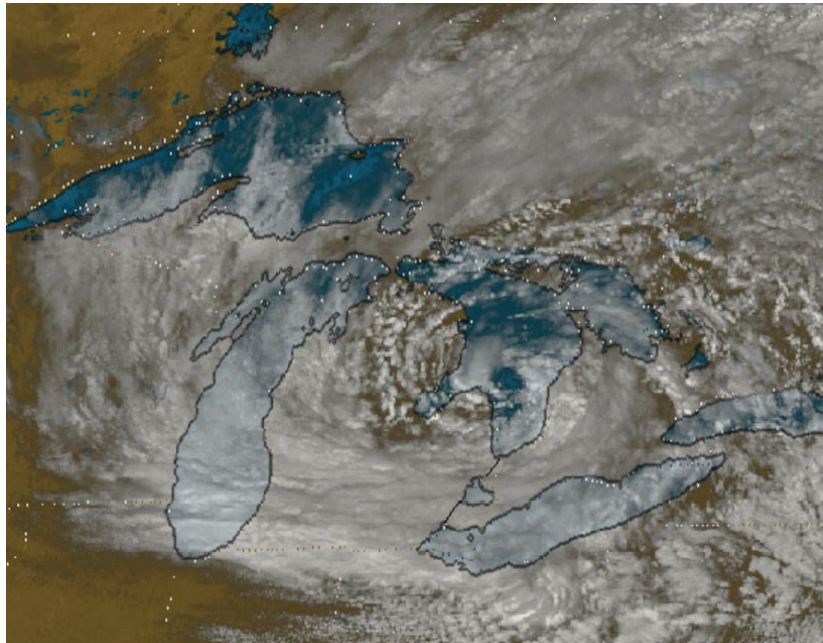




Climate Sustainability Plan

Meeting Our Climate Action and Green Community Goals



Contents

Executive Summary	2
Introduction	3
Climate Action	3
Purpose, Scope, and Process	4
Sustainability Plan, Programs, Policies, and Progress to Date	5
a. Energy Efficiency	5
b. Renewable Energy	7
c. Recycling and Waste Reduction	9
d. Transportation	11
e. Water Management	13
f. Monitoring and Evaluation	15
Conclusion	16
Acknowledgements	16

Executive Summary

In 2007, Meridian Township joined over 1000 communities in signing the U.S. Mayors Climate Protection Agreement. This plan describes many of the activities that have been done during the past 10 years to implement that agreement. The Meridian Township Board adopted a resolution of support for the Paris Climate Accord on June 20, 2017. Consistent with the Accord, many national, state, and local governments have established goals to reduce greenhouse gas emissions by 80% or more by 2050 compared to 2005 levels with an objective of a maximum global average temperature rise of 1.5°C to 2°C.¹ This is also the long-term goal of this plan.

Climate change is largely attributed to greenhouse gases, such as CO₂, released from burning fossil fuels. Climate change is predicted to have many impacts on our weather, our health, and our economy. These include flooding, poor air quality, negative impact on trees, and increased infectious diseases. One of the most significant impacts in Meridian Township will be more major rain events that lead to flooding.

Meridian Township has a long history of environmental stewardship. The Climate Sustainability Plan provides a framework for continuing and expanding this legacy. Implementation of this plan will enable Meridian Township to:

- Contribute to the worldwide efforts to curb greenhouse gas emissions.
- Make our community a more sustainable, resilient, affordable, and vibrant place to live.
- Make our township government operations more energy and resource efficient and better prepared to deal with the impacts of climate change.

This plan requires many actions related to energy efficiency, renewable energy, recycling and waste reduction, transportation, and water management. This plan includes objectives to:

- Achieve significant energy and water cost savings in township facilities and vehicle fleet.
- Obtain 50% of electricity used for township operations from renewable energy sources by 2025 and 100% by 2035.
- Reduce the amount of materials sent to landfills by 10% in 5 years.

The Township Manager will work with township staff, Meridian Township Energy Team, Environmental Commission, Transportation Commission, and other township boards and commissions to define responsibilities for implementing the plan. Monitoring will be important to determine plan impacts and what is working. Objectives and strategies in this plan should be revisited at least every 5 years.

¹ https://en.wikipedia.org/wiki/Paris_Agreement

Introduction

The Meridian Township Board adopted a resolution of support for the Paris Climate Accord on June 20, 2017. Consistent with the Accord, many national, state, and local governments have established goals to reduce greenhouse gas emissions by 80% or more by 2050 compared to 2005 levels with an objective of a maximum global average temperature rise of 1.5°C to 2°C.² This is also the long-term goal of this plan. Implementation of this plan will enable Meridian Township to:

- Contribute to the worldwide efforts to curb greenhouse gas emissions.
- Make our community a more sustainable, resilient, affordable, and vibrant place to live.
- Make our township government operations more energy and resource efficient and better prepared to deal with the impacts of climate change.

Achievement of this goal will require many actions related to energy efficiency, renewable energy, recycling and waste reduction, transportation, and water management. This plan includes objectives to:

- Achieve significant energy and water cost savings in township facilities and vehicle fleet.
- Obtain 50% of electricity used for township operations from renewable energy sources by 2025 and 100% by 2035.
- Reduce the amount of materials sent to landfills by 10% in 5 years.

In light of the urgency to mitigate climate change and the imperative to use tax dollars wisely, a plan to use resources as economically and efficiently as possible is essential.

Climate Action

In 2007, Meridian joined over 1000 communities in signing the U.S. Mayors Climate Protection Agreement. More recently, East Lansing, Grand Rapids, Ann Arbor, Traverse City, and others have developed Climate Action, Energy, and Resiliency Plans. Many of these are integrated in Comprehensive Plans. The Michigan Municipal League, Michigan Townships Association, State of Michigan, and others have launched a Green Communities Network to assist local governments in addressing environmental challenges including climate change.

Climate change is largely attributed to greenhouse gases, such as CO₂, released from burning fossil fuels such as coal, oil, and natural gas. Climate change is predicted to have many impacts on our weather, our health, and our economy. These include flooding (see Figure 1), poor air quality, negative impact on trees, increased infectious diseases, and increased wildfire risk. One of the most significant impacts in Meridian Township will be more major rain events that lead to flooding.

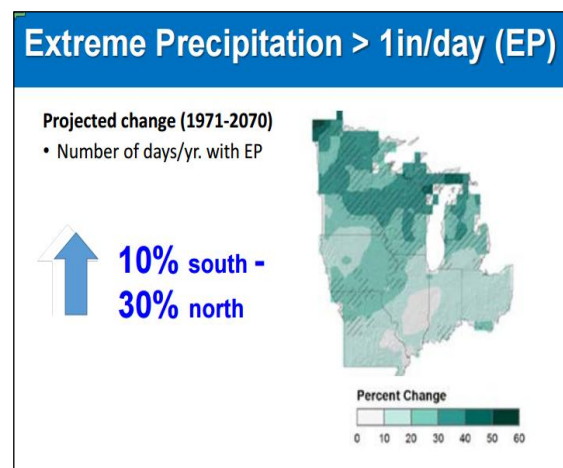


Figure 1: Great Lakes Integrated Sciences & Assessments (GLISA)

² https://en.wikipedia.org/wiki/Paris_Agreement

Predicted Changes in Michigan

Key Health Outcome	Biophysical Parameter Changes	Predicted Change
Respiratory Diseases	Air Pollutants increase with high temps; Pollen, Mold levels increase with longer growing season & more moisture	↑
Heat Morbidity, Mortality	More frequent, longer Heat Events; Warmer minimum temperatures	↑
Injury, CO Poisoning	More frequent Ice Storms, Extreme Rain leading to more Power Outages & Cleanup; changes in other storm types unclear	↑ ?
Waterborne Diseases, Toxins	Algal blooms, other Flood-related contaminations more frequent	↑
Vector borne Diseases	Impact on Mosquito & Tick lifecycle unclear	?

Figure 2: MI Climate & Health Adaptation Program

While exact impacts cannot be predicted, long term trends are evident (see Figure 2) and call for an organized response – especially when climate adaptation and mitigation actions make communities more vibrant, affordable, sustainable, and resilient places to live.

This Plan includes strategies that can help reduce climate change impacts while saving money, saving energy, saving resources, and improving landscapes. These “actions of no regret” offer win-win opportunities that should be carried out regardless of opinions about the nature and threat of climate change.

“The climate is changing and we need to be more dynamic in our planning, especially in terms of extremes”

– Jeff Andresen, MSU Professor of meteorology/climatology and State Climatologist

Purpose, Scope, and Process

Meridian Township has a long history of environmental stewardship. The adoption of a Climate Sustainability Plan provides a framework for continuing and expanding this legacy. This Plan helps nurture this culture of environmental stewardship that influences all Township policies and actions.

The Plan focuses on five areas: Energy Efficiency, Renewable Energy, Recycling and Waste Reduction, Transportation, and Water Management. It offers a list of positive steps we can take now and lays out long-range objectives. It is intended to stimulate conversation, generate ideas, and evolve as new information and ideas emerge, and as more people become involved. Education and communication will be an important part of all areas of the Plan. The Township will use the web page, HOM-TV, public forums, and other means to make residents aware of current and proposed policies, programs and incentives.

As incorporated by reference in the Township’s Master Plan, the Climate Sustainability Plan is integrated with all Township government activities. Resource usage is a part of everything the Township and its staff does, so everyone is a partner in efforts to achieve a sustainable future. The Township Manager will work with township staff, Meridian Township Energy Team, Environmental Commission, Transportation Commission, and other township boards and commissions to define responsibilities for implementing the plan. The Plan should be revisited at least at 5 year intervals and updated as needed.

Sustainability Plan, Programs, Policies, and Progress to Date

a. Energy Efficiency

Meridian residents spend over \$100,000,000 each year on energy.³ The majority of this, consisting of non-renewable coal, oil, and natural gas, is imported from outside of Michigan. Most energy efficiency investments are dollars spent in our community and they have a multiplier effect. A 2011 report on the “Economic Impacts of PA 295 Energy Optimization Investments in Michigan” indicated that for each dollar spent on energy efficiency there is a net increase of over seven dollars in the cumulative Gross State Product (GSP).

Past and Current Progress:

Energy efficiency remains one of the quickest and most economical paths to sustainability and resilience. Meridian government has made great strides in reducing energy consumption in its operations, saving over \$100,000 during the past 5 years. These energy improvements have more than paid for themselves and a portion of this savings has been allocated to a Revolving Energy Fund to support new investments in efficiency.

A “Phase II” Energy Study was completed in 2015⁴ (<http://bit.ly/phase-II>). In addition to seeking bids on the items recommended in this report, an engineering study is underway to explore major HVAC (heating, ventilating, & air conditioning) system replacements and/or retrofits for the Municipal Building. A recent benchmarking study by Consumers Energy shows we still have energy savings potential in our Township buildings⁵ (See Figure 3 and <http://bit.ly/energy-performance-17>).

³ <http://energy.gov/articles/how-much-do-you-spend> downloaded 9-12-16

⁴ Meridian Township Phase II Energy Efficiency Project - Part 1 Final Report submitted by Bob Tinker, RA, LEED AP, May 18, 2015

⁵ Consumers Energy Building Performance with Energy Star®: Energy Efficiency Walk Through and Behavioral Assessment Report submitted by Consumers Energy, May 2017

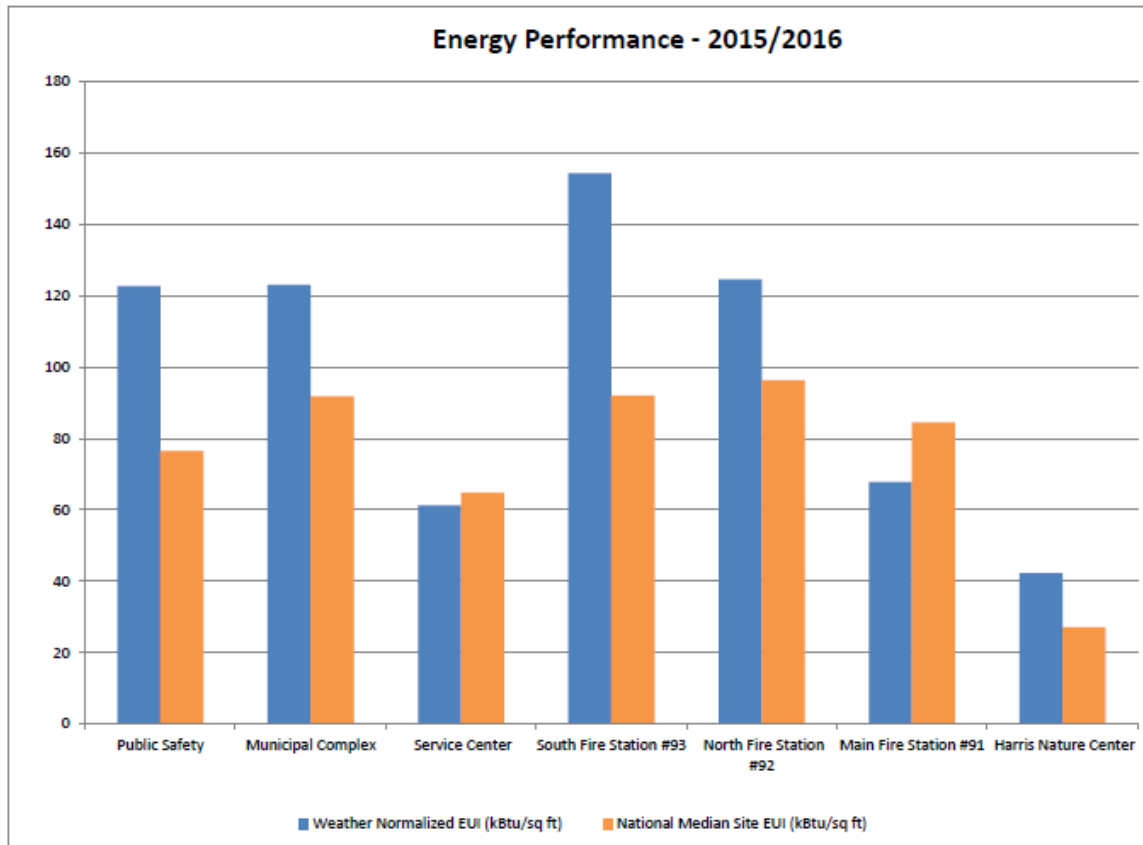


Figure 3 How Meridian’s Top-Consuming Buildings Compare to National Median

Objective a.1: Achieve significant energy cost savings and carbon emission reductions in Township facilities.

Strategies:

1. Implement recommendations from the Consumers Energy Building Performance with Energy Star Study including development and adoption of a Meridian Energy Policy.
2. Implement Phase II Energy Recommendations and HVAC Engineering Study and include major HVAC upgrades in Capital Improvement Plans.
3. Obtain Energy Star designation for township buildings where possible.
4. Use LEED Gold criteria or the equivalent for all projects undertaken by the Township. LEED criteria include measures related to energy efficiency, renewable energy, recycling and waste management, transportation, and water management.
5. Monitor energy savings and return 80% of savings to Revolving Energy Fund.
6. Budget funds for energy efficiency assessments a minimum of once every five years.
7. Address sustainability implications in proposals for capital improvements. Township Manager will consider criteria related to energy efficiency, renewable energy, waste management, transportation, and water management when developing a capital improvement plan.

Objective a.2: Explore other opportunities and partnerships to achieve energy savings.

Strategies:

1. Identify and pursue State and Federal grant funding, pilot programs, and utility programs.
2. Further build partnerships such as Michigan Green Community Network, Clean Cities, Sustainability Forums, and expand collaboration with other local governments in our region.
3. Establish incentives to builders to exceed the energy efficiency provisions of the state building code.
4. Increase tree canopy throughout the township and especially in business areas to reduce cooling loads. Consider the potential for future solar energy installations when deciding placement of trees. Propose ordinance changes and provide incentives for existing businesses to upgrade their parking lots and landscaping to increase tree cover and shade to be energy efficient and environmentally friendly.
5. Create incentives for the use of white roofs or green roofs to reduce cooling loads.
6. Identify opportunities and remove barriers to support the construction of “tiny houses.”
7. Review parking requirements and provide incentives to reduce and remove asphalt.

Objective a.3: Provide educational opportunities for Township staff and residents about energy consumption, energy savings opportunities, and utility incentives.

Strategies:

1. Improve delivery of information and data on energy consumption to building managers, Township staff, accounting/budgeting staff, and financial managers.
2. Provide Information to Township residents so they are aware of Township efforts and utility and other programs that can assist them.

b. Renewable Energy

Renewable energy systems are becoming more cost effective as technology advances lead to increased efficiencies and system cost decreases, while the cost of traditional power sources increase. Meridian Township will develop and identify opportunities to install solar, wind, geothermal, and other renewable energy systems at Township facilities and to facilitate installations elsewhere. The focus will be on solar energy in the near term because many opportunities exist.

Past and Current Progress:

Meridian Township adopted a wind energy ordinance in May 2011 (Ord. No. 2011-05) to provide standards and regulations pertaining to the location, construction, design, maintenance, and abandonment of wind energy systems and anemometer towers.

The Township worked with Peninsula Solar, Michigan Energy Options, U.S. Dept. of Energy, and Consumers Energy to create a solar demonstration and educational project at Harris Nature Center. The demonstration includes a solar-powered webcam system and a grid-connected photovoltaic (PV) system. The main panels are mounted on a racking system on the roof (right

photo) and a micro-inverter rests behind each panel. The two 250 watt roof-mounted solar panels were made in Michigan by Global Watt. These provide an average of 1.76 kWh on a sunny day. A separate 135 watt PV panel (left photo) powers two webcams pointed at the bird-feeding area and hawk cage. Energy production can be viewed at

https://enlighten.enphaseenergy.com/pv/public_systems/Uwam100679/overview



The Meridian Township Energy Team has been identifying opportunities to encourage more solar energy use in the Township. The Lansing Board of Water & Light (LBW&L) is developing a 300 kW Community Solar project in Burcham Park on the border of Meridian Township. Since the Township does have LBWL street lighting accounts, the Township Board authorized leasing ten 300 watt solar panels at the Burcham Park PV array. The Township will get utility bill credits for 25 years based on the electric production from the leased solar panels.

Objective b.1: Develop Township policies and procedures that encourage the use of renewable energy.

Strategies

1. Revise Township ordinances and procedures to ensure that they encourage energy conservation and the use of renewable energy.
2. Develop renewable energy and other practices that reduce greenhouse gas emissions that can be included in the list of amenities allowed in mixed use and commercial planned unit developments (PUDs).

Objective b.2: Increase the use of renewable energy at Township facilities.

Strategies

1. Obtain 50% of Township electricity from renewable energy by 2025 and 100% by 2035. The Township receives almost all of its electricity from Consumers Energy and indirectly will get 15% of its electricity from renewables due to the state Renewable Portfolio Standard (RPS) requiring the 15%.
2. Pursue the installation of solar electric systems at Township facilities by Dec. 31 2018. Identify and evaluate options to fund solar energy installations on Township facilities.
3. Participate in Community Solar or other green purchasing programs where possible.
4. Identify and seek grant funding for demonstrations of new renewable energy technologies.
5. Identify opportunities for non-grid connected applications like solar street lighting and solar lighting for signs.
6. Explore solar and other efficient back-up power options for Township facilities.

Objective b.3: Provide educational opportunities regarding renewable energy options and encourage the installation of renewable energy at private and public facilities throughout the Township.

Strategies

1. Obtain 25% of total community electric use from renewable energy resources by 2025. This includes the 15% due to Michigan’s Renewable Portfolio Standard (RPS) requirements.
2. Provide educational opportunities on current and proposed policies, programs and incentives that could help Township residents, businesses, and institutions utilize renewable energy.
3. Share information about funding and vendors with residents and business owners.
4. Provide incentives to developers to employ renewable energy in site plan and construction of new development. Identify and adopt incentives to encourage greater use of renewable energy, e.g. incentives for net zero homes or PV systems, elimination of permit fees for PV systems.
5. Collaborate with schools and other institutions on joint purchasing of renewable energy systems.
6. Inventory, highlight, and promote Meridian homes and businesses that feature net-zero, renewable, LEED, and related features.

c. Recycling and Waste Reduction

Recycling is an important environmental action taken by most Meridian Township residents and businesses. Recycling saves resources, prevents pollution, supports public health, and creates jobs. Harmful chemicals and greenhouse gasses are released from rubbish in landfill sites. It takes less energy to create new items from recycled materials than it does to create new products from raw materials.

Past and Current Progress:

For over a decade Meridian Township has partnered with citizen groups and waste haulers and recycling providers to provide recycling options to residents. During this time, Meridian has offered drop-off for yard waste, paper, metal, glass, and #1-#2 plastic at its Recycling Center and Transfer Station at 5976 E. Lake Drive in Haslett. This has been expanded to include electronics, Styrofoam/expanded polystyrene, green glass, and batteries. In addition, useable household furniture and knick-knacks are often reclaimed and refinished for resale.

In 2005, Granger, who serves the majority of single-family residential customers in the Township, began providing curbside recycling at no charge to their customers in 1-5 unit single-family dwellings. Also, in 2006, the

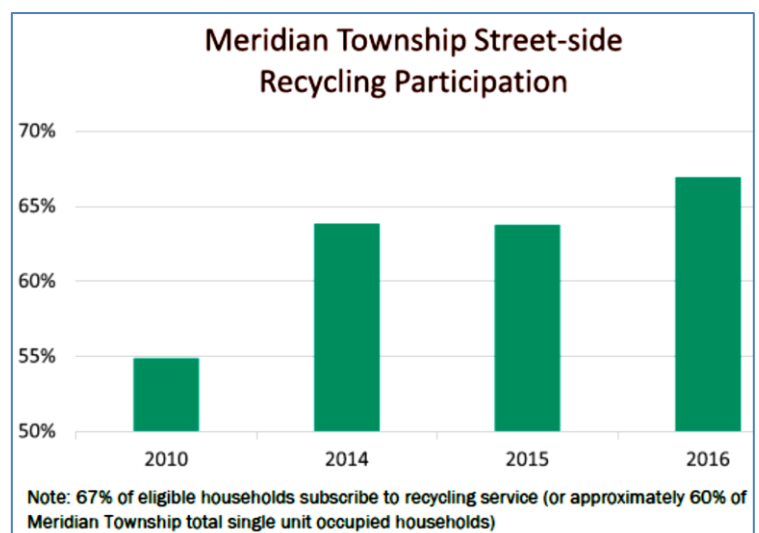


Figure 4 Granger 2016 Recycling Report

Meridian Township Citizen's Recycling Advisory Committee formed and offered the first bi-annual community-wide recycling day. In 2007, Meridian hired a Recycling Coordinator to assist with recycling efforts in the township. Figure 4 illustrates increases in curbside recycling rates during the past six years.

In 2015, larger residential recycling carts were offered, which helped increase recycling rates in the residential sector in 2016. In addition, more materials were collected at our drop off center.

Objective c.1: Increase recycling in owner-occupied dwelling units. Reduce the amount of materials sent to landfills by 10% in 5 years.

Strategies

1. Work with Granger and others to expand the use of 96 gallon carts and remove disincentives for recycling.
2. Evaluate having a single hauler in the township.
3. Launch a collaborative marketing and outreach program in the Township to promote existing recycling services and options.
4. Conduct regional education and promotion opportunities in collaboration with the Regional Recycling Coordinating Committee (R2C2), Capital Area Local First (CALF) and other neighborhoods, organizations, and partners.

Objective c.2: Expand recycling in multi-family housing, township departments, and in other commercial settings. Reduce the amount of materials sent to landfills by 10% in 5 years.

Strategies

1. Promote and expand current recycling efforts in multi-family housing.
2. Revise ordinances and policies as necessary to encourage recycling.
3. Provide technical assistance to managers and occupants of multi-family housing/apartments.
4. Implement a recycling campaign for all township departments.

Objective c.3: Offer community- and region-wide recycling events and other partnerships

Strategies

1. Partner with local business, schools, neighborhoods, governments, churches, and others to promote and offer recycling events.
2. Promote Ingham County household hazardous waste collections.
3. Explore collaborative processing and/or transfer of recyclables locally and/or in the region.
4. Identify and implement food, cooking oil/grease, composting, and related organic material recycling options.
5. Provide educational opportunities concerning the 5 R's: Refuse, Reduce, Reuse, Repurpose, & Recycle.
6. Consider a ban on plastic bags for single use purposes. Promote re-usable bags, bottles, etc.

d. Transportation

Transportation produced 26% of greenhouse gases in 2014⁶. Public and non-motorized alternatives can reduce the impacts from these greenhouse gases. The most accessible alternative to petroleum is often overlooked -- walking and biking. Transportation fuel use reduction measures decrease emissions, save the Township and residents money, enhance environmental quality, and promote public health. The Township will focus on its own fleet, walking and biking, and land use decisions. Land use decisions that lead to infill development and a greater use of public and non-motorized transportation can significantly impact petroleum use.

Past and Current Progress:

A Complete Streets Ordinance was adopted by the Meridian Township Board on Sept. 18, 2012. The ordinance is intended to provide safe, convenient, and comfortable routes for multiple modes of transportation including but not limited to walking, bicycling, personal vehicles and public transportation.

The Township has 20 miles of trails and 80 miles of pedestrian/bicycle paths. The development and maintenance of the trails and pathways are funded through the Park Millage and Pedestrian/Bicycle Pathway Millage. They are maintained by Township Parks and Grounds Maintenance Staff. The purpose of the pedestrian/bicycle pathway system is to provide a network of interconnected pathways throughout Meridian Township that connect destination points including schools; libraries; parks; public buildings; commercial areas; and connecting routes outside the Township.

Smart Commute competitions, coordinated by the Mid-Michigan Environmental Action Council, encourage trips involving alternatives to single-occupancy motor vehicles. Meridian Township staff has participated in the competitions for a number of years and in 2015 placed first among 23 teams participating. The 34-member Primed Meridian team won with 1,083 smart commutes, up from the previous year when the team had 927 trips. The Township has also offered bikes and bike helmets to employees and volunteers for the past three years.

The Meridian Energy Team partnered with the Greater Lansing Area Clean Cities Coalition and ChargePoint to purchase and install an electric vehicle charging station at Studio C in 2012. The Township has also explored clean diesel technology and experimented with biodiesel in its vehicles.

The Meridian Transportation Commission began meeting in January 2017. The purpose of the commission is to review transportation services, both public and private, within the township as to their efficiency, sufficiency, and costs and make recommendations, if necessary, for improvements.



⁶ Fast Facts on Transportation Greenhouse Gas Emissions, U.S. Environmental Protection Agency, December 1, 2016

Objective d.1: Encourage employee and citizen participation in Smart Commute competitions and encourage Township employees and citizens to be smart commuters year round.

Strategies

1. Continue to expand the bike and pedestrian pathways network throughout the Township.
2. Incentivize employee participation in Clean Commute competitions and encourage employees to be smart commuters year round.
3. Partner with Capital Area Transportation Authority and others to promote “Clean Commute” options and identify efficient paratransit and Redi-Ride efficiency improvements.

Objective d.2: Decrease the use of petroleum in the Township vehicle fleet.

Strategies

1. Choose the cleanest and most fuel-efficient vehicle that meets the department’s needs.
2. Use electric or hybrid vehicles whenever possible.
3. Use efficient trip-planning to reduce the use of fuel.
4. Conduct an efficiency inventory and audit of the Township vehicle fleet.
5. Adopt a fuel efficiency target for the Township vehicle fleet, including an implementation plan for reaching this target. The plan should incorporate vehicle efficiency and life cycle cost analysis as well as highlight opportunities for purchasing or converting vehicles to be more efficient.
6. Review and update the idling policy for the government fleet and/or a community-wide policy.
7. Identify and seek funding for alternative fuel vehicles and electric charging infrastructure.

Objective d.3: Use land-use planning to reduce vehicle miles traveled and petroleum use.

Strategies

1. Accelerate implementation of the Township’s Complete Streets policy to ensure that entire roadways are designed and operated with all users in mind - including bicyclists, public transportation vehicles and riders, and pedestrians of all ages and abilities.
2. Use the Urban Services Boundary to reduce vehicle miles traveled and encourage infill and redevelopment.
3. Encourage cluster developments, mixed use and other compact residential choices closer to shopping, public transit and other services.
4. Offer fast tracking and technical assistance for sustainable developments.

Objective d.4: Provide educational opportunities on transportation alternatives that can reduce petroleum use.

Strategies

1. Provide educational opportunities concerning public transit, car sharing, smart commuting, and transportation-efficient communities.
2. Provide educational opportunities on biking, walking, and driving safely, especially around bikers and walkers.

3. Continue membership in and partnerships with Greater Lansing Area Clean Cities (<http://michigancleancities.org>) and providers of efficient vehicles, equipment, and fuels.
4. Provide web sites and apps that identify charging stations for electric vehicles. Identify funding and opportunities for electric car charging stations.
5. Promote the employee and volunteer bike-sharing program.

e. Water Management

Water and how it is managed impacts almost all aspects of society, in particular health, food production, water supply and sanitation, and the functioning of ecosystems. Higher temperatures and changes in extreme weather conditions due to climate change are projected to affect rainfall, river flows groundwater, and water quality. Water management is an important Township responsibility and pollution prevention and wetland preservation are priorities. One of the most significant Climate Change impacts in Meridian Township will be more major rain events that lead to flooding.



Drinking water and wastewater systems account for approximately 2 percent of energy use in the United States, adding over 45 million tons of greenhouse gases annually. As much as 40 percent of operating costs for drinking water systems can be for energy.⁷

Past and Current Progress:

Meridian Township Public Works and Engineering maintains, repairs and operates the water distribution system; which includes 158 miles of water mains, 12,000+ water services, 15,000+ water meters, over 15,000 remote readers, over 1,900 fire hydrants, and two 500,000 gallon elevated storage tanks. The Township's web site has information on storm water management and pollution prevention including the following topics: Pollution Isn't Pretty, How to Properly Wash Pavement and Your Car, Pesticides and Fertilizers, Green Infrastructure and Low Impact Development, and Managing Riparian Lands.

The Township is a member of the East Lansing Meridian Water & Sewer Authority and purchases treated water from the Authority for areas of the Township north of Bennett Road and Kinawa Dr. The Township purchases treated water from the Lansing Board of Water & Light for areas south of Bennett Road and Kinawa Dr.

The Township enacted a wetlands protection ordinance that is more protective of wetlands than

⁷ Sustainable Water Infrastructure: Energy Efficiency for Water Utilities, U.S. Environmental Protection Agency, April 24, 2017

State regulations. The Township ordinance stipulating “no net loss” of wetlands means that wetlands drained or filled must be replaced by a wetland of equal or greater size. This includes wetlands as small as .25 acres. The Township maintains a wetland inventory and incorporates wetlands considerations into the site plan review process, including setbacks from natural features such as wetlands.

Objective e.1: Decrease water usage at Township facilities.

Strategies

1. Use building audits to determine which water fixtures to upgrade.
2. Amend purchasing policy to require that when purchasing or replacing new toilets only low flow fixtures will be purchased.
3. Install waterless urinals where appropriate.
4. Implement, as funds allow, a system to capture and use rainwater and gray water for turf and landscape irrigation at municipal facilities.

Objective e.2: Reduce storm water runoff.

Strategies

1. Partner with the Ingham County Drain Commissioner on reduction in storm water runoff.
2. Review and change policies as needed to accommodate expected changes in storm surges and extreme weather events.
3. Increase the number of street trees.
4. Use porous pavement, rain gardens, bioswales, riparian buffers, and retention ponds as appropriate. Use township parks and other properties to demonstrate these strategies.
5. Provide credits on water bills for rain barrels, porous pavement, and rain gardens.
6. Encourage projects that reuse storm water for irrigation purposes.
7. Discourage development within wetlands, floodplains, floodplain fringe areas, and water retention areas. Strengthen the Township wetlands ordinance in order to increase wetland acreage in the Township.

Objective e.3: Provide educational opportunities concerning water conservation and management.

Strategies

1. Use signs, brochures, and other outreach materials to describe why we conserve water and what the Township is doing to conserve water, alternatives to fertilizer use and how it affects stream ecosystems, drought resistant grasses, native plants, rain barrels, water efficient appliances such as low-flow toilets, and how one’s water usage compares to a typical home’s water usage.
2. Use media, web page, HOM-TV, public forums, and other means to encourage water conservation.

Objective e.4: Explore opportunities for water efficiency improvements within Meridian’s water supply and sewage treatment systems.

Strategies

1. Work with East Lansing Sewage Treatment Plant and Lansing Board of Water and Light to identify ways to reduce water use and sewage.
2. As a member of the East Lansing Meridian Water & Sewer Authority, identify ways to reduce water use.
3. Review water safety and supply plans and strategies.

f. Monitoring and Evaluation

Objective f. 1: Monitor greenhouse gas reductions and energy and cost savings and determine benefits to the community.

Strategies

1. Conduct a greenhouse gas inventory of the Township government operations.
2. An annual progress report will be prepared by township management on activities related to the Climate Sustainability Plan.
3. Evaluate cost-effective energy monitoring systems, software, assistance, and equipment including WeGoWise and Consumers Municipal Energy Efficiency Pilot and invest in monitoring equipment as needed
4. Prioritize top energy-using sites, buildings, and equipment for more frequent monitoring.
5. Explore opportunities with Consumers’ E-Billing Program, smart metering, street lighting, and other pilot programs.
6. Calculate annual water, energy, and cost savings and reductions in greenhouse gases. Reporting metrics would make annual comparisons and include:
 - 1) Annual greenhouse gas reductions for municipal operations and the community (tons)
 - 2) Annual municipal and community energy consumption (MBTU)
 - 3) Annual energy and cost savings from energy improvements to municipal buildings (MBTU, \$)
 - 4) Annual renewable energy generated from township facilities or purchases (kWh)
 - 5) Annual renewable energy generation in the community (kWh)
 - 6) Materials recycled communitywide (tons)
 - 7) Number of participants recycling (#residents, #businesses)
 - 8) Annual municipal water consumption (gallons)
 - 9) Annual community water consumption (gallons)
 - 10) Number of electric, electric hybrid, or alternative fuel vehicles in the township fleet
 - 11) Annual fuel savings in the township fleet (gallons of petroleum-based fuel)
 - 12) Percent sustainable commutes by mode type (%walked, %biked, % public transportation)
7. Objectives and strategies in this plan should be revisited every 5 years and a summary of accomplishments prepared.

Conclusion

This Climate Sustainability Plan for Meridian Township documents activities implemented by the Township since the Township's signing of the U.S. Mayors Climate Protection Agreement in 2007. Much progress has been made and the Township's departments and residents can be proud of the efforts to date. The Meridian Township Board adopted a resolution of support for the Paris Climate Accord on June 20, 2017. Implementation of this plan will support the Paris Climate Accord and enable Meridian Township to:

- Contribute to the worldwide efforts to curb greenhouse gas emissions.
- Make our community a more sustainable, resilient, affordable, and vibrant place to live.
- Make our township government operations more energy and resource efficient and better prepared to deal with the impacts of climate change.

Acknowledgements

Many organizations and citizens assisted in the development of this plan by providing presentations on climate change topics, comments on plan drafts, and suggestions for objectives and strategies.

- City of East Lansing
- Great Lakes Integrated Sciences & Assessments
- Consumers Energy
- Ingham County Drain Commission
- Meridian Economic Development Corp.
- Meridian Energy Team
- Meridian Environmental Commission
- Meridian Planning Commission
- Meridian Transportation Commission
- Michigan Climate & Health Adaptation Program, MDHHS
- Michigan Green Communities Network
- Michigan State Climatologist's Office

Cover Photo Credit: Todd Miner, Penn State University, 1996

Figure 1: Great Lakes Integrated Sciences & Assessments (GLISA)-Climate Change and Health Impacts presentation by Lorri Cameron, MPH, PhD to Environmental Commission on Feb. 1, 2017

Figure 2: Michigan Climate and Health Adaptation Program- Climate Change and Health Impacts presentation by Lorri Cameron, MPH, PhD to Environmental Commission on Feb. 1, 2017

Figure 3: Consumers Energy Building Performance Study (2017) <http://bit.ly/energy-performance-17>

Figure 4: [Granger 2016 Recycling Report](#)