



AGENDA
CHARTER TOWNSHIP OF MERIDIAN
ENVIRONMENTAL COMMISSION
JULY 5, 2017 7:00 pm



1. CALL MEETING TO ORDER AT 7:00 PM
2. APPROVAL OF THE AGENDA
3. APPROVAL OF THE MINUTES
4. PUBLIC REMARKS
5. NEW BUSINESS
6. OLD BUSINESS
 - A. Sustainability and Climate Action Plan

7. CHAIR'S REPORT
8. STAFF REPORT
9. COMMISSION/LIASON/WORKGROUP REPORTS
 - A. Planning
 - B. Land Preservation
 - C. Energy
 - D. Parks and Recreation
 - E. Transportation

10. PUBLIC REMARKS
11. ADJOURNMENT

Individuals with disabilities requiring auxiliary aids or services should contact the Meridian Township Board by contacting:
Township Manager Frank L. Walsh, 5151 Marsh Road, Okemos, MI 48864 or 517.853.4258 - Ten Day Notice is Required.
Meeting Location: 5000 Okemos Road, Okemos, MI 48864 Central Fire Station Conference Room

**CHARTER TOWNSHIP OF MERIDIAN
ENVIRONMENTAL COMMISSION MINUTES
Meridian Municipal Building – Town Hall Room
JUNE 7, 2017 - DRAFT**

REGULAR MEETING

PRESENT: Chair Bill McConnell, Commissioners, Ned Jackson, Ben Holland, Susan Masten, John Sarver, Jim Kielbaso, Kirk Lapham, and Marina Ionescu

ABSENT: NONE

STAFF: Assistant Planner Jennifer Quinlivan

OTHERS: NONE

1. CALL REGULAR MEETING TO ORDER

Chair Bill McConnell called the meeting to order at 7:05 p.m.

2. GREEN THEMES PRESENTATION:

David Arnost from Haslett Community Church presented on the solar panel project they have recently completed at the church. He stated the project was more of a focus on the “human side and outreach” of a solar panel installation lead by the Haslett Community Church Green Team. The team started working on the project in 2014 and conducted a variety of community talks regarding the use of solar panels to offset energy costs. They set a deadline of 2017 for the installation of the solar panels. By the end of 2016 Haslett Community Church had secured the funding necessary to purchase and install the panels. With a partnership with Consumers Energy and Michigan Interfaith Power and Light they were able to install the panels by their deadline. The solar panel ribbon cutting occurred on Earth Day 2017 and was dedicated to long-time supporter, Joyce Bartles. Bartels was instrumental in the establishment of the solar panel project. The solar panels are expected to reduce the annual energy expenditures by two-thirds, approximately \$3,000 in savings. Arnost stated as they move forward the Green Team plans to share their experience and promote solar panels within the community. On September 24, 2017 the Haslett Community Church plans to host a solar open house.

3. APPROVAL OF THE REGULAR MEETING AGENDA

MOTION BY COMMISSIONER MASTEN TO APPROVE THE AGENDA. SUPPORTED BY COMMISSIONER JACKSON. MOTION APPROVED 8-0.

4. APPROVAL OF MINUTES FROM MAY 3, 2017 MEETING

MOTION BY COMMISSIONER MASTEN TO APPROVE THE MINUTES. SUPPORTED BY COMMISSIONER KIELBASO. MOTION APPROVED 8-0.

5. PUBLIC REMARKS

NONE

6. NEW BUSINESS

Commissioner Masten read a statement regarding the support of the Paris Agreement by United States Mayors. Masten made a motion to forward the statement of support to the Township Supervisor; the motion was supported by Commissioner Sarver.

7. OLD BUSINESS

Chair McConnell addressed the work session held prior to the regular meeting on the Sustainability and Climate Action Plan. The Commission reviewed the draft of the plan as submitted to the Commission by the Township's Energy Team. Chair McConnell reported the plan had received comments from the Commission and would be circulated to the Planning Commission, Transportation Commission and Economic Development Corporation for further comment. He also requested a public hearing to comment on the plan prior to the Commission making a recommendation to the Township Board to have the plan added as an appendix to the Township Master Plan.

8. CHAIR'S REPORT

Chair McConnell reported he had received an offer from the Township Manager and Chief of Police to speak on the upcoming Township millage vote in August.

9. STAFF REPORT

NONE

10. COMMISSIONER SUBCOMMITTEE REPORTS

Planning: Chair McConnell reported the Planning Commission was reviewing their bylaws.

Land Preservation: Commissioner Kielbaso reported the Mud Ball was going to be held the following week at Davis Foster. The Land Preservation Commission was waiting on appraisals on multiple properties.

Energy Team: Commissioner Sarver reported the Township's Energy Team recently attended the Michigan Green Community meeting. The Township was awarded a silver designation for Michigan Green Communities. Commissioner Sarver also commented a link to the Sustainability and Climate Action Plan was available on the Energy Team's website.

Student Engagement: NONE

Parks: Commissioner Masten commented, construction of Towner Park was underway.

Transportation: Commissioner Jackson commented on the need for better signage and educational pieces relating to the Township Pathways.

11. PUBLIC REMARKS

Judy Kendal of 2915 Margate Lane spoke in support of the Sustainability and Climate Action Plan and in support of the statement for the Paris Agreement from U. S. Mayors.

12. ADJOURNMENT

Meeting adjourned at 8:27 p.m. without objection.

**CHARTER TOWNSHIP OF MERIDIAN
ENVIRONMENTAL COMMISSION MINUTES
Meridian Municipal Building – Town Hall Room
June 7, 2017 - DRAFT**

WORK SESSION

PRESENT: Chair Bill McConnell, Vice-Chair Ned Jackson, John Sarver, Susan Masten, Jim Kielbaso, Ben Holland, Kirk Lapham, and Marina Ionescu.

ABSENT: NONE

STAFF: Assistant Planner Jennifer Quinlivan

OTHERS: NONE

1. CALL SPECIAL MEETING TO ORDER

Chair McConnell called the meeting to order at 6:03 p.m.

2. APPROVAL OF THE WORK SESSION AGENDA

Approved by consent without objection.

3. NEW BUSINESS

Commissioner Masten introduced a statement regarding the support of the Paris Agreement by United States Mayors. Masten requested the statement be read at the regular meeting on June 7, 2017 and she would present a motion to forward the statement of support to the Township Supervisor. The Commissioners discussed the importance of the Paris Agreement, which was adopted in 2015 by 196 countries and addresses the mitigation of global warming.

4. WORK ITEMS

A. Recommendations on draft Sustainability and Climate Action Plan

Environmental Commission discussion included the following:

- Identification of large goals of sustainability and climate change as it relates to the six topics outlined in the plan.
- Inclusion of an abstract or summary at the beginning of the plan.
- Include past and present projects which the Township produced relating to the six topics.
- The “cross-cutting” topic should be moved forward and divided into two objectives; monitoring and implementation.
- A request to forward the draft plan to the Planning Commission, Transportation Commission, and Economic Development Corporation.
- Incorporate LEED targets into the six topics.
- Explore funding mechanisms for each topic.
- The plan shows a strong bias toward Township operations and should encourage commercial and residential partnerships.
- Inclusion of incentives for commercial and residential involvement in the plan.
- Township required amenities for mixed use, planned use, and planned residential developments should reflect topics and objectives of the plan.
- Storm water and wetland structures should be strengthened within the plan.
- The plan should incorporate an educational facet or policy.

5. **PUBLIC REMARKS**

None.

6. **ADJOURNMENT**

Approved by consent without objection at approximately 6:53 p.m.



To: Environmental Commissioners
From: JENNIFER QUINLIVAN
Jennifer Quinlivan, Assistant Planner
Date: June 25, 2017
Re: Sustainability and Climate Action Plan

The Sustainability and Climate Action Plan was created by the Township's Energy Team, addressing the Township's commitment to environmental stewardship. The plan is a framework to promote environmental stewardship in Township policies and actions.

The Environmental Commission has reviewed the plan and has sent their collective comments to the Energy Team. A draft of the plan was sent to the Planning Commission, Transportation Commission and Economic Development Corporation for review on June 15, 2017. Attached is a draft of the Sustainability and Climate Action Plan prepared by the Township's Energy Team, dated June 14, 2017.

MOTION to recommend the Township Board add the Sustainability and Climate Action Plan as an appendix to the Master Plan.

Attachment

1. Sustainability and Climate Action Plan dated, June 14, 2017.

G:\Community Planning & Development\Planning\ENVCOMM\Memos\2017 memos\Sustainability Climate Action Plan- staff report

-Climate Sustainability Plan: *Meeting our Climate Action and Green Community Goals*

(draft: 6-27-2017)

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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.¹ 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 economically and efficiently as possible is essential.

Climate Action

In 2007, Meridian joined 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, MI 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, 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.

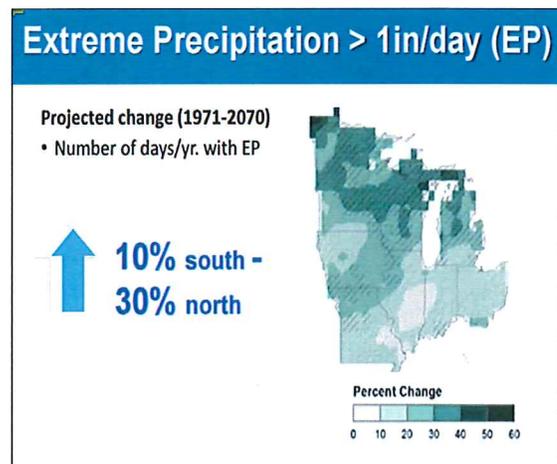


Figure 1: Great Lakes Integrated Sciences & Assessments (GLISA)

¹ 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 and call for an organized response – especially when climate adaptation and mitigation actions make communities better, more vibrant, more affordable, more sustainable, and more 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 Sustainability and Climate Action 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, ideas, and people become involved. It is offered to supplement and dovetail with the Township Master Plan, Annual Plan, and related visions for a prosperous, healthy, and sustainable future.

Education and communication will be an important part of all areas of the Plan. Activities will include:

- Maintain and update the Township web site as needed.
- Partner with HOM-TV and the Communications department to provide information
- Use the web page, HOM-TV, public forums, and other means to make residents aware of current and proposed policies, programs and incentives

As a working appendix to the Township’s Master Plan, the Sustainability and Climate Action Plan is integrated with all Township government activities with a focus on government operations. 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. When partnerships come together with projects and priorities, a great deal can be accomplished.

Ad hoc networks or working groups can take actions toward achieving objectives and strategies in the Plan. Interest group networks may be internal, external, local, regional, or statewide. Funding for actions may be local, county, regional, state, or federal. Many actions will not require funding but will require a time commitment by township staff and residents.

The informal networks will need leadership within the township government and a sustainable way to do that is for township management to assign a Sustainability Leader for each of the five areas of the Plan: Energy Efficiency, Renewable Energy, Recycling and Waste Reduction, Transportation, and Water Management. The primary duties of the leader would be to facilitate networks and partnerships to take advantage of interests and funding for achieving objectives of the Plan. The scope of duties and their limits can be developed by the Sustainability Leaders in their own informal network, once they are named.

Communication and education about interests, opportunities, and funding will be a continuing role of the Meridian Township Energy Team as the Plan is implemented over the next 5 years. The Meridian Township Energy Team and Environmental Program Coordinator will assist township department staff with their efforts to implement the plan and the Energy Team will report to the Township Manager and Environmental Commission on plan progress. As part of good government process, the Plan should be revisited at 5 year intervals and updated as needed.

Sustainability Plan, Programs, Policies, and Progress to Date

a. Energy Efficiency

The use of fossil fuels is the primary source of greenhouse gas emissions. Meridian residents spend over \$100,000,000 each year on energy.² 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). Energy expenditures represent a huge impact on our economy, our health, and our environment.

Past and Current Energy Efficiency Efforts:

Energy efficiency remains one of the quickest and most economical way towards sustainability and resilience. Meridian government operations has made great strides in reducing energy consumption, 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 2015 (<http://bit.ly/phase-II>). In addition to seeking bids on the items recommended in this report (<http://bit.ly/p2summary>), a major engineering study is underway to explore some major HVAC system replacements and/or retrofits for the Municipal Building.

² <http://energy.gov/articles/how-much-do-you-spend> downloaded 9-12-16

A recent benchmarking study by Consumers Energy shows we still have energy savings potential in our Township buildings. (see <http://bit.ly/energy-performance-17>).

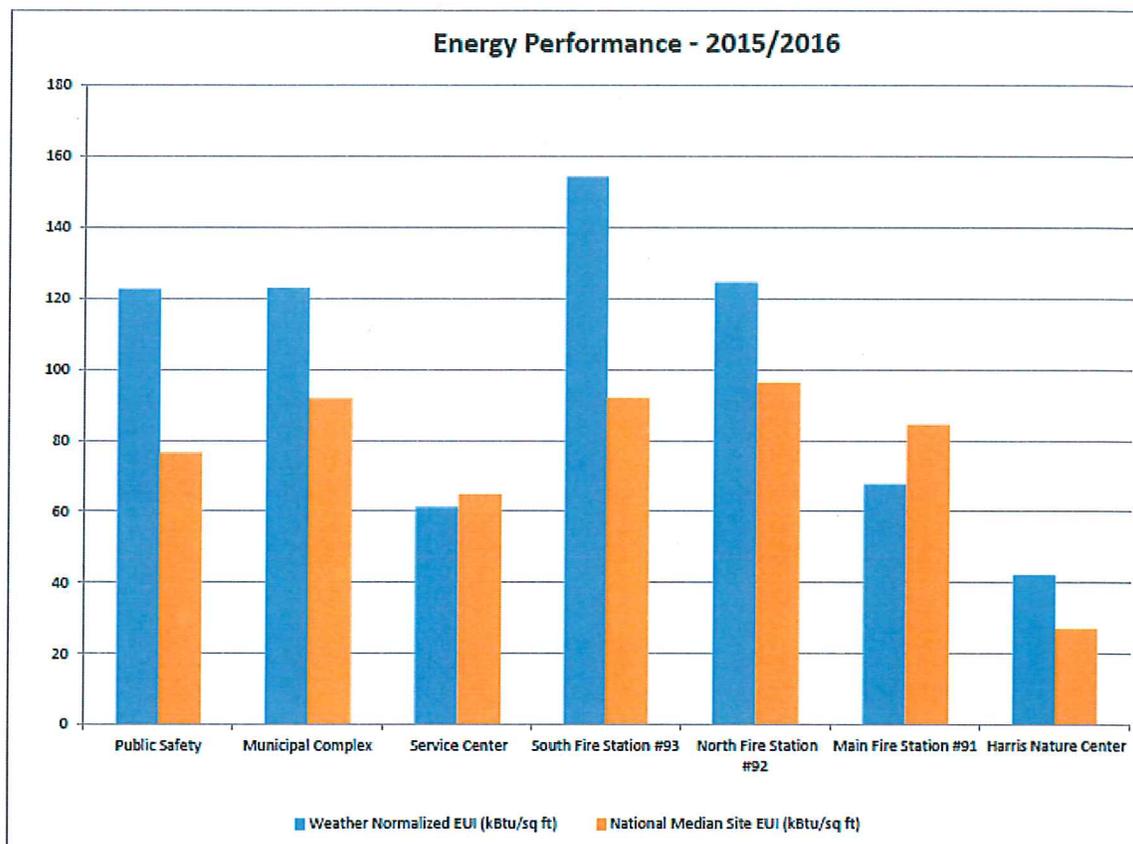


Figure 3 [How Meridian's Top-Consuming Buildings Compare to National Median](#)

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

Strategies:

1. Implement recommendations from the latest [Building Performance with Energy Star Study](#) including development and adoption of a Meridian Energy Policy.
2. Complete [Phase II Energy Recommendations](#) and HVAC Engineering Study.
3. Review Recent Engineering Study/Capital Improvement Plans.
4. Include major HVAC upgrades in Capital Improvement Plans.
5. Obtain Energy Star designation for township buildings where possible.
6. 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.
7. Monitor energy savings and return 80% of savings to Revolving Energy Fund.
8. Budget funds for energy efficiency assessments a minimum of once every five years.
9. Include a brief paragraph indicating sustainability implications in any proposals for capital improvements.

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

Strategies:

1. Explore State and Federal grant funding, pilot programs, and utility programs.
2. Continue and explore partnerships such as Michigan Green Community Network, Clean Cities, Sustainability Forums, and 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. Grow 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. Encourage use of white roofs or green roofs.

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

Strategies:

1. Develop better ways to provide energy consumption data to building managers, occupants/Township staff, and accounting/budgeting staff and financial managers. Information will also be provided to Township residents so they are aware of Township efforts.

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 foster installations elsewhere. The focus will be on solar energy in the near term because many opportunities exist. Meridian Township will revise policies and procedures to encourage a greater use of renewable energy.

Past and Current Renewable Energy Efforts:

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.

Meridian 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 discussing opportunities to encourage more solar energy use in the Township. Community Solar has been a frequent topic of conversation and Consumers Energy was invited to select a Township site for their Solar Gardens pilot. Consumers Energy did actively look into a number of possible sites but was not able to find a site big enough (5-6 acres) and suitable for one of their Solar Gardens PV arrays. 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. Propose revisions to Township ordinances and procedures to ensure that they are renewable energy-friendly and do not provide any unnecessary barriers to the use of renewable energy.
2. Consider renewable energy and other innovative practices that reduce greenhouse gas emissions 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. Since the Township receives almost all of its electricity from Consumers Energy, indirectly the Township will get 15% of its electricity from renewables due to the state Renewable Portfolio Standard (RPS) requiring the 15%. The Township can do better and set a goal of obtaining an additional 35% of Township electric usage from renewable energy sources by 2025 and 85% by 2035.
2. Pursue the installation of solar electric systems at Township facilities by Dec. 2018.
3. Participate in Community Solar or other green purchasing programs where possible.
4. Pursue grant funding for demonstrations of new renewable energy technologies.
5. Explore non-grid connected applications like solar street lighting and solar lighting for signs.
6. Explore options to fund solar energy installations on Township facilities.
7. Explore benefits and costs of using a solar electric system as backup power for Twp buildings.

Objective b.3: Provide educational opportunities on 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) goals and 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. Document information about funding and vendors and share with residents and business owners.
4. Work with developers to consider alternative energy in site plan and construction of new development. Explore 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. Explore collaboration 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.
7. Consider additional stretch goals and challenges in the public and private sector, locally and regionally.

c. Recycling and Waste Reduction

Past and Current Recycling and Waste Reduction Efforts

For over a decade Meridian Township has partnered with citizen groups and waste haulers/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 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. This graph 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.

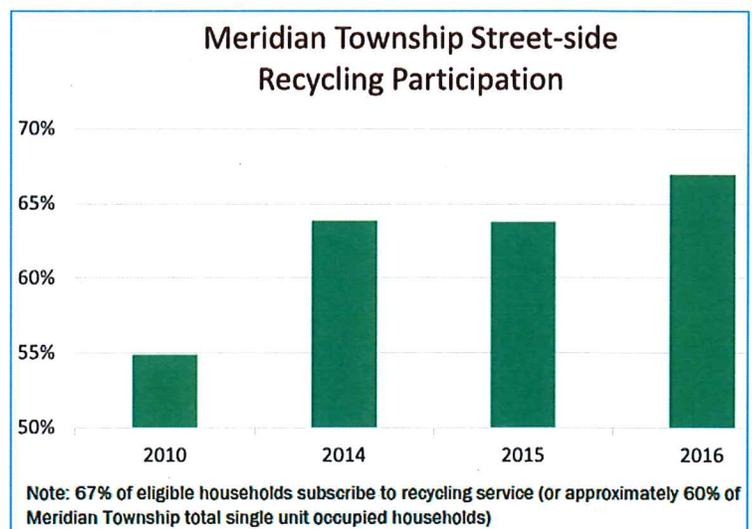


Figure 4 Granger 2016 Recycling Report

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. Explore 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. Explore and conduct regional education and promotion opportunities in collaboration with the Regional Recycling Coordinating Committee (R2C2), Capital Area Local First (CALF) and other neighborhoods/organizations/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 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. Explore food, cooking oil/grease, composting, and related organic material recycling options.
5. Provide educational opportunities on the 5 R's: Refuse, Reduce, Reuse, Repurpose, & Recycle.

d. Transportation

Transportation produces 26% (US EPA Data 2014) of greenhouse gases and alternatives can reduce the impacts from these greenhouse gases. The most accessible alternative to petroleum is often overlooked -- non-motorized transportation options such as walking and biking. Transportation fuel use reduction measures decrease emissions, save the Township and its' residents money, enhance environmental quality, and promote public health. The Township will focus on its own fleet, walking and biking, and land use decisions.

Past and Current Efforts:

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 the Township's 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 related connecting routes outside the Township.

Smart Commute competitions 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.

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. Encourage employee participation in Smart Commute competitions and encourage employees to be smart commuters year round.



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. Encourage 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. Explore grants 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. Continue a 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 on 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 to identify charging stations for electric vehicles. Encourage electric car charging stations.
5. Continue to 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 and 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.



Past and Current Water Management Efforts:

Meridian Township Public Works and Engineering maintains, repairs and operates the water distribution system; which includes 158 miles of water mains, over 12,000 water services, 15,000+ water meters, 15,000+ remote readers, 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 adopted a wetland protection ordinance that is more protective of wetlands than State regulations. The Township ordinance of "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 energy 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. Explore and 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 Co. Drain Commission 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.
5. Use township parks and other properties to demonstrate these strategies.
6. Provide credits on water bills for rain barrels, porous pavement, and rain gardens.
7. Encourage projects that reuse storm water for irrigation purposes.
8. 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 on water conservation and management.

Strategies

Educational topics might include:

1. Importance of water conservation. Use signs or other outreach materials describing why we conserve water and what the Township is doing to conserve water.
2. Alternatives to fertilizer use and how it affects stream ecosystems
3. Drought resistant grasses
4. Rain barrels.
5. Water efficient appliances such as low-flow toilets and Energy Star appliances.
6. How one's water usage compares to a typical home's water usage.

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

Strategies

1. Discuss opportunities with East Lansing Sewage Treatment Plant, East Lansing Meridian Water and Authority, and Lansing Board of Water and Light.
2. 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. On an annual basis, have township departments communicate progress to the Environmental Commission and Township Manager about activities related to the Meridian Township Sustainability and Climate Action Plan.
3. Invest in monitoring equipment as needed. Explore cost-effective energy monitoring systems, software, assistance, and equipment including WeGoWise and Consumers Municipal Energy Efficiency Pilot.
4. Calculate water, energy, and cost savings and reductions in greenhouse gases.
5. Prioritize top energy-using sites/buildings/equipment for more frequent monitoring.
6. Explore opportunities through Consumers' E-Billing Program, smart metering opportunities, street lighting options, and other pilot programs.
7. Reporting metrics would make annual comparisons and include:
 - 1) Total annual greenhouse gas reductions (tons)
 - 2) Total annual municipal energy consumption (MBTU)
 - 3) Total annual energy consumption (MBTU)
 - 4) Annual energy and cost savings from energy improvements to municipal buildings (MBTU, \$)
 - 5) Total annual renewable energy generated from township facilities or purchases (kWh)
 - 6) Total annual renewable energy generation in the community (kWh)
 - 7) Materials recycled communitywide (tons)
 - 8) Number of participants recycling (#residents, #businesses)

- 9) Annual municipal water consumption (gallons)
 - 10) Annual communitywide water consumption (gallons)
 - 11) Number of electric, electric hybrid, or alternative fuel vehicles in the township fleet
 - 12) Annual fuel savings in the township fleet (gallons of petroleum-based fuel)
 - 13) Percent sustainable commutes by mode type (%walked, %biked, % public transportation)
8. As an appendix to the Township's Master Plan, the specific strategies in this plan should be revisited every 5 years and a summary of accomplishments prepared.

Conclusion

This Sustainability and Climate Action Plan for Meridian Township documents the remarkable activities implemented by the Township since the Township's signing of the U.S. Mayors Climate Protection Agreement 10 years ago. Much progress has been made and the Township's departments can be proud of the efforts to date.

The Plan moves the Township further along the path of sustainability by recommending both immediate and longer term actions. Implementing the strategies will help make the Township an even better place for residents to live, work, and play and go a long way to ensuring a sustainable future.

Acknowledgements

- City of East Lansing
- Great Lakes Integrated Sciences & Assessments
- Meridian Energy Team
- Meridian Environmental Commission
- Michigan Green Communities Network
- Meridian Planning Commission
- Consumers Energy

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

Figure 2: Michigan Climate and Health Adaptation Program

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

Figure 4 Granger 2016 Recycling Report