability measures within City functions, processes, behaviors, etc. The objectives and implementing actions outlines in the Plan provide terms-based actions and directives that will help the City of Battle Creek become more sustainable. The Plan is a living document that should be used and modified as innovation brings new technologies, new practices are developed, or significant events impact Battle Creek. Further, certain goals or objectives may gain greater attention or impact with advancements in technologies or systems. Therefore, having flexible priorities to will enable adjustments in planning efforts with such future advancements. This plan will nurture a culture of sustainable awareness within the City of Battle Creek.

Implement Master Plan

This plan assists in the implementation of the City of Battle Creek Master Plan sustainability section which recommends items such as green infrastructure, efficient transportation networks, and re-investment in underdeveloped areas. These items are also found in the subject plan to help guide staff toward implementation. Other areas of recommendation in the Master Plan such as land use and development, transportation, recreation, etc. are related or indirectly benefited by implementing sustainability measures.

Influence Capital Improvement Program (CIP) & Priority-Based Budget (PBB)

In addition to the Master Plan, this Sustainability Plan will add influence the City's Capital Improvement Program (CIP) and Priority-Based Budgeting (PBB) by providing direction toward implementing and funding projects which have varying priorities for short- and long-term effects.

Advance Future Community-Wide Sustainability Plan

This plan serves as a catalyst for the Sustainable BC Committee to guide efforts towards establishing a new community-wide Sustainability plan in the future. Many cities throughout the US have adopted sustainability plans which address public and private sustainable goals.

Support City of Battle Creek Vision & Mission

This plan will help implement the City of Battle Creek Mission and Vision statements.

Vision: Battle Creek is an extraordinary community where people choose to live, work, and play.

Mission: The City of Battle Creek is a safe, prosperous, and culturally enriched community.

How this Plan will be used

This plan is likely different than other sustainability plans in that it is focused on sustainable measures affecting City-owned buildings, infrastructure, vehicles, purchasing measures, and consumption of energy, water usage, and operations. Despite this City-focused vision, the results will be felt throughout the community as the City owns and manages an expansive and valuable amount of infrastructure that ensures residents, businesses, local governments, and tourists receive a high level of service. For example, upgrading exterior lighting may provide a greater sense of safety for pedestrians. As a result, implementing internal sustainability measures will have a large positive effect to the community and its people.

Structure of the Plan

The Plan consists of seven themes provided in Chapters 2-8. The following is a summary of each theme. Chapter 2: *Energy* discusses methods to reduce energy expenses related to operating buildings and occupied spaces; increasing energy efficiencies; and pursuing renewable energy sources. Chapter 3: *Water* discusses ways to preserve natural water resources; explore green infrastructure for stormwater management; and support educational programs about water quality. Chapter 4: *Transportation* discusses ways to examine full costs of fleet and transit services; increase non-motorized transportation and transit opportunities; and examine full electric vehicles. Chapter 5: *Waste* discusses ways to increase recycling at City buildings and events; and methods to reduce City waste. Chapter 6: *Government Management Practices* discusses ways for City operations to be more efficient; support City programs which utilize sustainable elements; and invest in green building policies. Chapter 7: *Land Use* discusses methods which support highest and best use of land development; encourage redevelopment of contaminated sites; and plan for downtown riverfront redevelopment opportunities. Chapter 8: *Public Outreach & Education* discusses ways that the City of Battle Creek can be a local resource to the public on sustainable measures; and build support for a future community-wide sustainability plan.

Within those themed chapters are goals which can be met by following Short-term (By 2020), Mid term (By 2025), and Long-term (+2030) Objectives. Each Objective is accomplished through its term-corresponding Implementing Action. Through accomplishing each objective, the related goal can be met. An example of this hierarchical process is provided below.

Example

Chapter: Energy

Goal: All City-owned buildings regularly-occupied by employees utilize energy efficient appliances, and are Energy Star or LEED certified.

Objective (Short Term, by 2020): Determine baseline energy costs of buildings regularly- occupied by staff (i.e. office buildings, maintenance garages).

Implementing Action: Collect baseline data on electricity, natural gas, propane and other energy/ power sources (and any other power/ heat source) of all occupied buildings for the past five years.

Due to this plan's diverse goals, various City departments will be responsible for implementing and coordinating listed actions. A select core of City staff will monitor progress to ensure completion of benchmarks. Certain projects will warrant additional support or City Commission approval. The City's use of Priority-Based Budget will assist in determining which elements of the plan may gain greater attention than others. Much of the work will depend on 1) sufficient funds, 2) support staff, and 3) resources/ technology. Because of the uncertainty of those items, completing all Objectives and Implementing Actions by their corresponding terms should be desired not required.

Amendments/ Updates

This plan should be reviewed and updated as necessary at least every five years as progress continues and objectives are completed. The Sustainability BC Committee should coordinate periodic updates, and propose new objectives and policies as needed.

Monitoring & Reporting

Sustainable BC will monitor and review of this plan, as well as propose changes to the City Commission. Progress will be reported to the City Commission on an annual basis.

Chapter 2: Energy

The use of energy has long been an obvious area of focus of sustainability plans because of the awareness of increased energy costs, wide production of energy efficient processes/ appliances, and the ease of tracking costs data to name a few. Also, energy can be broad and diverse. Depending on the user or organization, energy could be electricity or fossil fuels, renewable energy, human output levels, or the methods of sustainable energy. The focus of this plan's internal use will provide goals which the City can control. Examining buildings, appliances, and human behavior are targeted areas; while other areas of energy use such as transportation or sustaining energy practices are discussed later in the plan.

The purpose of the following goals is to reduce costs spent on energy sources such as electricity, natural gas, etc.; reduce emissions; and establish sustaining methods and policies by using products and appliances efficiently.

GOALS

- ❖ All City-owned buildings regularly-occupied by employees will utilize energy efficient appliances, and are ENERGY STAR or LEED certified.
- ❖ All street lighting will consists of energy-efficient lights.
- ❖ All City-owned buildings will exceed State of Michigan minimum energy codes.
- ❖ The City will invest in and utilize renewable energy sources.

OBJECTIVES

- ❖ **Short term** (By 2020)
 - Determine baseline energy use and costs of buildings regularly occupied by staff (i.e. office buildings, maintenance garages).
- ❖ **Mid-term** (By 2025)
 - Achieve a 5% reduction in energy costs of buildings regularly occupied by staff (i.e. office buildings, maintenance garages).
 - Analyze renewable energy sources appropriate for Battle Creek or Southwest Michigan.
- ❖ **Long-term** (+2030)
 - Achieve a 10% reduction in energy costs of buildings regularly occupied by staff (i.e. office buildings, maintenance garages).
 - Implement and fund appropriate renewable energy source infrastructure(s) for city-owned buildings, structures, or uses.

IMPLEMENTING ACTIONS for 2020 Objective

- ❖ Collect baseline data on electricity, natural gas, propane and other energy/ power sources (and any other power/ heat source) of all occupied City facilities/ buildings in the past five years.
- ❖ Collect energy data on electricity for all non-occupied city facilities/ buildings.
- ❖ Determine software to track and analyze baseline data.

- ❖ Determine a method/ process to identify energy loss or inefficiencies (e.g. energy audit; investigation).
- ❖ Use an energy audit to identify areas of energy waste, leak, and heavy use in targeted buildings.
- ❖ Identify ways to encourage and promote existing energy efficiency programs and resources.
- ❖ Create partnerships with Subject Matter Experts (SME) to create linkage between existing partnerships and necessary audience.
- ❖ Establish plan to upgrade all City street lights to LED or other current energy efficient methods. Create multi-phase approach for accomplishing this action over the next 5-10 years.

IMPLEMENTING ACTIONS for 2025 Objective

- ❖ Collect greenhouse gas data on City-owned buildings.
- ❖ Take action on energy audit findings: Determine options/ alternatives to improve building's energy use and how its occupants use appliances. (Ex. change lights bulbs to LED; replace appliances w/ ENERGY STAR; increase insulation, fill leaking gaps; staff training on appliance use; and more.)
- ❖ Explore integration of energy efficiency projects into city community development work and other programs/incentives through community partners.
- ❖ Develop community partnerships emphasizing energy reduction and renewable energy, including potentially matching challenge to local businesses, environmental stewardship in development projects, and inclusion of low-income housing.
- ❖ If warranted, expand staffing opportunities to increase project/ program implementation and success.
- ❖ Initiate upgrades of all City street lights to LED or other current energy efficient methods.
- ❖ Explore locally-available or regionally-appropriate renewable energy sources for municipality use.
- ❖ For renewable energy sources: analyze cost-benefit analysis, long-term maintenance options of infrastructure and personnel, and locations for various types of infrastructure.

IMPLEMENTING ACTIONS for +2030 Objective

- ❖ Replace all City street lights to LED or other current energy efficient devices.

Chapter 3: Water

Water is a necessary resource to life, habitat, and affects the quality of life. The protection of both groundwater and surface water (stormwater) is important to a community's growth and sustainability. Groundwater is the source of Battle Creek's drinking water. It is crucial to ensuring compliance with government drinking water standards and protection of the local wells for the long-term health and economic well-being of the community.

Surface water is the water derived from rain water, and observed in lakes, rivers, wetlands, and other similar surface conditions. When rain water runs off buildings' roofs, across parking lots and streets, and across lawns it is directed toward open channels and/ or underground pipes called the stormwater system. At this point, surface water is typically called stormwater. Stormwater is then carried to lakes, rivers, and other waterbodies. Locally, these water bodies are the Battle Creek River, Kalamazoo River, Goguac Lake, Harts Lake, Beadle Lake, etc. These water bodies provide rich aquatic habitat, outdoor recreation (boating, swimming, fishing, etc.), economic benefit, and overall value to the community. Storm water may be naturally filtered before entering those waterbodies, but is not treated/ filtered for higher quality standards. Therefore, ensuring the protection of stormwater quality is critical.

As stated above, there is an overall community benefit to protect local lakes and rivers. In addition to stormwater protection, protection from development which may reduce or negatively affect waterbodies quality or habitat is also important. The downtown stretches of the Battle Creek and Kalamazoo Rivers consist of concrete channels to reduce flooding. Despite the effectiveness of those, there is little to no utilization of those rivers for downtown benefit. Recently, kayaking activities are increasing, and a desire to replace a portion of the Kalamazoo River channel with a more open, natural shoreline is being explored. Examining man-made shorelines for future community use and protecting natural shorelines of local lakes and rivers can provide various benefits to the environment and community.

The City of Battle Creek Department of Public Works is working toward becoming a 'Utility of the Future' which is a "...concept...defined by clean water utility leaders pioneering innovative technologies and cutting-edge practices, with a focus on resource recovery, efficiency and sustainability" according to the National Association of Clean Water Agencies. This recognition celebrates the achievements of forward-thinking, innovative water utilities that are providing resilient value-added service to communities, particularly in community engagement, watershed stewardship, and recovery of resources such as water, energy, and nutrients.

The purpose of the following goals is to create a sustained method to have healthy potable water for the community; clean water for the environment; and reduce water-related costs to the City and end user.

GOALS

- ❖ Increase educational outreach to City staff that underlines the importance of water quality and conservation.
- ❖ Evaluate a funding mechanism for stormwater infrastructure that provides a sustainable management of stormwater infrastructure.
- ❖ Protect natural lakes, rivers, creeks, and wetlands ecology and associated outdoor recreation from adverse effects from future development and pollution.
- ❖ Certify the City of Battle Creek as a Utility of the Future [Reference: NACWA.org; National Association of Clean Water Agencies].
- ❖ Establish policies which support the health of the Kalamazoo and Battle Creek Rivers.
- ❖ Ensure goals for preserving the City's drinking source are supported.

OBJECTIVES

- ❖ **Short term (By 2020)**
 - Identify staff or partners with other organizations to support additional education promotion to preserve water quality.
 - Create a stormwater advisory group to establish the level of funding needed to support current infrastructure.
- ❖ **Mid term (By 2025)**
 - Establish programs that increase educational awareness on water quality measures. Seek grants which help fund new and expanded programs.
 - Analyze equitable approaches for establishing a new funding structure to support stormwater infrastructure management. As of the date of this plan, a draft State bill has been introduced to create a new utility management process for stormwater; treat similar to water or wastewater billing. City staff will continue to follow this bill, and if passes, will determine what new City billing system for stormwater utility may be appropriate.
- ❖ **Long term (+2030)**
 - Adopt a funding source to ensure long-term stormwater management is adequately funded, equitable, and flexible.

IMPLEMENTING ACTIONS for 2020 Objectives

- ❖ Identify measures for tracking data of potable water demands and stormwater volumes and qualities.
- ❖ Analyze leaks in overall billed City's water exist to reduce loss in water revenues.
- ❖ Identify measures for tracking data on water quality of inland lakes and rivers within the City of Battle Creek.
- ❖ Determine appropriate staff to undertake tracking data measures.
- ❖ Identify funding sources to address stormwater infrastructure needs, including on-going maintenance.
- ❖ Analyze items of Utility of the Future for future implementation.

IMPLEMENTING ACTIONS for 2025 Objectives

- ❖ Increase the use of rain gardens and low-impact development through existing mechanisms.
- ❖ Research improved treatment and water protection techniques to be used during construction projects.
- ❖ Research the use of “green” infrastructure techniques for street and building designs.
- ❖ Create a GIS mapping tool showing stormwater flows throughout Battle Creek.
- ❖ Improve community education and outreach programs to encourage water conservation.
- ❖ Research ‘skinny streets’ (narrowing of streets) as a way to reduce size of impervious surface to reduce stormwater volume. Determine if and where ‘skinny streets’ should become a policy or option for future city streets.
- ❖ Research on-street stormwater features that slow stormwater run-off, filter particulates, and increase water quality before stormwater reaches inland lakes and rivers.
- ❖ Examine options to upgrade waste water treatment plant to ensure efficient and effective use; examine maintenance procedures.

IMPLEMENTING ACTIONS for +2030 Objectives

- ❖ Re-evaluate the City’s stormwater codes to ensure adequate protection is provided.

Chapter 4: Transportation

Generally, transportation systems facilitate commerce, personal travel, tourism, daily commutes, mail delivery, emergency access, and provide connectivity throughout and between municipalities. These systems primarily consist of vehicles (cars, buses, trucks, trains, bicycles, etc.) and the infrastructure to support/ accommodate vehicles (streets, waterways, rail, trails, etc.) Maintaining both is a considerable investment for the user and owner of the vehicle and infrastructure. Public and private investments are utilized to establish and maintain transportation systems.

The plan's internal focus guides this chapter's goals towards sustainable transit and fleet operations and non-motorized transportation means within the City of Battle Creek. This plan will focus on passenger and transit vehicles (cars, trucks, buses, etc.) instead of specialized vehicles (fire trucks, police vehicles, fleet trucks, etc.). Staff notes that the City should be encouraged to examine sustainable elements in specialized vehicles in the future.

Currently, the City's fleet, staff (City passenger vehicles), and transit vehicles are internal-combustion engines (gasoline, diesel, propane, or LP). The City has been acquiring used, low-cost vehicles; maintaining and fixing vehicles internally with little to no outside contracts; and maintaining a support infrastructure and trained personnel to manage and maintain these vehicles. Use of hybrid (electric + internal-combustion engines) and full electric vehicles are becoming popular throughout the US. However, the higher cost (compare to typical internal combustion engines), maintenance, and repair of these vehicles have become cost-prohibitive for the City of Battle Creek and other municipalities. Without additional revenue (local, State, or Federal assistance), it is unlikely that the City of Battle Creek would solely fund the transition from internal-combustion engines to a hybrid or full electric fleet. Adding a few of these types of vehicles to the fleet over time may seem reasonable. However, the added cost of new infrastructure, parts, additional training and likely outsourcing maintenance would be required if one or all fleet are replaced with hybrid or full electric vehicles. Therefore, a piecemeal approach to these new vehicles is not likely. Replacing entire infrastructure for these vehicles would be best but comes with high costs. Current City practices have resulted in significant cost savings in purchasing, maintaining, and fixing older vehicles.

Transit fleet consist of buses on fixed routes and paratransit (dial-a-ride) on no fixed routes. The former operate on diesel engines of various age and emission control standards. Due to modern emission controls, some buses are more expensive to maintain and operate. While the paratransit vehicles are much smaller and cheaper than buses, they run on either diesel, gasoline, or propane. This variety of fuel choice was made in efforts to experiment with fuel costs and operations. Despite the lowest cost of propane (by volume), it is less fuel efficient, more expensive to purchase and maintain. It is clear that the cost of managing fleet vehicles must look at a comprehensive approach not just fuel costs.

The City of Battle Creek Department of Public Works fleet division is current striving toward becoming a 'Leading Fleet City' exhibiting high level in fleet innovation and leadership. This

award is provided by *Government Fleet* magazine and the American Public Works Association (APWA). The award is given to various-sized cities.

The purposes of the following goals are to address full costs of fleet, staff passenger vehicles, and transit while improving sustainability by addressing: 1) costs/ quantity of fuel, 2) costs of acquiring future vehicles, 3) maintenance costs, 4) costs of support infrastructure for existing and future vehicles, and 5) costs of specialized personnel training.

GOALS

- ❖ The City of Battle Creek achieves a Diamond-level Bicycle Friendly Community. (Awarded by The League of American Bicyclists.)
- ❖ City staff will identify a comprehensive approach for the use of alternative transportation for transit fleet and passenger vehicles.
- ❖ The City of Battle Creek will become a Leading Fleet city (Awarded by *Government Fleet* magazine and the American Public Works Association).
- ❖ The City of Battle Creek provides a popular bike share program.

OBJECTIVES

- ❖ **Short term** (By 2020):
 - Research and analyze Leading Fleet criteria and measures.
 - Determine baseline usage of bikes of bike-share program.
- ❖ **Mid-term** (By 2025):
 - Establish electric vehicle re-charging stations at City-owned/ managed parking areas, and provide public awareness.
 - Adopt an anti-idling policy for city vehicles near schools, parks, daycares, downtown, and other areas with high pedestrian volume.
 - Prioritize and determine which best Leading Fleet measures to implement.
 - Analyze options to reduce overall fuel costs for transit, fleet, and passenger vehicles, such as Compressed Natural Gas (CNG), clean diesel options, etc.
 - Attain Gold-level Bicycle Friendly Community.
 - Research items to implement to attain Platinum-level Bicycle Friendly Community.
 - Increase ridership of fixed-route transit buses by 2%.
 - Establish bike-share campaign to increase usage.
- ❖ **Long-term** (+2030):
 - Increase ridership of fixed-route transit buses by 15%.
 - Research costs of acquiring hybrid and full electric fleet, transit, and passenger vehicles to determine reasonable costs for the future.
 - Research grants available for public hybrid and full electric fleet, transit, and passenger vehicles.
 - Attain Platinum-level Bicycle Friendly Community.

- Analyze and priority measures needing to accomplish and attain Diamond-level Bicycle Friendly Community.
- Increase bike-share usage by 5%.
- Implement measures to become a Leading Fleet city.

IMPLEMENTING ACTIONS for 2020 Objectives

- ❖ Research and prioritize elements to attain Gold-level Bicycle Friendly Community.
- ❖ Research other transit organizations' vehicle engine type by vehicle type. Determine overall costs of operating diesel-only, hybrid, and full electric vehicles.
- ❖ Examine City-owned/ managed parking areas and research companies that could install and maintain electric plug-in vehicle stations.
- ❖ Explore options that increase ridership for fixed-route transit buses (i.e. marketing and branding, bus stop locations reach more people, etc.)
- ❖ Research number of bikes checked-out at each bike-share station through the city.

IMPLEMENTING ACTIONS for 2025 Objectives

- ❖ Install various electric vehicle charging stations at City-owned parking areas and garages. Provide a downtown map showing new plug-in stations and general education of use for public.
- ❖ Determine base cost and quantity of transit, fleet, and staff passenger fuel used in the past three years.
- ❖ Implement campaign to increase ridership for fixed-route transit buses.
- ❖ Determine boarding counts of riders for fixed-route transit buses and dial-a-ride.
- ❖ Create educational material for City employees about the benefits of using City transit.
- ❖ Create a transit program that provides lower/ free fare for City employees to reduce personal car commute, traffic congestion, etc.
- ❖ Establish a policy which utilizes the best management of vehicles to ensure longer use.
- ❖ Research and coordinate bike campaign with bike-share company; initiate changes where necessary, such as: distribute campaign material, initiate social media advertisement, determine best bike stations for user, etc.
- ❖ Research and prioritize elements to attain Platinum-level Bicycle Friendly Community.
- ❖ Establish a policy that determines which engine type (i.e. internal combustion, hybrid, full electric, etc.) is best fit for the type of vehicle used (i.e fleet, transit, and passenger vehicles).

Chapter 5: Waste

This chapter provides goals related to various waste produced by City buildings, processes, and people. From the daily office worker to annual events hosted by the City of Battle Creek, examining ways to reduce waste, re-use waste, and recycle waste is key. The City contracts with Waste Management to provide curbside pickup of trash, recycling, and yard waste. Trash is delivered to a nearby solid waste facility along with other community's waste. Recycling is delivered to a recycling center outside of the City of Battle Creek.

Residential curbside pickup of yard waste accepts grass clippings, leaves, and small branches which are delivered to a City compost center called Bryce Pit. Residents may personally transport yard waste to Bryce Pit. This compost center is valuable to the community because the City prohibits burning of yard waste (i.e. leaves, christmas trees, etc.).

Residential curbside pickup of recyclables increased substantially when the size of the pickup container increased to 96 gallon containers in 2016. This size increase was an easy mechanism for residents to recycle more plastics, papers, glass, cardboard, aluminum, and other daily items.

The mantra “Reuse, reduce, rethink, recycle” continues to be an important part of a circular economy as waste represents raw materials to be recaptured. Recapturing these materials or not generating them in the first place, encompasses the true essence of sustainability.

The purpose of the following goals is to 1) rethink how waste is generated and used; 2) reduce the amount of waste consumed by City operations and buildings; 3) and recycle and re-use the products necessary for operations and buildings.

GOALS

- ❖ Decrease raw materials used by the City of Battle Creek.
- ❖ Increase recycling city-wide.
- ❖ Encourage recycling of construction, demolition, and remodeling debris.
- ❖ Provide recycling receptacles with proper collections and disposal at all public spaces and events.

OBJECTIVE

- ❖ **Short term** (By 2020)
 - ❖ Research baseline data of raw materials used by City facilities.
 - ❖ Determine baseline data of recycled products at City buildings.
- ❖ **Mid term** (By 2025)
 - Implement measures which reduce raw materials used by the City by 5%.
 - Implement measures which increase recycling at City buildings by 5%.
- ❖ **Long term** (+ 2030)
 - Implement measures which reduce raw materials used by the City by 10%.

- Implement measures which increase recycling at City buildings by 10%.

IMPLEMENTING ACTIONS for 2020 Objective

- ❖ Analyze costs and processes for providing recycling receptacles at every occupied City building; City-hosted events; and City parks.
- ❖ Provide programs for recycle/ re-use education at City facilities.
- ❖ Analyze and map wastewater infrastructure for future replacements.

IMPLEMENTING ACTIONS for 2025 Objective

- ❖ Provide recycling receptacles at every occupied City building.
- ❖ Provide recycling receptacles at City-hosted events.
- ❖ Provide recycling receptacles at City parks.
- ❖ Establish a more efficient and sustainable biosolids program at the wastewater treatment plant.
- ❖ Implement an internal mandate for City staff to recycle.
- ❖ Conduct waste audits for City facilities.

IMPLEMENTING ACTIONS for +2030 Objective

- ❖ Implement or establish a private/public partnership to create a local business/composting program.
- ❖ Establish a food composting program at Brice Pit to receive food waste from City facilities; install bins for compost material.

ON-GOING

- ❖ Continue supporting the existing annual household waste, recycle, and yard waste collection programs.

Chapter 6: Government Management Practices

By reassessing our current internal management practices, the City has the opportunity to encourage environmentally- and fiscally-minded leadership to our community's businesses and organizations. By implementing green purchasing policies, instilling an eco-conscious mindset in staff, and utilizing our current resources more efficiently the City can create a positive example for the public.

The purpose of the following goals serve to encourage environmentally and fiscally responsible practices within the City which will establish sustainably-minded leadership.

GOALS

- ❖ Efficiently use City products and buildings through efficient systems and tools.
- ❖ Ensure long-term impacts to the community, budgetary management, and internal staff are considered during City acquisitions of products and processes.
- ❖ When delivering City services, provide highest value to citizens at lowest reasonable cost.
- ❖ Vendors which provide City services or programs will utilize sustainable practices.
- ❖ Establish a culture of sustainability among City staff.

OBJECTIVES

- ❖ **Short term (By 2020)**
 - Initiate program that guides City staff toward operating buildings sustainably.
 - Initiate program that guides City staff toward a green purchasing policy.
- ❖ **Mid term (By 2025)**
 - At least one regularly-occupied building is utilizing sustainable use elements.
 - Implement a Best Management Practice Sustainability Plan for vendors which provide City service.
- ❖ **Long term (+2030)**
 - Half of all regularly-occupied City buildings utilize sustainable use elements.

IMPLEMENTING ACTIONS for 2020 Objective

- ❖ Research and examine elements of green purchasing policies for the City of Battle Creek.
- ❖ Research and draft Best Management Practice sustainability items for vendors which provide City services.
- ❖ Research elements of a green building policy for all new or reconstructed City building projects.
- ❖ Research methods which inform staff on ways to operate City buildings sustainably.

IMPLEMENTING ACTIONS for 2025 Objective

- ❖ Adopt and implement a green purchasing policy for the City of Battle Creek.

- ❖ Adopt and begin implementation of a green building policy for all new or reconstructed City building projects.
- ❖ Research a comprehensive, community-wide Sustainability Plan for Battle Creek.
- ❖ Research Climate Action Plan elements.
- ❖ Develop an internal sustainability recognition program to recognize departments or individuals that have contributed to sustainability efforts.
- ❖ Create a manual for City employees which lists sustainable uses of buildings and electronics operations.

IMPLEMENTING ACTIONS for +2030 Objective

- ❖ Adopt and begin implementing Climate Action Plan.

Chapter 7: Land Use

The City of Battle Creek is a major property owner within the community as it provides critical infrastructure to meet the needs of the entire community (rights-of-way, parks, sewer treatment plant, flood controls, and protected open space/ habitat), and various buildings (e.g. City Hall, Police Department, Public Works, etc.).

The City acquires land from other government agencies or purchases property from private landowners. Conversely, the City sells or disposes of land for private or other government agency use. In addition to land acquisitions and disposals, the City also rezones public and private property for development or preservation needs. Much of the direction for rezoning property is guided by the City of Battle Creek Master Plan, subplans (Transportation Plan, Parks & Recreation Plan, Neighborhood Plan, etc.), and existing conditions.

The purpose of the following goals is to ensure future growth consists of highest and best use for the overall community while meeting the City of Battle Creek Master Plan and other community planning documents. Changes in zoning, regulations, and processes will assist in the following goals.

GOALS

- ❖ Renewed investment and high development growth occurring in older parts of town, and downtown area.
- ❖ Brownfields, distressed sites and neighborhoods have land use mechanisms to attract development and appropriate uses.
- ❖ Establish planning efforts that result in reduction of carbon dioxide emissions (ex.

OBJECTIVES

- ❖ **Short term (By 2020)**
 - Provide support for more mixed-use development opportunities (ex. New mixed-use zoning district(s), flexible zoning, etc.) in areas consistent with the goals of the City of Battle Creek Master Plan.
- ❖ **Mid-term (By 2025)**
 - Establish a plan for future uses of brownfield sites within the city.
 - Adopt a community forestry or tree management plan or ordinance.
 - Establish a plan for best use of downtown riverfront areas along Battle Creek and Kalamazoo Rivers.
 - Establish plan for collecting baseline data of carbon dioxide emissions.
- ❖ **Long-term (+2030)**
 - Establish policies/ ordinances which permit outdoor recreational activities along the Battle Creek and Kalamazoo Rivers in the downtown area.

- Reduce carbon dioxide volumes in the community by 2%.
- Establish active or passive uses on 10% of available brownfield sites.

IMPLEMENTING ACTIONS for 2020 Objective

- ❖ Expand and incentivize mixed-use development:
 - Establish new mixed use zoning districts in areas supported by the City of Battle Creek Master Plan.
 - Establish flexibility between commercial and residential uses where supported by the City of Battle Creek Master Plan.
- ❖ Brownfield Re-development:
 - Staff will identify brownfield sites by searching for industrial sites which may be known for having (or possibly having) environmental waste that may be categorized as a 'brownfield' site.
 - Once identified as a brownfield, staff will determine if any grants associated with brownfield sites could be acquired to incentivize the re-development of the brownfield site. Grants may be sourced by EPA, DEQ, etc. Other development incentives may include the State of Michigan Plan Rehabilitation and Industrial Development Districts Act known as 'Industrial Facilities Exemption' (up to 12 year, 50% property tax reduction approved by local city).
- ❖ Identify and analyze City property for future best use, based on Master Plan.
- ❖ Research other community's forestry plan/ tree preservation for future City of Battle Creek planning efforts, policies, or ordinance(s).

IMPLEMENTING ACTIONS for 2025 Objectives

- ❖ Increase strategic tree plantings in ROWs, unoccupied City lots, etc. to increase urban tree canopy.
- ❖ Identify brownfield sites available for redevelopment opportunities.

IMPLEMENTING ACTIONS for +2030 Objective

- ❖ Recommend redevelopment and coordination with riparian owners along Kalamazoo River to support water-based activities, habitat protection, and educational purposes.
- ❖ Create long-term use plan of brownfield sites, such as future development for residential, commercial, etc. uses; open space; recreation; etc.

Chapter 8: Public Outreach & Education

As noted earlier, this plan is intended to influence the City's sustainability processes and planning. However, the effects of implementing this plan will be felt throughout the community. Further, many of the resources utilized to assist in implementing this plan will be funded through local taxes and grants. Therefore, providing local government transparency and fiscal responsibility is paramount. This chapter focuses on internal actions within the organization of the City and results portrayed externally.

GOALS

- ❖ Facilitate a strong community-wide interest in supporting sustainable planning efforts.
- ❖ The City of Battle Creek provides a critical role in sustainability planning for the community at large.
- ❖ The City of Battle Creek serves as an information resource for private sustainable planning efforts.
- ❖ City of Battle Creek employees are ambassadors of the City's sustainability efforts.

OBJECTIVES

- ❖ **Short term (By 2020)**
 - Research and explore various mediums for public consumption of City sustainable planning efforts.
- ❖ **Mid-term (By 2025)**
 - Develop various public resources (website, annual events, staff, etc.) for sustainable planning efforts.
 - Explore other local community's sustainable efforts for regional sustainable planning efforts.
- ❖ **Long-term (+2030)**
 - Determine planning efforts and resources needed for a future community-wide sustainability plan.

IMPLEMENTING ACTIONS for 2020 Objective

- ❖ Determine best or most appropriate methods of displaying the subject plan and local sustainable events to the public.

IMPLEMENTING ACTIONS for 2025 Objective

- ❖ Establish new City of Battle Creek webpage informing public about the subject plan and upcoming events.
- ❖ Assign appropriate staff to maintain the various mediums used to publicly display the subject plan, upcoming events, and updates.
- ❖ Explore other city-wide sustainability plans, determine various costs, and learn about community processes needed for such community-wide planning effort.

- ❖ If needed and appropriate, establish a City Sustainability Coordinator or single point of contact for assisting in the implementation of the subject plan, providing a source for public education, and overall internal subject matter expert.

APPENDIX A

Existing Initiatives

ENERGY

1. 2006 Traffic Monitoring and Video room at DPW/Transportation

- a. Upgraded 17 signalized intersections to video monitoring that could be routed to DPW. Now 34 City-owned and 35 Michigan Department of Transportation (MDOT) owned intersections can be viewed and maintained from at DPW. This monitoring can verify real and past-time conditions to eliminate crew time investigations to false reports. Signal cycle times can be adjusted permanently or temporarily for special events from DPW, which also saves crew time and lessens vehicular grid lock.

2. Upgrade Lighting to LED

- a. Upgrade City-wide and downtown signal and street lighting with new LED lights for energy efficiency purposes and extend life cycle of equipment.
- b. Lights have been upgraded when replacement is needed. Replacements have been made throughout the entire City.

3. Street Light Inventory: 2011 – Present

- a. Drive city streets at night to collect location of street light outages and submit information to Consumers Energy for repair. This greatly assists in keeping streets well-lit; promotes safety for pedestrians, bicyclists, and motorized vehicles.

4. 2015 Propane Station at DPW/Energy Conservation & Green Buildings

- a. Currently two buses are running on propane, which is typically at least half the cost of diesel but almost as efficient (10% to 30% less in power)
- b. Fueling can now be done at DPW instead of at outside sources.
- c. Fleet is planning to purchase 17 vehicles in 2018 that will run on propane.
- d. Learned that despite lower propane costs, propane burns much faster than diesel. Thus, overall fuel cost savings is not as significant.

5. Verona Pumping Pilot Study- Energy Conservation and Green Buildings

- a. Currently, this pilot study is monitoring pump efficiency at the Verona pumping station using Supervisory Control and Data Acquisition (SCADA) (using remote

technology to control and monitor pump infrastructure). The City has two sets of three pumps in series to pump the city's well treated water to the distribution system. Although these pumps are already efficient, it was shown that when the pumps work in a series they might be working against each other. This new pilot study monitor pump run times of individual pumps and notes the efficiency when running in tandem. There may be ways to sync the pumps to get a more efficient flow and to operate off peak demand times to save energy and cost during high charge demand times.

6. Wood Chip Boiler Heating Project, City Hall

- a. Installation of a wood chip heater boiler that provides up to 90% of the heating for City Hall and the Police Department. More than 40% of the energy consumed by the buildings will come from a wood chips, a renewable energy source. Source: <http://qwww51.honeywell.com/honeywell/news-events/case-studies-n3n4/wood-chips.html?c=36>

7. DPW Garage Motion Sensor Lighting

- a. New light detection lights are ensuring a more energy efficient building.

8. DPW Building Construction

- a. DPW was constructed on a Brownfield site in 2002. Brownfield sites are those with polluted/ contaminated environmental conditions and; thus, can be expensive and difficult to redevelop. This site already had access to City utilities and street frontage. Putting the site back into an active use was a successful use of land efficiency and resources. Nearby development has occurred since the construction of this new DPW site.

9. WWTP Secondary Treatment Project Waste and Recycling

- a. This project replaces 1,000 HP blowers that are at the end of their life cycle with high efficiency blowers that is estimated to save \$220,000/year in electricity cost. Chemical feeds and monitoring are also included in this project where treatment can be done based on real time instead of the current one-day delay. This delay has resulted in treating yesterday's conditions not the current-day condition. The estimated savings in chemicals is \$178,000/year. This project will pay for itself within 10 years.

WATER

1. Annual Rain Barrel Sale

- a. The City facilitates an annual rain barrel sale to the general public. This will reduce utility water costs for the consumer; place less demand on City water utility management; make it easier

and more affordable for residents to upkeep private gardens; decreases water run-off and drainage impacts; and generally helps conserve water.

2. Water Meter Read System

- a. Installation of new digital meters for water use program. This will increase efficiency and receive more accurate meter reads and terminate transportation costs from drive-by reads.

3. Annual Children’s Water Festival- Education Training and Outreach

- a. The festival teaches students about water resources and protection. This event attracts approximately, 1,000 students in the Battle Creek area every year. Students learn about groundwater, surface water, and watch a fun performer sign and dance about teachings of science, water, and environmental elements.

4. Krazy for the Kazoo (A.K.A. River Clean Up: Education Training and Outreach)

- a. This event has grown into the first ever watershed-wide citizen cleanup of the Kalamazoo River and its tributaries.

5. Kanoe the Kazoo: Education Training and Outreach

- a. An annual event since 2003, ‘Kanoe the Kazoo’ and its many hosts have introduced thousands of area citizens to the beauty and recreational opportunities in the Battle Creek area.
- b. Received American Public Works Association (APWA) Branch Award.

6. Wellhead Protection/Storm Water Public Education Efforts/Education, Training, & Outreach

- a. These activities include a radio advertisement campaign, pre-movie ads, seasonal photo contest, participation in local events, educational activities, etc. These efforts encourage residents to properly dispose their waste, protect surface and groundwater, and communicate other general environmental protection knowledge.

7. 2004 CMI – La Vista Storm Drainage Project/Transportation

- a. This project redirected more than 3,400-feet of Columbia Avenue’s storm water (from 24th Street to La Vista Boulevard) away from discharging into Goguac Lake and directed to an infiltration and existing bio-retention La Vista Storm Basin. This basin also serves 116-acres of residential property that experienced flooding and/ or had direct discharge to Goguac Lake. An additional 3,200-feet of Columbia Avenue storm water (from La Vista Boulevard to Capital Avenue) is filtered through cleaning structures prior to discharging into Goguac Lake. Conceptual plans for this 3,200-foot

section of Columbia are being develop to convey the storm water to the La Vista Storm Basin or create a new bio-retention basin.

b. Received American Public Works Association (APWA) Branch Award.

8. 2016 Blackmore Drain

a. This project will treat one-half mile of Columbia Avenue storm water (Capital Avenue to Riverside Drive) with bio-retention basins and improvements to the drain and outlet channel to Kalamazoo River.

9. 2008 State Street/Willard Beach Rain Gardens/Land Use and Natural Environment

a. Rain gardens were planted to allow rainwater runoff from impervious surfaces, and be properly absorbed. It is designed to limit concentrations of nutrients that are found in storm water runoff.

b. Received APWA Branch Award

10. 2005 City Hall Storm Water Treatment Project

a. This project treated the storm water generated by the City Hall's and Police Department Headquarters' building and parking campus. Storm treatments, included a bio-retention basin, rain garden, infiltration drain fields, and a vegetated/green roof.

b. APWA Branch Award, Project of the Year

11. 2006 Willard Beach Porous Paving Project

a. This project eliminated 12,800 cubic yards of parking runoff to Gougac Lake with pavement reduction, placing porous asphalt over stone infiltration bed and catching overflow water with rain gardens.

12. Continue City sales and marketing of rain barrels to community to reduce water billing costs and demands on City water usage.

13. Continue enforcement of existing fertilizer ordinance to ensure waterways and water bodies are not negatively influenced by residential and commercial fertilizer applications.

14. Continue to support City training/ educational events to learn about new elements in stormwater programs, water quality and preservation, and municipal water processes. Identify staff to fulfill roles for future stormwater planning and programs.

15. Review and monitor demand levels on the local aquifer to ensure preservation of local drinking water.

16. Ensure compliance with State stormwater standards.
17. Review local stormwater standards every 10 years to ensure they meet the needs of the community.
18. Continues to support standards and regulations which protect the local wellhead drinking source.
19. Continues to support the existing fertilizer ordinance to preserve water quality and reduce excessive and accelerated growth of algae and aquatic plants.

TRANSPORTATION

1. **2004 Interduct Project for City Fiber/Resiliency and Preparedness**
 - a. This project enabled the City to network with existing facilities.
 - b. This paved the way for future equipment monitoring.
2. **2007 Helmer Road Shared Use Path**
 - a. This project connected the City's Linear Path at Bedford Road to Lakeview High School, promoting bicycle use and connectivity with the City's +26-mile system.
 - b. Received APWA Branch Award.
3. **Non-Motorized Transportation Plan**
 - a. Strategically identified major corridors within the city to create bike lanes to promote safe and increase bicycle use to lessen vehicular traffic. Most of these corridors are now marked with bicycle lanes.
 - b. Road dieting –reducing four lanes to three lanes to make room for bike lanes.
 - c. Received APWA Branch Award.
4. **City of Battle Creek Transit**
 - a. Past purchasing practices of buying used municipal buses at low prices have lowered overall costs of operating, maintaining, and acquiring transit vehicles.
5. Include Sustainable BC committee as a stakeholder to provide input into the City of Battle Creek, Transit Master Plan, City-wide Master Plan, Non-Motorized Transportation Plan, Safe Routes to School Program, and other City plans that play a role in sustainability.
6. Continue bicycle rental program to support healthy transportation choices; lower transportation costs; and options to reach destinations. Track usage overtime to determine needed changes to rental program.

7. Continue to learn hybrid and electric vehicle technologies to determine future use for City vehicles, transit, etc.

WASTE

1. All residents were provided a 96-gallon recycling cart which increased the City's recycling rate by 46% in less than one year.
2. Tire Recycling Program
3. Electronics Recycling Program
4. Hazardous Waste cleanup/ programs

GOVERNMENT MANAGEMENT SYSTEMS

1. Energy Improvements & Recording 2005-2023

Honeywell International Inc. established energy efficiency improvements in City Hall & Police Building, including new sensor lighting and updated lighting, no-water gravity urinals, updated control system for using and monitoring HVAC and temperatures, and a new wood chip fueled boiler system. Also, all street traffic and pedestrian signal lighting were upgraded with LED lighting. This near \$4 million contract for improvements is expected to pay for itself within 15 years; coming up in the next several years.

2. Continue to evaluate low-cost acquisitions of property, vehicles, and City services.
3. Seek grants that help fund various sustainability-oriented projects, future sustainability plans, and any that may cover staff time

LAND USE

1. Fresh Coast Capital Project- Land Use and Natural Environment

Project to plant trees on vacant properties for harvesting. The hybrid poplar grow for 12 years and then are harvested for bio-fuel. Trees regrow or are removed based on any potential development.

2. Mixed Use Zoning Consideration/ Master Plan

City staff is tasked with implementing the Master Plan by examining existing zoning districts to determine areas most appropriate for a mix of commercial and residential land uses to increase the development potential of various properties around the City.

3. Analyze environmental conditions of property before City acquisition/ disposal of property.

4. Seek Brownfield grants (EPA, DEQ, etc.) that facilitate development or preservation of land.

5. Increase priority of land use and neighborhood-level planning in areas labeled as 'Challenged Neighborhood' in the City of Battle Creek Master Plan Land Use Map.

APPENDIX B

2006 Battle Creek Mayor's Agreement and BC City Resolution

Adopt and enforce land-use policies that reduce sprawl, preserve open space, and create compact, walkable urban communities.

Maintain healthy urban forests, promote tree planting to increase shading and to absorb CO₂.

Purchase only Energy Star equipment and appliances for City use.

Practice and promote sustainable building practices using the U.S. Green Building Council's LEED program or a similar system.

Increase recycling rates in City operations and in the community.

Promote transportation options such as bicycle trails, commute trip reduction programs, incentives for carpooling and public transit.

Increase the average fuel efficiency of municipal fleet vehicles, reduce the number of vehicles, launch an employee education program including anti-idling messages, and convert diesel vehicles to bio-diesel.

Inventory global warming emissions in City operations and in the community, set reduction targets and create an action plan

Increase the use of clean, alternative energy by, for example, investing in "green tags", advocating for the development of renewable energy resources, recovering landfill methane for energy production, and supporting the use of waste to energy technology.

Make energy efficiency a priority through building code improvements, retrofitting City facilities with energy efficient lighting and urging employees to conserve energy and save money.

Evaluate opportunities to increase pump efficiency in water and wastewater systems, recover wastewater methane for energy production.

Help educate the public, schools, other jurisdictions, professional organizations, businesses and industries about reducing global warming pollution.

