CLIMATE ACTION PLAN 2020-2023

City of Lansing

Strategic Plan for Sustainable Municipal Operations Plan Created February 2020



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EXECUTIVE SUMMARY

The City of Lansing strategic plan for climate action and sustainability aligns with the City's overarching community values and goals. It is essential that any investments we make to achieve our sustainability goals are affordable and result in long-term operational savings, while protecting our natural environment and human health.

As we move forward with our plans, we are mindful to review our advancement and recalibrate our path accordingly. We also need to remember that savings and return on investment can and should be calculated in many ways. We must balance direct and indirect payback efforts with practices that are the "right thing to do."

The City has many successful programs and partnerships already engaged in creating a sustainable and climate resilient community such as Lansing Board of Water & Light, Consumers Energy, Pure Lansing, Ingham County, Tri-County Planning Commission, Michigan State University, neighboring municipalities, and numerous local community action groups focused on creating an adaptive and engaged citizens.

Our long-term goals will play a part in defining the City's overall success and impact on the world.

CLIMATE ACTION MISSION, VISION & VALUES

MISSION

The mission or purpose of Lansing's Climate Action Plan is to elevate quality of community, operational design and living for environmental sustainability through all City services and operations.

VISION

The vision for Lansing's Climate Action Plan aligns with the vision of our Mayor Andy Schor and the Lansing Forward initiative (www.lansingforward.com). The plan will also incorporate the commitment made when Lansing signed on to the U.S. Conference of Mayor's Climate Protection Agreement. We will accomplish our sustainability and climate action goals through this lens and work toward this vision.

> "Lansing will become its best self: a diverse, dense, livable, responsible and welcoming environment."

VALUES

Values indicate what we stand for and are embedded throughout the entire plan. These values should guide all future climate action work.

- Accountability Acting with integrity and transparency.
- Affordability Ensuring implementation is done in a way that is affordable for the citizens of Lansing.
- Collaboration Working together in partnership with others.
- Customer Service Professionally serving our community.
- Equity Intentionally remove and prevent barriers created by institutional injustice.
- Innovation Challenge how things have been done before.
- Sustainability Understanding how decisions impact the environment, people and communities today and in the future.

CILMATE ACTION PRIORITIES

The plan will operate through a series of priorities and values which assist the process of planning and implementation. Established priorities to guide the planning process and development of goals.

PRIORITIES

- Governmental Excellence Actions are fiscally responsible for government/citizens and adaptive to changing landscape of technology and innovation.
- Health & Environment The health and wellbeing of all people and the environment are advocated for, protected and enhanced.
- Safe Community All people are safe at all times.
- Mobility Leading to a connected and accessible community.
- Engaged & Connected Community Citizens have a voice.

OVERVIEW OF CLIMATE ACTION PLAN

As a major component of Lansing's vision, the strategic plan for sustainability will function within short-, mid-, and long-term objectives spanning through 2040. Short-term objectives we believe to be achievable within two-five years. Mid-term objectives, accomplished within ten years beyond the short-term continuum, will allow us to utilize the knowledge gained in the near-term and apply emerging technologies for completion of long-term goals. While this plan established long range goals for the next decade and beyond, the plan itself should be reviewed and updated for progress regularly.

Goals that reflect an imprecise amount of time and resources that may be currently unavailable or in infancy stages of development are considered to be long-term goals. It is our belief that each goal aligns with Lansing's strategic vision of becoming national leader in sustainable municipal operations. Tactical plans for each overarching sustainability goals are recommendations but will require additional development by the City's climate action team.

It is also important to assess and consider past, current and ongoing work specific to sustainability and climate change. In 2016, the City received a grant to commission a study from Public Sector Consultants to create a Community Energy Management Plan. This assessment and the corresponding recommendations are still valid and should be included in the City's climate action plan going forward. It should also be noted that the LBWL is very active in reducing its climate impact which should translate to the City's operational footprint as well as community wide reductions in energy use. The City of Lansing's strong relationship with the LBWL will be of great benefit as we work together towards carbon neutrality, clean energy goals, renewables and energy efficiency projects and other sustainability efforts.

As a first step toward identifying opportunities for reducing our operational carbon impact, the City conducted an emissions inventory along with a review of the major municipal operations in the development of this climate action plan.

STATEMENTS OF COMMITMENT

- We define "sustainability" as supporting and sustaining the mission of the City into the future while providing city services that are economically, socially and environmentally responsible.
- We commit to creating and maintaining sustainable practices in all department operations including building maintenance, city services, planning, design and construction, transportation/fleet, and employee engagement.
- We commit to operating in a socially and environmentally responsible manner including but not limited to our hiring and engagement practices, supply chain and supplier requirements, and provision of city services to residents and other community stakeholders.
- We commit to reducing our carbon footprint and emissions. We also commit to helping the community move towards carbon neutrality in a fiscally responsible way that also supports the City's vision and mission.
- We continue our commitment to the U.S. Conference of Mayors Climate Protection Agreement. As part of this ongoing commitment, the City will strive to meet or exceed Kyoto Protocol targets for reducing global warming pollution by taking actions in our own operations. The actions identified in the agreement can be found at mayors.org/climateprotection/agreement.htm
- Through the implementation of this climate action plan, we commit to our ongoing participation with the Michigan Green Communities Challenge with a goal of achieving Bronze as soon as possible in 2020.
 migreencommunities.com
- We commit to join the Global Covenant of Mayors for Climate and Energy by December 2020. globalcovenantofmayors.org

KEY CLIMATE ACTION STRATEGIES

Overarching key strategies and city-wide actions emerged from and reflect the insight and innovation produced by ongoing City activities. These strategies are intended to support and enhance the plans established across the organization. For that reason, we focus on areas where centrally coordinated and supported programs and initiatives will be most effective in reducing our impact on climate change. This plan is a four year plan and we will be working to understand how we can invest to achieve our desired outcomes within this timeframe.

KEY UNIT-WIDE STRATEGIES

- 1. Reduce Operational Carbon Footprint
- 2. Mitigate Solid Waste from Municipal Operations
- 3. Reduce Water Waste from Municipal Operations
- 4. Core Business Integration
- 5. Employee & Stakeholder Engagement

REDUCE CARBON IMPACT & INCREASE ENERGY EFFICIENCY IN OPERATIONS

"Carbon neutral" is defined as a system where no carbon dioxide is emitted, or the balance of relatively minor emissions is reduced using legitimate carbon offsets to bring the net output to zero. From an operational perspective, carbon neutrality includes Scope 1, 2 & 3 emissions thus improving the carbon impact of not only energy production and transportation but also includes, but is not limited to energy production, energy distribution, energy demand, supply chain, water distribution, waste systems, travel/commuting, building maintenance services, and construction projects.

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 in order to reduce the City's overall carbon impact.

KEY OBJECTIVES

- 1. Reduce carbon emissions and increase climate resiliency.
- 2. Reduce energy demand for city-owned buildings and operations.
- 3. Establish carbon mitigation strategies for energy, transportation and supply chain sectors.

LONG TERM GOALS

- 1. Achieve carbon neutrality for Scope 1&2 emissions by 2040
- 2. Achieve carbon neutrality for non-transportation and transportation related Scope3 emissions by 2030.

ENERGY SPECIFIC GOALS

Energy use is a primary source of carbon impact for municipal operations. The use of energy has long been an a high focus of sustainability and carbon neutrality plans because of the awareness of increased energy costs, creating energy efficient processes/systems, and the ease of tracking costs data. Depending on the user or organization, energy could be electricity or fossil fuels, renewable energy, or "clean" sustainable energy. The focus of this plan's internal use will provide goals which the City can control. Examining buildings, equipment systems, and human behavior; while other areas of carbon impact such as transportation, waste reduction or integrating sustainability practices are discussed later in the plan.

SHORT TERM GOALS

- Refine and finalize GHG baseline data on electricity, natural gas, propane and other energy/ power sources (and any other power/ heat source)
- Using ICLEI, finalize forecasting and planning modules including process for annual data collection
- Use building performance energy audit to identify areas of energy waste, leak, and heavy use in targeted buildings.
- Analyze renewable energy sources appropriate for City of Lansing.
- Seek partnerships with regional stakeholders also working to develop renewable energy sources such as Michigan State University and City of East Lansing.
- Explore locally-available or regionally-appropriate renewable energy sources for municipality use. Community solar projects are increasing in region.
- For renewable energy sources: analyze cost-benefit analysis, long-term maintenance options of infrastructure and personnel, and locations for various types of infrastructure.

MID TERM 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 within current context.
- All City-owned buildings will exceed State of Michigan minimum energy codes.
- Achieve a 5% reduction in energy costs of buildings regularly occupied by staff.
- Take action on energy audit findings: Determine options/ alternatives to improve building's energy use and how its occupants use appliances.

LONG TERM GOALS

- Achieve a 10% reduction in energy costs of city operated/owned buildings
- Implement and fund appropriate renewable energy source infrastructure(s) for city-owned buildings, structures, or uses.

TRANSPORTATION SPECIFIC GOALS

Currently, nearly all of the City's fleet, staff (City passenger vehicles), and specialty vehicles are internal- combustion engines (gasoline, diesel, propane, or LP). Use of hybrid (electric + internal-combustion engines) and full electric vehicles are becoming popular throughout the US. However, the higher cost (compared to typical internal combustion engines), maintenance, and repair of these vehicles is likely cost-prohibitive for the City of Lansing and other municipalities. However, there is one Malibu (Hybrid), one Volt (electric vehicle), as well as two hybrid patrol cars, which are on the way. Without additional revenue (local, State, or Federal assistance), it is unlikely that the City of Lansing 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.

Best practice goals for reducing carbon emissions in the City's fleet would include the following goals but are only to address full costs of fleet, staff passenger vehicles, and specialty vehicles 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.

Specific goals for fleet transportation have not been created however, it is recommended that the City invest in a comprehensive Fleet Optimization Study in order to determine the best process by which to evolve the current fleet and alter funding models. Partnership with Tri-County Planning Commission, Capital Area Transit Authority, Michigan State University and/or other organizations should provide resources for recommended study. A regional approach would be highest best use of resources.

However, a few interim goals have been recommended:

- Reduce fuel consumption through development and implementation of Idle Time Reduction policy in all City fleet vehicles, including specialty vehicles as appropriate.
- Promote City employee carpooling, alternative transportation methods, remote working arrangements, etc.
- Include full life cycle assessment and optimization study for all new vehicle purchases until such time as Fleet Optimization Study is completed.
- Create purchasing criteria for new fleet vehicles including MPG standards, automatic shut off to reduce idle time, alternative fuels, and electric vehicles when appropriate.

*Note that the City of Lansing does not operate the public transit system. Also, following this initial Climate Action Plan focused on City operations, a community-wide Climate Action Plan would be much more inclusive of broader transportation goals.

MITIGATE SOLID WASTE

Mitigating solid waste from City operations can create cost savings, avoids risk and contributes to the overall reduction of carbon impacts. Goals to reduce and eliminate solid waste are accomplished through two general practices, aversion and diversion. Aversion is the practice of eliminating the potential for waste by not generating any waste to start. This can be accomplished through supply chain interventions and many other opportunities. Diversion is the practice of rerouting valuable resources that would otherwise end up in the landfill to other uses or outcomes such as recycling, upcycling, reuse, etc.

OBJECTIVE

1. Achieve 90% Waste Diversion Rate for Municipal Operations by 2030.

SHORT TERM GOALS

- 1. Establish a detailed data collection system for municipally produced waste.
- 2. Research and determine baseline data of raw materials used by City facilities.
- 3. Research and determine baseline data of recycled products at City buildings.
- 4. Update waste characterization study, separate community from City.
- 5. Identify key areas of improvement and annual reporting process.
- 6. Ensure recycling of construction, demolition, and remodeling debris. Review standards and recommend change if necessary.
- 7. Conduct waste audits for City facilities and departments.

MID TERM GOALS

- 1. Decrease raw materials used by the City of Lansing.
- 2. Increase internal recycling at all City facilities.
- 3. Increase source reduction through "aversion" strategies, developing policies, procedures and programs for reducing waste at its source.
- 4. Establish a food composting program from City facilities; install bins for compost material. Partner with regional efforts already ongoing.
- 5. Implement measures which reduce raw materials used by the City by 5%.
- 6. Implement measures which increase recycling at City buildings by 15%.

LONG TERM GOALS

- 1. Implement measures which reduce raw materials used by the City by 10%.
- 2. Implement measures which increase recycling at City buildings by 10%.
- 3. Establish a more efficient and sustainable bio-solids program at the wastewater treatment plant.
- 4. Implement an internal mandate for City staff to recycle.

REDUCE WATER WASTE

Reducing Water Waste means using the minimum amount of water in the most efficient way possible to satisfy a given need. Considerable water waste reduction is achieved when all municipal effluent is captured, treated and reused through a combination of more efficient fixtures, better management and distribution for use by mechanical, technical and irrigation systems. Lansing is fortunate to be located in a water-rich region. Never the less, conserving and protecting our water resources are key priorities. The City and Lansing Board of Water & Light ensure the city's water supply is safe, accessible, and reliable.

OBJECTIVES

- 1. Achieve 50% Reduction in operational water waste by 2040.
- 2. Reduce operational demand for water and water effluent sourced by municipal operations by creating a water conservation plan aligned with climate change factors.
- 3. Reduce energy consumption of the wastewater treatment plant one of the largest users of energy in the City.

SHORT TERM GOALS

- 1. Complete detailed energy audit of waste water treatment plant, identify options for improved energy management.
- 2. Complete detailed water use audit of fixtures / devices in all City facilities.
- 3. Implement actions identified by energy/water audits.
- 4. Engage employees and operational stakeholders on water use reduction to assist with municipal water reduction goals.

MID TERM GOALS

- 1. Decrease water usage at City facilities.
- 2. Reduce the amount of storm water run-off and adopt best practices for ongoing management.

CORE BUSINESS INTEGRATION

Core business integration of sustainability and climate action is the most challenging but most vital demonstration of our value system. Core business integration addresses how we choose to run our operations by ensuring policies, procedures and programs all reflect the City's commitment to sustainability and carbon neutrality. An important part of core business integration is the development of diversity, equity and inclusion efforts within the City, connecting directly with Climate Action Planning.

OBJECTIVES

- 1. Integrate mitigation, adaptation and sustainability practices into City governance structures including processes, procedures, policies and ordinances. Incentive policies could include sustainability measures (i.e. incentives for EV chargers, or carbon reduction, or other measures).
- 2. Update City Master Plan and Strategic Plan to include sustainability and prioritize climate action.

SHORT TERM GOALS

- 1. Conduct detailed assessment of City Master Plan and Strategic Plan to ensure alignment with Climate Action Plan.
- 2. Conduct detail assessment of City operational procedures and policies.
- 3. Convene internal climate leadership team.
- 4. Convene Commission on the Environment.
- 5. Convene external stakeholder advisory group.

MID TERM GOALS

1. Draft policies for climate adaptation and energy efficiency in all future City planning, design and construction projects.

EMPLOYEE ENGAGEMENT

Active employee engagement will promote the development, integration and successful implementation of the City's Climate Action Plan. It is also general good practice to encourage personal initiative by providing learning opportunities and resources such as sustainability education and awareness programs.

OBJECTIVES

- 1. Develop employee engagement programs specific to sustainability and climate action.
- 2. Create an employee climate action team representing various departments and operations.
- 3. Provide foundational climate change professional development training for City employees.
- 4. Create internal awareness campaigns for employees.
- 5. Develop opportunities for all employees to engage with subject and in problem solving. Recommend employees have input into Climate Action Plan before City finalizes goals.
- 6. Track and set goals for engagement. (% of total employees engaged in sustainability or climate action activities).
- 7. Employee Engagement is also relevant for Key Strategy 4 Core Business Integration.

IMPLEMENTATION

EMPLOYEE ENGAGEMENT

We must successfully implement this plan to focus the City's finite resources to achieve our desired outcomes. The creation of a strategic plan for climate action is the first step in an important journey to achieving more equitable, effective and sustainable operations. With the completion of this written plan, we now turn our focus to creating a robust implementation process that will include:

- Establishing a performance management team responsible for managing the successful implementation of the plan
- Assigning accountability to staff for measuring, tracking, accomplishing and reporting on the progress of strategies and metrics
- Creating a robust information and data tracking system that supports detailed analysis of performance
- Training staff on the plan, implementation process and performance management expectations
- Establishing a cadence of report-outs on progress, which will include internal staff reporting as well as an annual report to the Mayor, City Council and public
- Publishing performance information and data publicly on the website and through other communication methods
- Updating the plan as needed
- Reorganizing the budget and budget process to align with the plan
- Integrating strategic plan performance measures into employee evaluations

Each year, the Mayor proposes a budget the 3rd Monday in March and City Council passes the final budget the final Monday in May. Strategies and investments for the upcoming year may be reflected in the budget, which runs from July 1 through June 30.

IMMEDIATE ACTION RECCOMMENDATIONS

- Dedicate a full time staff member who will continue developing and implementing the City's sustainability and climate action plan. As possible, there would be budget allowance for support from internal staff, interns and/or outside consulting.
- Provide foundational climate change professional development for City employees including City Council, department managers, and other key operational leaders. See www.climateofficers.org as leading opportunity.
- Create an internal climate action/sustainability team of city employees, department leaders, and directors. This team will support the city's climate action plan development and drive progress within their own operations.
- Create awareness campaign for city employees and departments. This will assist with internal and community communications.
- Create an external team or Commission on the Environment which would be inclusive of a city staff and city council liaisons.
- Establish an external stakeholder advisory group comprised of various local partners, businesses/organizations and governmental agencies such as State of Michigan, LWBL, MEO, MEC, Mid-MEAC, Consumers Energy, City of East Lansing, townships, General Motors, etc. all of whom operate in support of Lansing's climate action plan.
- Create a data collection and reporting methodology and process to provide ongoing planning and progress on goals with viable and timely data. Data gap analysis will be instrumental in this process.
- Prioritize the City's new sustainability/climate action coordinator to complete the GHG inventory forecast and planning processes using the ICLEI framework.
- Prioritize the City's new sustainability/climate action coordinator to join upcoming training cohorts with ICLEI.
- Initiate work on a community-wide climate action plan!
- Renew commitment to U.S. Conference of Mayor Climate Protection Agreement.
- Enroll in the 2020 Michigan Green Communities Challenge..
- Join the Global Covenant of Mayors for Climate and Energy.

I. SUMMARY GHG INVENTORY (ICLEI)

The inventory established a FY2017 baseline year for measuring progress going forward.

The City of Lansing joined ICLEI via annual membership. ICLEI is a national organization that assists cities develop and manage their GHG inventory, forecasting and planning. This plan has completed some initial data entry and analysis within the ICLEI framework. Full access to the framework is available. Using the framework, the following has been determined:

Based on data collection, Scope 1 emissions are the primary source of carbon footprint deriving from building operations.



(Exhibit 1)

A review of the municipal fleet fuel use indicates a relatively flat line of fuel use even though the cost of fuel has fluctuated. The fuel use chart reveals a large opportunity for reducing the overall GHG emissions of operations.



(Exhibit 2)

A review of the baseline year also indicated the following points of interest regarding the City's operations:

- 113,561 MMBtus of natural gas used/purchased
- 2,706,280 KwH of electricity used/purchased
- 414,645 gallons of fuel used for fleet operations or 2,058 Metric Tons of CO2e

Scope 3 emissions are in large part reflective of employee commuting and travel. Collecting this data for a past baseline year is very difficult. In lieu of the extensive research, the process only looked at employee commute for FY2019 based on employee's home zip code and assuming travel to City Hall. In following years it is recommended to conduct a full survey of employee commuting behavior and extended analysis of both travel and commuting patterns. For the purpose of this inventory it was determined that City employees commuted over 4.35 million miles in one year which equates to 1,759 Metric Tons of CO2e.

II. DATA COLLECTION PROCESS

During the process of collecting data for this strategic plan, several challenges were encountered. There are multiple sources of data from multiple departments and other external sources (LBWL, Consumers Energy, etc.) which complicated the collection process. Much of the data received for the project remains incomplete or missing. Primary root causes for data gaps include:

- Multiple and incompatible sources.
- Data sets do not exist or are not collected. New collection processes will need to be created.
- Examples
 - MSW generated by City operations only. Data available is inclusive of entire City and surrounding areas making it impossible to identify City's waste footprint.
 - Fugitive emissions from use of refrigerants, propane, butane, kerosene, fuel oil, etc. are only partially reported as purchasing data for these items is not complete or not tracked in a sufficient manner.
 - City Fleet Analysis included mileage assess for 6/1/2018 5/31/2019, which is an incomplete period and not the baseline year. More extensive data was not available.

The ICLEI Framework includes nine major categories: There were four major categories of data that were not collected for the ICLEI framework, see list below. Items 7-9 are not included because the City does not own and/or operate the functions, therefore do not need to include in GHG inventory.

1. Buildings & Facilities – Included

- 2. Vehicle Fleet Included
- 3. Employee Commute FY2019 Data Included
- 4. Water & Wastewater Treatment Included
- 5. Process & Fugitive Emissions Partial FY2017 Data Included
- 6. Street Lights & Traffic Signals Not included as data is not available and method to collect data does not currently exist.
- 7. Transit Fleet The City does not own or operate transit fleet in city
- 8. Electric Power Production Although part of the municipal structure, LBWL energy production is not included in the City's GHG inventory.
- 9. Solid Waste Facility The City does own or operate a solid waste facility.

III. 2016 CEM PROJECT GOALS & RECOMMENDATIONS

Based on the evaluation of the ENERGY STAR[®] Portfolio Manager and Excel energy and water use tools as well as information gained from building walkthrough assessments and discussion regarding long-term energy and water sustainability goals:

GOALS:

Decrease utility costs 10% by 2020 Dedicated funding source to support continued energy & water efficiency improvements Ensure City Staff commit to tracking & reducing water/energy use Maintain & invest in buildings for a comfortable and productive work envrionment Examine opportunities for renewable energy, including solar and geothermal

RECOMMENDATIONS:

In order to achieve these ambitious goals, PSC and MEO worked with the City's Green Team to identify short- and medium-term (two to four years) priority recommended actions for improving the City's energy and water sustainability:

- Track energy and water use/cost regularly
 - Maintain the CEM database and evaluate weather-normalized energy and water use each year.
 - Assess the necessity of existing meters that are not in use but that the City continues to pay for. The meters should be disconnected and closed if the annual cost exceeds future costs to re-use the meter.
 - Create an easy-to-read dashboard for the City website that shows annual energy and water efficiency investments, utility costs and savings.
- Use sustainable practices to operate municipal buildings and programs
 - Review and upgrade policies that require recycled content and/or energyefficiency standards in purchased materials and equipment.
 - Evaluate options for providing managers with flexibility to make quick purchases of small items to take advantage of energy-efficient and maintenance-decreasing procedures.

- Educate and empower staff to help reduce energy and water use.
 - Survey staff regarding building energy and water conservation issues and suggestions or improvement.
 - Update goals and recommendations annually to address staff concerns and suggestions.
 - Identify and support building-level champions who can educate their peers and play a role in leading sustainability outreach efforts (such as building energy and water saving contests.)
 - Teach staff how they can reduce energy and water use such as turning off computers at night, not using portable heaters or fans, and using recycled paper for notes. Training and outreach should be fun and easy for people to access, and emphasize tangible, real-time benefits to staff (e.g., more comfortable and healthy workspaces.)
 - Convene Green Team meetings quarterly to track progress on achieving goals to ensure that Green Team members can act as champions among staff to encourage energy-efficient behaviors.
 - Communicate program successes and efforts to staff and the community through emails, social media and flyers, and/or consider rewards for employee behavior and positive outcomes.
- Establish an NREF to promote continued energy conservation technologies and behavioral measures. The NREF should be structured to allow for the capture of all or some portion of energy savings achieved through energy and water conservation investments and used for additional investments.
- Build on this municipal energy plan by creating a citywide sustainability/energy plan that identifies broad goals for the community as a whole and identifies actions that the City, businesses and residents can all take to reduce environmental impacts and save costs.
- Survey residents and businesses in order to understand (and track over time) their perceptions of energy conservation and sustainability actions the City is undertaking.

IV. DEFINING GHG EMISSION SCOPES 1, 2 AND 3

To help delineate direct and indirect emission sources, improve transparency, and provide utility for different types of organizations and different types of climate policies and business goals, three "Scopes" (Scope 1, Scope 2, and Scope 3) are defined for Greenhouse Gas (GHG) accounting and reporting purposes. As defined by the U.S. Environmental Protection Agency:

SCOPE 1: DIRECT GHG EMISSIONS

- Direct GHG emissions occur from sources that are owned or controlled by the company, for example, emissions from combustion in owned or controlled boilers, furnaces, vehicles, etc.
- Direct CO2 emissions from the combustion of biomass shall not be included in Scope 1 but reported separately.
- GHG emissions not covered by the Koto Protocol, e.g. CfCs, NOx, etc. shall not be included in Scope 1 but may be reported separately.

SCOPE 2: INDIRECT ELECTRICITY GHG EMISSIONS

- Scope 2 accounts for GHG emissions from the generation of purchased electricity consumed by a company.
- Purchased electricity is defined as electricity that is purchased otherwise brought into the organizational boundary of the company.
- Emissions physically occur at the facility where electricity is generated.

SCOPE 3: OTHER INDIRECT GHG EMISSIONS

- Scope 3 is a vital reporting category that allows for the treatment of all other indirect emissions.
- Scope 3 emissions are a consequence of the activities of the organization, but occur from sources not owned or controlled by the organization.
- Some examples of Scope 3 activities are extraction and production of purchased materials; transportation of purchased fuels; and use of products and services.

V. DEFINITIONS

Adaptation – Improving our ability to cope with or avoid harmful impacts; or taking advantage of new favorable conditions. These actions can include reducing vulnerability and risk. Adaptation can reduce sensitivity to extreme events and long term condition changes. Examples: protecting existing infrastructure, science-based decision making to improve infrastructure, climate resilience planning, etc.

Carbon Footprint – The measured amount of carbon dioxide and other carbon compounds emitted due to the consumption of fossil fuels.

Climate Change – The long-term change in the average climate caused by human or natural factors. Climate change occurs globally, regionally, locally, etc. and is variable depending on many variables. The term is not specific to warming or cooling as geographic variables will influence outcome of change.

Global Warming – The long term increase in the global average temperature.

Greenhouse Gas Emissions (GHG) – A gaseous compound in the atmosphere that is capable of absorbing and emitting radiant energy. Greenhouse gases are most commonly attributed to the overall trend of global warming and climate change.

Life Cycle Assessment (LCA) – A methodology for assessing environmental or carbon impacts associated with all stages of the life-cycle of a commercial product, process, operation or service. The assessment includes the raw material extraction, processing, manufacture, distribution, use and final disposal, recycling, or compost.

Mitigation – Actions that reduce the abundance of greenhouse gas emissions being emitted and/or removing carbon dioxide (CO2) from the atmosphere. Examples: planting trees to increase carbon sequestration, implementing low/no carbon energy sources, increasing energy efficiency, etc.

Resilience – The capacity of a system or organization to prepare for, withstand, recover and adapt to significant threats with a minimum of damage to infrastructure, assets, operations, social well-being, economic health and the environment.

Sustainability – The basis of "sustainability" focuses on meeting the needs of the present without compromising the ability of future generations to meet their needs. Sustainability frameworks are composed of three pillars: economic, environmental and social.

VI. ACKNOWLEDGEMENTS

- City of Lansing Mayor's Office & Chief of Staff
- City Council City of Lansing
- City of Lansing Operational Departments
- Lansing Board of Water and Light
- Consumers Energy
- Lansing Economic Area Partnership
- Tri-County Planning Commissions
- Granger Waste Services

VII. OTHER RESOURCES

- City of Lansing Website lansingmi.gov
- Lansing Forward Website lansingforward.com
- City of Lansing Community Energy Management Assessment Project 2016
- Live Green Lansing Campaign website not available
- Lansing Board of Water & Light lbwl.com
 - Energy Efficiency Programs
 - Annual Report
 - Fuel Mix & GHG Emissions
- Lansing Economic Area Partnership lansing.org
- U.S. Environmental Protection Agency epa.gov
- State of Michigan EGLE michigan.gov/egle/