



Commissioner Chris Trubac
Barbara Andersen
Nichole Biber
Fred Cowles
Sarah Mullkoff
Claire Nowicki
Matthew Lincoln
Brenda Gray

THE ENVIRONMENTAL AFFAIRS COMMISSION WILL MEET ON SEPTEMBER 27, 2023 AT 5:30 PM IN CONFERENCE ROOM D AND E OF THE HUMAN SERVICES BUILDING, 5303 S. CEDAR, LANSING.

Agenda

Call to Order

Approval of Draft Minutes

Additions to the Agenda

Limited Public Comment

1. Center for Climate Integrity (*Presentation*)
2. Sustainability Action Plan Request for Proposals (*Update*)
3. Commission Bylaws

Announcements

Public Comment

Adjournment

ENVIRONMENTAL AFFAIRS COMMISSION

August 23, 2023

Draft Minutes

Members Present: Trubac, Cowles, Nowicki, Lincoln

Members Absent: Anderson, Biber, Mulkoff, Gray

Others Present: Morgan Feldpausch, Elaine Fischhoff, Glenn Canning

The meeting was called to order by Chair Trubac at 5:30 p.m. in Conference Room A of the Human Services Building, 5303 S. Cedar Street, Lansing Michigan.

Approval of Draft Minutes

The minutes were approved.

Additions to the Agenda

Renewable Energy Education Pre-Session and Site Tour

Limited Public Comment

None.

1. Electric Vehicle Charging and Fueling (*Discussion*)
 - a. Ingham County Justice Complex
 - b. Usage and Operations Policy

Morgan Feldpausch and Glenn Canning provided information on plans for electric vehicle charging in the county. Charging stations are planned for the new Justice Complex, but the policies around these are still to be determined. The commission discussed questions on these policies such as: How long may someone park there? If there is a charge how much would that be? When would a vehicle be towed?

The Justice Complex chargers will have public access and consist of Type 2 chargers, which are slower but compatible with more vehicles.

Glenn mentioned the need to balance policy on public charging with charging for county vehicles. Ingham County has some county vehicles on public lots and others on secure locations. The Department of Transportation is looking at changing policy/guidelines concerning ADA accessibility on charging stations.

Morgan will bring a draft policy back, but this will not be ready by the next meeting. This draft will highlight certain decision points for us to discuss.

2. Energy Audit (*Update*)

Morgan Feldpausch and Glenn Canning provided an update on the Energy Audit. The 1st phase began by examining “low-hanging fruit” such as lightbulbs and aerators. Information regarding exhaust fan timers was updated as some sites that were assessed for it cannot receive it. For example: Animal care areas and shopping areas require constant ventilation.

Information was also updated regarding the 2nd phase such as additional LED lighting upgrades and retrofitting toilets to dual flush.

New building projects will utilize more recycled materials. For example: 90% of the granite from the old jail will be ground up, recycled, and used on-site.

3. Commission Bylaws

MOVED BY COWELS, SUPPORTED BY LINCOLN TO TABLE THE COMMISSION BYLAWS UNTIL THE NEXT MEETING

THE MOTION CARRIED UNANIMOUSLY

4. Renewable Energy Education Pre-Session and Site Tour

Morgan Feldpausch discussed the renewable energy education pre-session and site tour program which is being planned to educate local governments on wind and solar systems. This is funded by an EGLE grant and will be a regional effort. It is organized by the University of Michigan Graham Sustainability Institute and the Michigan Planning Association.

Morgan attended a similar program by the University of Michigan, which included a conference where they brought planners and administration from different levels of government. Morgan asked for support/approval to move forward with this plan. The grant expires at the end of 2023 and the timeline for completion is in September/October.

Announcements

Cowles - Would like to discuss tangible ways to address environmental justice and social inequity, suggests that a speaker be invited at a future meeting to discuss this in more detail.

Trubac –BWL is planning to launch its own rebate program that will provide a \$1000 rebate for quality induction stoves to replace gas stoves for BWL customers.

Public Comment

Elaine Fischhoff – Mentioned that Tesla may be the least expensive charger, and some local governments have requested funding for EV chargers. She would also like to suggest that the group address the proposal by BWL for an additional natural gas plant.

Adjournment

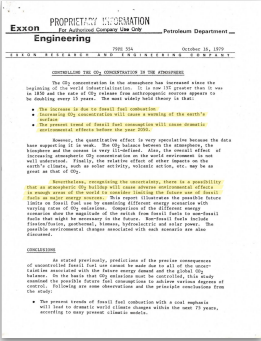
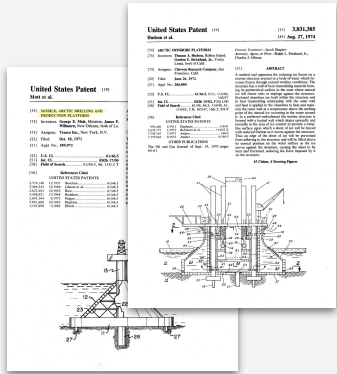
The meeting was adjourned by Chair Trubac 6:31 pm.

What is **climate**
accountability?

The Center for Climate Integrity (CCI) helps communities **hold oil and gas corporations accountable** for the massive costs of climate change.

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American Petroleum Institute
Ikard Speech

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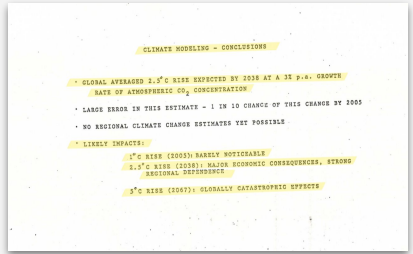
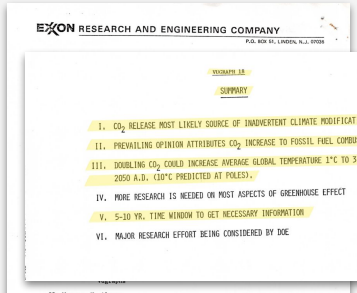
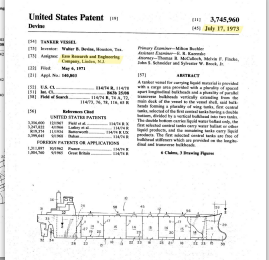
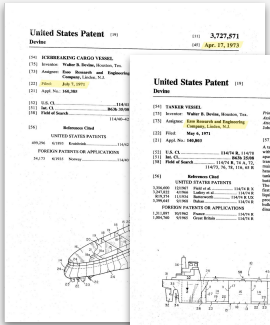
1978

1979

Esso Patents

Exxon
Black Memo

American Petroleum Institute
Task Force Meeting



Exxon 1988

0 THE GREENHOUSE EFFECT MAY BE ONE OF THE MOST SIGNIFICANT ENVIRONMENTAL ISSUES FOR THE 1990s.

EXXON POSITION

0 EMPHASIZE THE UNCERTAINTY IN SCIENTIFIC CONCLUSIONS REGARDING THE POTENTIAL ENHANCED GREENHOUSE EFFECT.



CENTER FOR
CLIMATE
INTEGRITY



Information
Council
for the Environment

Who told you the earth was warming... Chicken Little?



Chicken Little's hysteria about the sky falling was based on a fact that got blown out of proportion.

It's the same with global warming. There's no hard evidence it is occurring. In fact, evidence the Earth is warming is weak. Proof that carbon dioxide has been the primary cause is non-existent. Climate models cannot accurately predict far-future global change. And the underlying physics of climatic change are still wide open to debate.

If you care about the earth, but don't want your imagination to run away with you, make sure you get the facts.

Write Informed Citizens for the Environment, P.O. Box 1513, Grand Forks, North Dakota 58206, or call toll-free 1-701-746-4573. We'll send today's



Informed Citizens

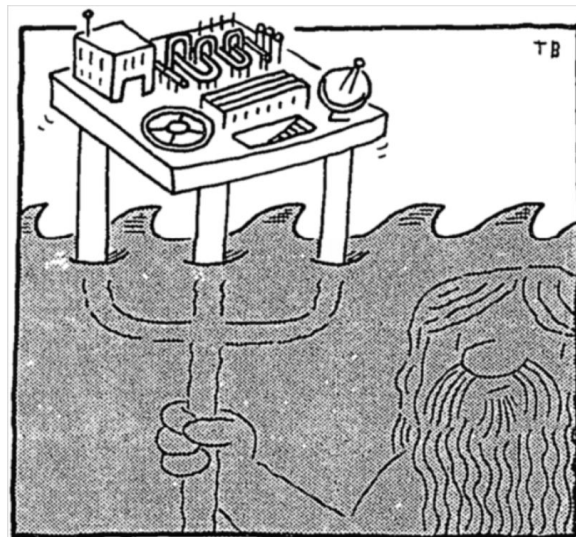
Greenhouse Effect: Shell Anticipates A Sea Change

Whether global warming will raise the level of the world's oceans is still being debated, but engineers who build natural-gas production platforms at Shell Oil do not want to take chances. In what is considered the first major project that takes account of the changes the greenhouse effect is expected to bring, the engineers are designing a huge platform that anticipates rising water in the North Sea.

Norske Shell, the company's Norwegian subsidiary, had been planning to build in the Troll gas field a 1.5-million-metric-ton structure that would stand in more than 300 meters of water, or about 1,000 feet, and rise 30 meters above the surface, or about 100 feet.

But if those are the dimensions of the structure when it is put in place in 1995, how much will be above the water in 2065, at the end of its life? Engineers are not sure. The global warming of the greenhouse effect, which is caused by carbon dioxide from combustion trapping the sun's heat in the atmosphere, is expected to raise the sea level in two ways: Warmer temperatures mean less water tied up in the ice caps, and therefore more in the oceans; also, warmer water occupies more space than cool water.

So the engineers are considering raising the platform from the standard 30 meters — the height now thought necessary to stay above the waves that



Tom Bloom

come in a once-a-century storm — to 31 or 32 meters.

A one-meter increase would cost an additional \$16 million, said Einar Knudsen, a spokesman for the company in Stavanger, Norway, and a two-meter rise roughly double that. The higher number is about 1 percent of the platform's projected cost.

Shell's problem with its gas platform is tougher than the engineering questions involved in building oil platforms, of which the North Sea has many. The oil platforms are typically expected to be in use for only 30 or 35 years. But according to Mr. Knudsen, "We have such huge gas reserves; we can see this production going on for up to 70 years."



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Offsetting your annual travel emissions is quick, easy and affordable. Simply tell us about your vehicle, your mileage and any flights you've taken, and our calculator will figure out your carbon footprint for you.

Once you have your footprint, you can offset it. By offsetting it, you're helping to fund [carbon reduction projects](#) around the world.

Calculate your footprint

Bloomberg CityLab

The Great Lakes Region Is Not a 'Climate Haven'

The water-rich U.S. region may have cooler temperatures and sit high above sea level. But it can't be a refuge for anyone if it doesn't take action now to adapt to its own changing climate.

The Guardian

**'Bigger picture, it's climate change':
Great Lakes flood ravages homes and
roads**

THE CONVERSATION

**Warmer, wetter, wilder: 38 million
people in the Great Lakes region are
threatened by climate change**



**'We're just at the beginning': Damage from
climate change could cost Great Lakes coastal
cities billions**

Climate Accountability and Environmental Justice

ORIGINS



Systemic and Environmental Racism



Disinvestment



Redlining

VULNERABILITIES



Pollution Exposure



Aging Infrastructure



Food, Water, and Housing Insecurity

DAMAGES



Public Health



Air Quality



Urban Heat Islands



Infrastructure



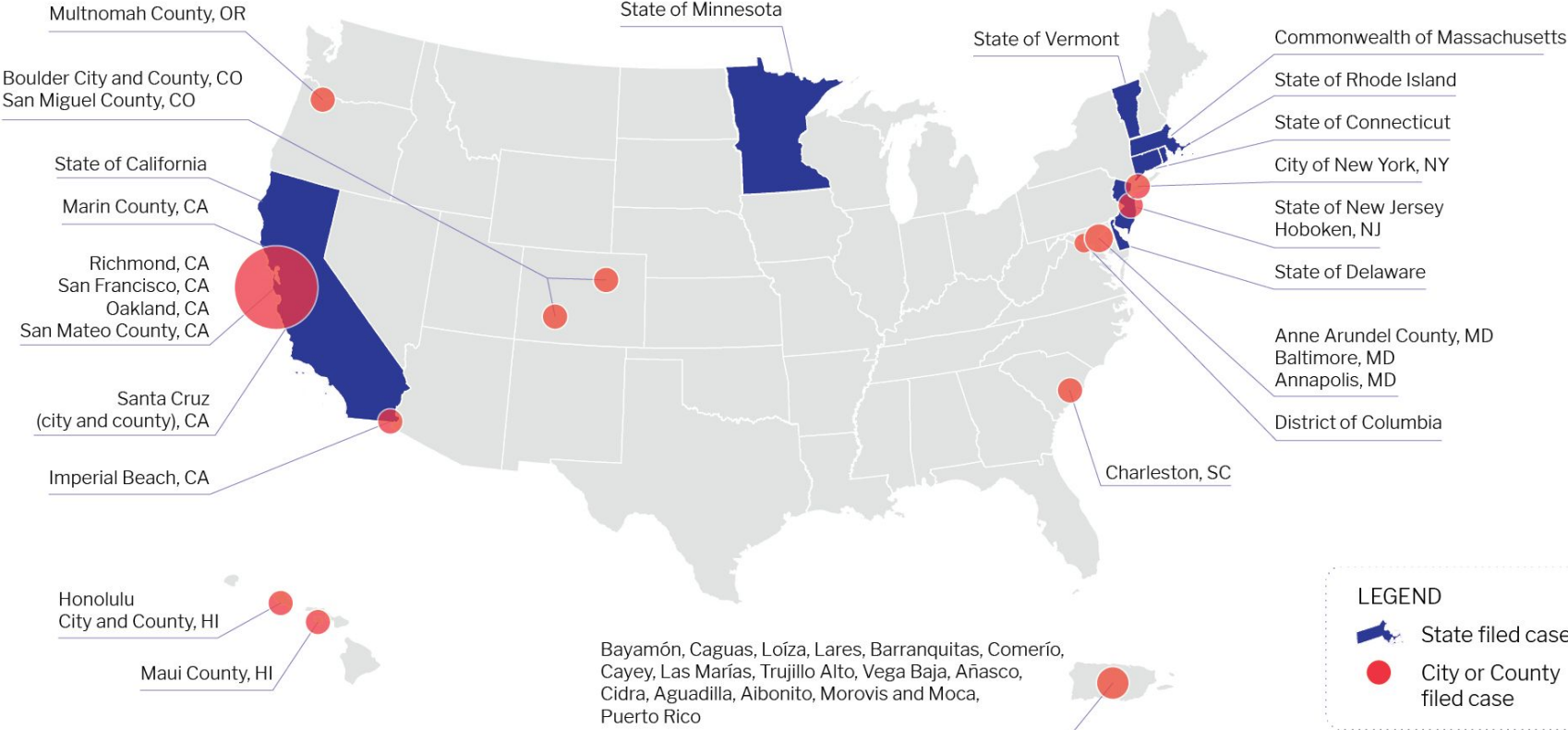
Food, Water, and Housing Access



Climate Gentrification

So who should **pay?**

CASES UNDERWAY TO MAKE CLIMATE POLLUTERS PAY: 2023



Michigan Climate Impacts and Costs

Climate change poses many costly risks to Michigan residents, including an increase in severe storms, extreme winter weather, fluctuations in lake levels, and hotter temperatures.¹ Even if fossil fuel emissions and atmospheric concentrations of greenhouse gases eventually stabilize through aggressive climate action, the severity of these events will continue to rise as we adjust to the new reality of the climate crisis. Below we outline the impacts of climate change Michigan faces and some of the potential costs associated with these impacts. This list is not all-encompassing and other costs may be incurred as a result of additional climate change impacts.

Severe Storms

Since a warmer atmosphere can hold more water vapor, climate change increases precipitation in many areas, including Michigan (Table 1).² Average annual precipitation in the Midwest has increased by 5-10% and precipitation for the four wettest days of the year has increased by 35%,³ resulting in more frequent flooding in Michigan.⁴ By 2100, average annual precipitation in Michigan is expected to increase by another 5%.⁵ As storm events continue to intensify due to climate change — especially hourly rainfall accumulation⁶ — stormwater infrastructure will be overwhelmed causing even more extreme flooding.⁷ The Sanford Lake dam failed in central Michigan in 2020 because it was overwhelmed with water after 5 inches of rain fell in the area in the preceding two days.⁸ According to NOAA, flooding costs an average of \$4.6 billion per event and severe storms cost an average of \$2.4 billion per event.⁹ A recent analysis by Swiss Re, a reinsurance company, found that severe storms in the U.S. incurred \$34 billion in insured losses during the first half of 2023.¹⁰

¹ Cameron et al., “Michigan Climate and Health Profile Report 2015: Building Resilience Against Climate Effects on Michigan’s Health”; “What Climate Change Means for Michigan.”

https://www.michigan.gov/mdhhs/-/media/Project/Websites/mdhhs/Folder3/Folder11/Folder2/Folder111/Folder1/Folder211/MI_Climate_and_Health_Profile.pdf?rev=ab2c0a4563ff4310b7811cfcfc077a42&hash=66C31F4B31C24F0245E51034E91FE51E

² Sillmann et al., “Climate Extremes Indices in the CMIP5 Multimodel Ensemble.”

<https://onlinelibrary.wiley.com/doi/abs/10.1002/jgrd.50188>

³ “What Climate Change Means for Michigan.”

<https://19january2017snapshot.epa.gov/sites/production/files/2016-09/documents/climate-change-mi.pdf>

⁴ Mallakpour and Villarini, “The Changing Nature of Flooding across the Central United States.”

<https://www.nature.com/articles/nclimate2516>

⁵ Kim, Ivanov, and Fatichi, “Climate Change and Uncertainty Assessment over a Hydroclimatic Transect of Michigan.” <https://doi.org/10.1007/s00477-015-1097-2>

⁶ Ham et al., “Anthropogenic Fingerprints in Daily Precipitation Revealed by Deep Learning.”

<https://www.nature.com/articles/s41586-023-06474-x>

⁷ “What Climate Change Means for Michigan.”

⁸ Fountain, “Expect More.”

<https://www.nytimes.com/2020/05/21/climate/dam-failure-michigan-climate-change.html>

⁹ National Atmospheric and Oceanic Administration (NOAA), “NOAA National Centers for Environmental Information (NCEI) U.S. Billion-Dollar Weather and Climate Disasters,” 2023. <https://doi.org/10.25921/stkw-7w73>.

¹⁰ The Associated Press, “Surge in U.S. Thunderstorms Has Caused ‘unprecedented’ \$34B US in Insured Losses This Year.” <https://www.cbc.ca/news/business/swiss-re-insurance-damage-1.6932920>

Table 1: Changes in average precipitation (inches) from 1952-2022 in Michigan.¹¹

GLISA Division	Annual	Winter	Spring	Summer	Fall
Southwest Lower Michigan	5.9	0.9	1.2	1.6	2
South Central Lower Michigan	7.1	1	1.6	1.6	2.6
Southwest Lower Michigan	5.9	0.5	1.5	1.6	2.2
West Central Lower Michigan	6	0.7	2	1.3	2
Central Lower Michigan	5.9	1.3	2.2	1.1	1.2
East Central Lower Michigan	5	0.5	1.6	1.4	1.3
Northwest Lower Michigan	4.6	0.8	1.6	0.4	1.8
Northeast Lower Michigan	3.1	0.7	1	0.5	0.9
Western Upper Michigan	0.4	0.7	-0.4	-1.5	1.6
Eastern Upper Michigan	2.7	0.8	-0.4	-0.1	2.4

Flooding also increases the amount of polluted runoff and sewage overflow to streams, rivers, and lakes. Increased nutrient load to the lakes can cause harmful algal blooms (HABs) and pollute beaches, increasing public health risks. Warmer waters and changes to both regional precipitation patterns and timing can increase the risk of HABs. In Michigan, harmful algae is growing in more places, more often, and earlier than ever before.¹² For example, over 80 HABs affecting 38 counties in Michigan were reported in 2022.¹³ In June 2023, a harmful algal bloom formed in Lake Erie much earlier than usual.¹⁴ HABs cause many health impacts to humans and their pets, such as: asthma-like symptoms, stomach pain, vomiting, rashes, and more.¹⁵ Further, HABs deplete oxygen in the water, killing fish and creating economic impacts to fishing and other recreational industries.¹⁶ Taxpayers are paying the price for HABs, which cost anywhere from \$10-\$18 more per year per person for drinking water treatment.¹⁷

In addition to flooding, severe storms often bring intense winds and sometimes tornados. Though more work is needed to understand the full impacts of climate change on tornados, recent research suggests an increased risk and occurrence of tornados throughout this

¹¹ GLISA, “Great Lakes Climatology: Interactive Climatology Map.” <https://glisa.umich.edu/climate-data/great-lakes-climatologies/>

¹² Johncox, “Watch Out.” <https://www.clickondetroit.com/news/michigan/2023/08/04/watch-out-algal-blooms-common-on-michigan-waters-in-summer-can-cause-illness/>

¹³ ibid

¹⁴ Graham, “Harmful Algal Blooms Appearing on Lake Erie Earlier than Usual.” <https://www.michiganradio.org/environment-climate-change/2023-07-06/harmful-algal-blooms-appearing-on-lake-erie-earlier-than-usual>

¹⁵ “Algal Blooms.” <https://www.niehs.nih.gov/health/topics/agents/algal-blooms/index.cfm>

¹⁶ ibid

¹⁷ Graham, “Harmful Algal Blooms Cause Problems in Lake Erie; Drinking Water Customers Pay the Price.” <https://www.michiganradio.org/environment-climate-change/2022-05-23/harmful-algal-blooms-cause-problems-in-lake-erie-drinking-water-customers-pay-the-price>

century. This is due to the climate impacting hazardous convective weather, or the conditions that form tornadoes.¹⁸ In August 2023, at least five people died in Michigan after a severe storm brought seven tornadoes.¹⁹ The storm downed power lines, led to road and bridge closures, damaged buildings and other structures, overwhelmed stormwater infrastructure, deposited debris, and prompted the Governor to declare a state of emergency to deal with the resulting damages.²⁰ According to the National Weather Service and National Centers for Environmental Information, tornadoes cost \$2.5 million per event.²¹

Michigan is situated on four great lakes. The lower Peninsula has Lake Michigan to the west and north, Lake Huron to the east and north, and Lake Erie to the southeast. The upper Peninsula has Lake Superior to the north, Lake Michigan to the south, and Lake Huron to the southwest. The Great Lakes play a large role in regional precipitation patterns, especially lake effect snow.²² Temperatures are rising the fastest in the winter months, which means winter precipitation is more likely to fall as rain or freezing rain, increasing winter flooding.²³ Even though winters are becoming increasingly warm, winter storms and freezes are simultaneously intensifying when they do occur, which some scientists attribute to a warming Arctic weakening the jet stream, though competing ideas still exist in the scientific community.²⁴ Warming temperatures also mean that the lakes have more open water in winter, potentially adding fuel in the form of water vapor to winter “lake effect” snow storms. In February 2023, a severe winter storm left 797,000 Michigan residents without power, led to road closures, and killed a local



¹⁸ Tippett et al., “Climate and Hazardous Convective Weather”; Strader et al., “Projected 21st Century Changes in Tornado Exposure, Risk, and Disaster Potential.” <https://doi.org/10.1007/s40641-015-0006-6>; <https://doi.org/10.1007/s10584-017-1905-4>

¹⁹ Gross, “At Least 5 Dead in Michigan After Severe Storms.” <https://www.nytimes.com/2023/08/25/us/michigan-tornado-storm-deaths.html>

²⁰ Sylvester, “Gov. Whitmer Expands State of Emergency in Michigan Following Storms and Tornadoes.” <https://wwmt.com/news/local/gov-whitmer-expands-state-of-emergency-michigan-following-storms-tornadoes-eaton-ingham-county-community-heavy-rain-strong-winds-flooding>

²¹ Hurst, “Tornadoes Caused \$2.5 Million in Damage Per Storm Across U.S. in Past Decade.” <https://www.valuepenguin.com/damage-caused-by-tornadoes>

²² Scott and Huff, “Impacts of the Great Lakes on Regional Climate Conditions.” <https://www.sciencedirect.com/science/article/pii/S0380133096710067>

²³ Fair, “Issues of the Environment.” <https://www.wemu.org/show/issues-of-the-environment/2023-01-18/issues-of-the-environment-michigan-winters-are-changing-and-climate-adaptation-is-key-to-the-future>

²⁴ Fountain, “A ‘Once in a Generation’ Storm. What’s the Role of Climate Change?” <https://www.nytimes.com/2022/12/28/climate/storm-buffalo-climate-change.html>

firefighter.²⁵ About a week later, another severe winter storm left 350,000 Michigan residents without power.²⁶ Severe winter storms often cost more than \$1 million dollars per event and storm size and intensity have increased since the 1950's.²⁷

Potential Costs Related to Severe Storms

Structure and Infrastructure Projects

- Remove, relocate, acquire, or demolish structures to minimize future flood losses.
- Install, reroute, increase capacity, or implement a routine cleaning plan of the storm drainage system.
- Add extra culverts, increase dimensions of existing culverts, or implement routine cleaning and repairing.
- Install detention or retention basins, relief drains, spillways, drain widening/dredging or rerouting, etc.
- Inspect and maintain drainage systems and flood control structures (dams, levees, etc.).
- Inspect bridges in order to identify and/or implement repairs or retrofits or clean under low bridges.
- Resurface roads with more permeable pavement and concrete.
- Elevate roads and bridges above the base flood elevation (BFE)²⁸ to maintain dry access.
- Elevate structures above the BFE, or relocate utilities, water heaters, etc. above BFE.
- Floodproof inside of municipal buildings, for example by installing check valves, sump pumps, or backflow prevention devices.
- Floodproof wastewater treatment facilities located in flood hazard areas.
- Floodproof water treatment facilities located in flood hazard areas.
- Protect emergency operations by requiring or moving all emergency operations centers, police stations, and fire department facilities outside of flood-prone areas.
- Protect critical and emergency facilities by requiring all critical facilities be built one foot above the 500-year flood elevation (to meet requirements of FEMA Executive Order 11988).²⁹
- Protect critical and emergency facilities from floods using any other technique, for example, raising components above BFE, installing pumping systems or back-up generators for pumping, building dikes or stabilizing banks.
- Construct floodwalls, small berms, revetments, bioengineered bank stabilization, or other small structural mitigants.
- Implement severe storm strategies for the future like burying utility lines underground.

²⁵ Nguyen, "Winter Storm Pounds US; Firefighter Killed in Michigan; NWS San Diego Issues First-Ever Blizzard Warning."

<https://www.usatoday.com/story/news/weather/2023/02/23/winter-weather-forecast-snow-storm-0223/11326523002/>

²⁶ National Weather Service, "Winter Storm Impacts Michigan March 3-4, 2023."

<https://www.weather.gov/grr/2023March3-4WinterStorm>

²⁷ Changnon, "Catastrophic Winter Storms." <https://doi.org/10.1007/s10584-007-9289-5>

²⁸ Base flood elevation (BFE), as defined by FEMA, is "the elevation of surface water resulting from a flood that has a 1% chance of equaling or exceeding that level in any given year."

²⁹ Federal Emergency Management Agency, "Executive Order 11988: Floodplain Management," www.fema.gov/executive-order-11988-floodplain-management.

Natural Flood Mitigation

- Protect and enhance natural floodplain mitigation features (such as wetlands, dunes, and vegetative buffers) to help prevent flooding in other areas and increase water quality.

Public Health

- Protect public water supplies from harmful algal blooms.
- Increased hospitalizations related to water-borne illness.

Local Planning and Regulation

- Update flood risk maps and flood zones.
- Develop a floodplain management plan.
- Adopt a stormwater management or drainage plan.
- Adopt, apply, and enforce building codes to ensure buildings can withstand flooding.
- Obtain easements to use privately-owned land for temporary water retention and drainage.
- Join or improve compliance with the National Flood Insurance Program (NFIP) if needed.³⁰
- Preserve floodplains as open space using any of several land use planning tools: develop a plan that targets hazard areas for acquisition, reuse, and preservation, a land banking program, use of transfer of development rights to keep floodplains vacant, easements to prevent development, or acquiring properties in the floodplain and turning them into open space.

Education and awareness programs

- Increase public outreach to encourage flood insurance purchase; educate residents in flood safety, flood mitigation, technical assistance availability, funding sources, and best practices.
- Increase public outreach to provide awareness of harmful algal blooms and their health impacts.
- Locate new utilities and critical facilities outside of susceptible areas.

Summary of Costs from Increased Precipitation and Severe Storms

Floodproof buildings, relocate infrastructure in especially flood prone areas, improve drainage systems and flood control structures, elevate infrastructure (buildings, roads, and bridges) where needed, restore natural flood protection, develop and implement comprehensive flood management plans, preserve floodplains, increase public awareness of flooding and HABs.

³⁰ U.S. Federal Emergency Management Agency (FEMA), The National Flood Insurance Program (NFIP), at www.fema.gov/national-flood-insurance-program Policy Information by State (<https://nfipservices.floodsmart.gov/reports-flood-insurance-data>), accessed September 1, 2023; Michigan has over \$4 million in total coverage and over 19,000 policies, but local governments should make sure they comply.

Hotter Temperatures – Air and Water

By 2100, average annual temperature is predicted to increase by almost 9°F in Michigan.³¹ Already, the average annual temperature has increased by more than 2.5°F in most areas of the state, with the largest increases observed in average winter temperatures (Table 2).³² This corresponds to a decrease in the number of frost days and an increase in the length of the growing season. Warming – especially in the winters – will decrease revenue from recreational activities like ice fishing, snowmobiling, and skiing.

The number of days with temperatures above 90°F is expected to quadruple by mid-century,³³ which will increase the need for air conditioning in schools and public buildings.³⁴ For example, this past June both Detroit and Grand Rapids closed schools due to inadequate air conditioning, which impacted thousands of students.³⁵ The Center for Climate Integrity estimates Michigan will need to spend \$2.3 billion by 2025 to install air conditioning in schools and hotter temperatures will impact over 500,000 students.³⁶

Warmer temperatures will change the composition of forests and decrease agricultural yields of corn, soybeans, and other crops. For example, without winter freezes,³⁷ crops and other plants are more vulnerable to pests, less productive, and bloom too early.³⁸

Warmer temperatures will also increase ground level ozone, increase heat-related illness, and increase vector-borne illness.³⁹ The District Health Department #10 found that Lyme disease has already been increasing in Michigan.⁴⁰

Table 2: Changes in average temperature (°F) from 1952-2022 in Michigan.⁴¹

GLISA Division	Annual	Winter	Spring	Summer	Fall
Southwest Lower Michigan	2.3	3	2.4	1.7	1.8
South Central Lower Michigan	2.4	3.2	2.7	1.7	1.9

³¹ Kim, Ivanov, and Fatichi, “Climate Change and Uncertainty Assessment over a Hydroclimatic Transect of Michigan.” <https://doi.org/10.1007/s00477-015-1097-2>

³² GLISA, “Great Lakes Climatology: Interactive Climatology Map.” <https://glisa.umich.edu/climate-data/great-lakes-climatologies/>

³³ Malewitz, “Climate Change Could Bring Woe to Michigan’s Lakes, Farms, Forests | Bridge Michigan”; Dahl et al., “Killer Heat in the United State: Climate Choices and the Future of Dangerously Hot Days.” <https://www.bridgemi.com/michigan-environment-watch/climate-change-could-bring-woe-michigans-lakes-farm-s-forests>; <https://www.ucsusa.org/sites/default/files/attach/2019/07/killer-heat-analysis-full-report.pdf>

³⁴ LeRoy, Matthews, and Wiles, “Hotter Days, Higher Costs: The Cooling Crisis in America’s Classrooms.”

³⁵ Bosman, “High Heat Closes Schools in Grand Rapids, Mich., and Other U.S. Cities.”

<https://www.nytimes.com/2023/06/01/us/michigan-schools-heat.html>

³⁶ LeRoy, “Michigan - Hotter Days, Higher Costs: The Cooling Crisis in America’s Classrooms.”

<https://coolingcrisis.org/uploads/media/CCI-StateReport-Michigan.pdf>

³⁷ Ocko, “5 Reasons Why Your Warmer Winter Is so Alarming.”

<https://www.edf.org/blog/2020/02/12/5-reasons-why-your-warmer-winter-so-alarming>

³⁸ “Leaves Emerging Earlier.” <https://www.climatecentral.org/climate-matters/leaves-emerging-earlier>

³⁹ “Climate and Health Overview.”

<https://www.michigan.gov/mdhhs/safety-injury-prev/environmental-health/topics/climate/overview>

⁴⁰ District Health Department #10, “Lyme Disease Increasing in Michigan.”

http://www.dhd10.org/wp-content/uploads/2017/07/DHD10_LymeDisease_July2017.pdf

⁴¹ GLISA, “Great Lakes Climatology: Interactive Climatology Map.”

GLISA Division	Annual	Winter	Spring	Summer	Fall
Southeast Lower Michigan	2.8	3.3	3.1	2.3	2.2
West Central Lower Michigan	2.5	3.6	2.6	1.9	1.9
Central Lower Michigan	2.8	3.9	2.7	2.2	2.3
East Central Lower Michigan	2.9	3.8	2.8	2.3	2.4
Northwest Lower Michigan	3.1	4.1	2.9	2.7	2.5
Northeast Lower Michigan	2.9	3.8	2.5	2.6	2.3
Western Upper Michigan	2.7	3.9	2.2	2.5	2.3
Eastern Upper Michigan	2.3	2.8	1.8	2.5	2

Temperatures are increasing the most in the winter (Table 2), posing many challenges for Michigan. According to the Environmental Protection Agency, winter ice coverage on the Great Lakes has decreased by 63% due to warmer air and water temperatures.⁴² Declining ice coverage and warmer waters pose both ecological and recreational threats. In 2020, winter tourism brought \$3.6 million to Michigan according to TravelUSA.⁴³ But Michigan winters, as many know them, are “coming to an end.”⁴⁴ Muskegon Luge, for example, hasn’t opened for business during the holiday break in the last 5 years due to lack of snow,⁴⁵ a trend observed across Michigan.

The water level in the Great Lakes has been increasing and lake level fluctuations up to 2 meters have occurred.⁴⁶ Until about 2016, the Great Lakes experienced decreased water levels due to increased evaporation of the warmer waters.⁴⁷ More recently, lake levels have been rising. Lake Michigan water level is the highest it has been since the 1980’s.⁴⁸ By 2040, lake levels in the Great Lakes are projected to rise up to another 0.4 meters, as over-lake precipitation and basin run-off increase due to climate change.⁴⁹ Increased wind and wave action in the Great Lakes also causes coastal flooding.⁵⁰ Fluctuating lake levels impact shipping, ecosystem assemblages, coastal infrastructure, hydropower, and recreation.

Harmful algal blooms (HABs) are also caused by warmer temperatures, so the impacts related to HABs in the “Severe Storms” section above apply here too. It is important to note

⁴² “What Climate Change Means for Michigan.”

⁴³ Miller, “As Snow and Ice Disappear with Climate Change, Some Michigan Businesses Struggle.” <https://michiganadvance.com/2021/12/27/as-snow-and-ice-disappear-with-climate-change-some-michigan-businesses-struggle/>

⁴⁴ Matheny, “Michigan Winters, as Generations Have Known Them, May Be Coming to an End.” <https://phys.org/news/2021-01-michigan-winters.html>

⁴⁵ Miller, “As Snow and Ice Disappear with Climate Change, Some Michigan Businesses Struggle.”

⁴⁶ “Future Rise of the Great Lakes Water Levels Under Climate Change | Great Lakes Research Center | Michigan Tech.” <https://www.mtu.edu/greatlakes/research-highlights/climate-change-great-lakes/>

⁴⁷ US EPA, “Climate Change Indicators.” <https://www.epa.gov/climate-indicators/great-lakes>

⁴⁸ “State Climate Summaries: Michigan.”

⁴⁹ Kayastha et al., “Future Rise of the Great Lakes Water Levels under Climate Change.” <https://linkinghub.elsevier.com/retrieve/pii/S0022169422007788>

⁵⁰ Changnon, “Changes in Climate and Levels of Lake Michigan”; Hartmann, “Climate Change Impacts on Laurentian Great Lakes Levels.” <https://doi.org/10.1007/BF01091616>

that warmer temperatures or increased runoff can cause HABs (in other words, both conditions do not need to be present for a HAB to occur), but if both conditions are present HABs may become more likely.

Potential Costs Related to Hotter Temperatures

Structure and Infrastructure Projects

- Energy efficiency retrofits in public and private buildings and housing, including costs for the design and development of standards.
- Increased cooling costs for all public buildings, including green roofs or cool roofing systems on public buildings and new AC installation or upgrade costs for schools.
- Increased road damage due to more frequent extreme heat events.
- Plan for and increase capacity for increased energy demands due to both increased daytime and nighttime temperature.
- Increase high-albedo surfaces on buildings, roads, and other locations where feasible.
- Increased costs of dredging during times of lower lake levels.
- Update piers and other coastal infrastructure to accommodate fluctuating water levels.

Public Health Projects

- Build and manage more cooling centers, including staffing and tracking of high-risk individuals.
- Increased demand for publicly financed air conditioning targeted to low-income families and public housing.
- Control the increase of vector borne illness using education and physical and chemical controls for ticks and mosquitos.
- Treat victims of vector borne illness.
- Treat an increase in asthma attacks requiring hospitalization (resulting from increased heat and ground level ozone, and the increase in airborne allergens).
- Reduce the urban heat island effect by planting trees.
- Protect drinking water supplies from hazardous algae blooms.

Summary of Costs from Hotter Temperatures:

Public health costs (e.g., medicare/medicaid), AC installation and upgrades where needed, establishing new cooling centers, planting trees to reduce urban heat islands, protecting drinking water supplies, and updates to coastal infrastructure.

Intensified Drought

Despite increases in average precipitation, summer droughts — a natural part of Michigan's climate — are predicted to intensify.⁵¹ Increased summer droughts threaten crop yields in

⁵¹ "State Climate Summaries: Michigan."

Michigan, like asparagus, which brings in \$73 million annually.⁵² Summer droughts will also likely increase wildfire occurrences in Michigan’s forests.⁵³

Potential Costs Related to Intensified Drought

Water Management

- Protect drinking water supplies from low lake levels.
- Individual purchase of water during water scarce times.⁵⁴
- Treatment for victims of water-borne illnesses.⁵⁵
- Replace old pipelines that have water leak issues.⁵⁶
- Hire a climate scientist to recommend updates to water treatment, wastewater treatment, and other energy infrastructure using the best available science.⁵⁷

Wildfires

- Increase fire suppression, including staffing and aviation.
- Rebuild or relocate damaged properties and public infrastructure, such as homes and utility lines.
- Relocate public infrastructure where necessary.
- Update power lines to withstand wildfires.
- Implement fire mitigation strategies for the future like burying utility lines underground.
- Plan for and disburse community aid after wildfires.
- Implement fire detection strategies, like solar-powered sensors.⁵⁸
- Rehabilitate the landscape post-fire to reduce the risk of erosion and invasive species and mitigate future fire risk.
- Increased hospitalization costs for asthma attacks and other chronic health conditions (resulting from decreased air quality due to wildfire smoke).

Education and awareness programs

- Increase public outreach to encourage wildfire risk management; educate residents in wildfire safety, technical assistance availability, funding sources, and best practices.

Summary of Costs from Extreme Drought:

Fire prevention and recovery, water security and water treatment, infrastructure damages, public health, and education and awareness.

⁵² Brainard et al., “Managing Drought Risk in a Changing Climate.”

<https://www.sciencedirect.com/science/article/pii/S0378377418304517>

⁵³ Neuman, “Climate Change and Wildfire in the Great Lakes Region.”

https://www.canr.msu.edu/uploads/resources/pdfs/e-3277_wcag_2_aa.pdf

⁵⁴ Zoë Roller et al., “Closing the Water Access Gap in the United States: A National Action Plan,” Dig Deep and US Water Alliance, 2022.

https://static1.squarespace.com/static/5e80f1a64ed7dc3408525fb9/t/6092ddcc499e1b6a6a07ba3a/1620237782228/Dig-Deep_Closing-the-Water-Access-Gap-in-the-United-States_DIGITAL_compressed.pdf

⁵⁵ *ibid*

⁵⁶ CISA, “Drought and Infrastructure - A Planning Guide”

https://www.cisa.gov/sites/default/files/publications/Drought_and_Infrastructure_A_Planning_Guide_508c.pdf

⁵⁷ *ibid*

⁵⁸ Jennifer L, “Wildfires Cost Over \$148B” <https://carboncredits.com/wildfires-cost-emissions/>

Losses to Local Revenue

Climate change — especially warmer Winters — impacts revenue from agriculture, recreation, and tourism. Around 2000, snowmobile sales produced \$187 million in income and created thousands of jobs in Michigan. Since then, snowmobile sales have dropped by 70%, due in part to warmer winters and decreased snow accumulation.⁵⁹ According to the U.S. Fish and Wildlife Service, over 2 million anglers flock to the Great Lakes to ice fish in the winter, but as the number of days of ice cover on the Great Lakes decreases, ice fishing revenue will decline as well.⁶⁰

Other Potential Costs

Other plausible impacts from climate change that would incur public health costs are increased allergen levels, food- and water-borne infections, and zoonotic diseases.⁶¹ Since Michigan's climate is historically moderate, Michigan is also likely to see an influx of climate refugees, which will incur costs as they plan for and accommodate more residents.⁶²

⁵⁹ Matheny, "Michigan Winters, as Generations Have Known Them, May Be Coming to an End."

⁶⁰ Gitelman and Cheng, "Great Lakes Fish and Fisheries Suffer Stress of Warming Climate."
<https://www.freep.com/in-depth/news/local/michigan/2022/06/14/great-lakes-fish-fisheries-warming-climate/925762002/>

⁶¹ Carmen Milanes et al., "Indicators of Climate Change"

⁶² Freedman, "The Great Lakes Region Could Be a Haven for Climate Migrants. Some Are Already Here."
<https://www.crainsdetroit.com/crains-forum/climate-change-extreme-weather-spur-migration-great-lakes>

Ingham County
Environmental Affairs Commission
Request for Proposals (RFP) – Ingham County Sustainability Action Plan
Scope of Services Framework Summary

I. INTRODUCTION

Section Summary: Defines and describes the project, the scope, and the high-level purpose(s).

Review Specifics:

The plan will provide detailed strategies for Ingham County to:

- 1) Achieve carbon neutral operations no later than 2040;
- 2) Set community emissions reduction goals and science-based targets towards decarbonization;
- 3) Adapt and improve the resiliency of County operations and the local community to climate change and other human-induced environmental changes (biodiversity loss, resource depletion, wetland loss, surface and ground water pollution, etc.); and
- 4) Align climate and sustainability initiatives to the County’s tentative vision: “Ingham County inspires pride among our residents and creates opportunities for every person to realize their potential. We lead by example.” This vision is currently pending approval by the Ingham County Board of Commissioners.

II. BACKGROUND

ABOUT INGHAM COUNTY

Section Summary: Provides an introductory overview of Ingham County (including size, population, geographic location, etc.), outlines the county's governmental structure and the services offered by the county. The purpose is to provide essential background information about the County's demographics, governance, and service offerings.

SUSTAINABILITY AND CLIMATE RELATED EFFORTS

Section Summary: Provides the County’s recent background in sustainability and climate related initiatives beginning with the County’s resolution declaring a Climate Emergency (2020) to the creation and filling of the Environmental Sustainability Manager position (2022). It works to demonstrate the importance of community participation, climate justice, racial equity, and economic transitions in these efforts, with references to relevant board resolutions. The purpose of this section is to provide context on the County's commitment to sustainability, climate action, and equitable community engagement.

OVERVIEW OF PROJECT

Section Summary: Provides an overview of the project's purpose and identity’s/defines key guiding principles for the project.

Review Specifics: The Sustainability Action Plan will consider, incorporate, and address the following priority guiding principles:

- **Social Equity and Justice:** The plan must prioritize projects that produce benefits to communities who are disproportionately impacted by climate change and/or who have been historically

disproportionately impacted by environmental injustices. The plan should detail impacts on different communities and groups in Ingham County and how the implementation will incorporate social equity, climate justice, and environmental justice considerations.

- **Stakeholder and Community Engagement:** The planning process must be developed and informed through an extensive community and stakeholder engagement process including but not limited to, community members, regional agencies, local units of governments, non-profit entities, County Staff, and other local experts. The planning process should involve extensive engagement of minorities and those most impacted by climate change, including children, seniors, individuals with pre-existing conditions, low-income individuals, Black, Indigenous, and People of Color (BIPOC) community members.
- **Health in All Policies:** The plan takes an approach to improving the health of all people by incorporating health considerations into the decision-making process(s) throughout development and within the final plan. The plan must consider and align with the five key elements of Health in All Policies: Promoting health, equity, and sustainability, supporting intersectional collaboration, benefiting multiple partners, engaging stakeholders, and creating structural or process change.
- **Alignment and Consistency:** The plan must align with the County’s core functions, missions, and priorities ([INSERT LOCATION]). The plan must identify and leverage existing local community plans, initiatives, and resources, and build a shared commitment to sustainability across County departments, community partners, and the general public. The proposal and the plan must occur in align and concurrently with the climate and sustainability action planning efforts of other entities within the County and by the State of Michigan.

III. SCOPE OF CONSULTANT SERVICES

GENERAL REQUIREMENTS

Section Summary: Outlines the general high-level requirements for the consultant selected – to manage and administer the required services, collaborate with County representatives, attend meetings, communicate with stakeholders, provide progress reports and final deliverables, etc.

TASK 1 – KICKOFF MEETING, INTRODUCTION PRESENTATION, AND PROJECT SETUP

Section Summary: Establishes the foundation for the project. It includes identifying key stakeholders, convening a kickoff meeting, and presenting an introduction to the EAC. The purpose of the task is to define the project scope, vision, stakeholders, and communication methods.

Deliverables:

Project Manual

Introduction Presentation

TASK 2 – COMMUNITY AND STAKEHOLDER ENGAGEMENT PROCESS AND PLAN

Section Summary: The purpose of this task is to develop a comprehensive Community and Stakeholder Engagement Plan that aligns with the Sustainability Action Plan's goals, approach, and schedule. It emphasizes the importance of inclusive engagement, identifying stakeholder groups, defining communication strategies, and obtaining input from communities disproportionately impacted by climate change and environmental injustices. Details and outlines the priority characteristics of engagement opportunities (accessibility, inclusivity, etc.).

Deliverables:

Stakeholder Engagement Plan

Progress Reports

Stakeholder Engagement Final Report

TASK 3 – GREENHOUSE GAS EMISSION ASSESSMENT

Section Summary: The purpose is to conduct a comprehensive Greenhouse Gas (GHG) Emissions Assessment for the County, including both County operations and the community. While following industry standard protocols, it aims to establish baseline emission levels and forecast projections based on economic and population changes. It also defines the requirements of the report (executive summary, key findings, detailed methodology, results, projections, recommendations, etc.).

Deliverables:

Green House Gas (GHG) Assessment Report

TASK 4 – VULNERABILITY ASSESSMENT

Section Summary: The purpose of this task is to conduct a Vulnerability Assessment for the County, identifying existing and anticipated climate change hazards and evaluating their potential impact on County operations and the local community. The assessment includes hazards like extreme heat, increased precipitation, and climate migration, with a focus on qualitatively assessing the likelihood of each hazard's risk level. Additionally, it highlights potential disproportional impacts on vulnerable populations, including BIPOC communities. The goal is to identify areas and groups most at risk from climate change and to aid in informing the development of adaptation strategies.

Deliverables:

Vulnerability Assessment Report

TASK 5 – SUSTAINABILITY ACTION VISION, OBJECTIVES, AND GOALS

Section Summary: The purpose of this task is to develop and recommend a vision, objectives, and goals for the Sustainability Action Plan based on the previous tasks. Defines the parameters of the objectives (align with the plan's vision, desired outcomes, and guiding principles and should be specific, measurable, attainable, relevant, and time-bound (SMART)) and the process engagement, feedback consideration/incorporation, and for finalization.

Deliverables:

Vision, Objectives, and Goals Report

TASK 6 – SUSTAINABILITY ACTION STRATEGIES

Section Summary: The purpose of this task is to develop and refine a list of potential sustainability action strategies in collaboration with stakeholders. The required elements of recommended strategies are defined (timeline, cost savings or avoidance, lead department, metrics, etc.). The goal of this is to create a comprehensive list of strategies that align with goals and objectives.

Deliverables:

Draft Sustainability Action Strategies List

Sustainability Action Strategies and Project Progress Presentation

Final Sustainability Action Strategies List

TASK 7 – IMPLEMENTATION AND MONITORING PROGRAM

Section Summary: The purpose of this task is to prepare a comprehensive program for Ingham County to prioritize, monitor, evaluate, and report its progress in implementing the plan. The required elements of program are defined (method and mode for reporting progress, Key Performance Indicators (KPIs), resource requirements, etc.). This section also includes a directive for the consultant to evaluate project management software options for tracking sustainability program information and provide a recommendation for selection.

Deliverables:

Implementation and Monitoring Program

Project Management Software Evaluation and Recommendation

TASK 8 – SUSTAINABILITY ACTION PLAN

Section Summary: This plan will integrate research, analysis, and stakeholder engagement from previous tasks and outline strategies, objectives, goals, and monitoring mechanisms. The Consultant will propose an outline, prepare a draft plan for stakeholder review, and finalize it for presentation to the County Board and County Controller/Administrator, ultimately recommending its adoption.

Deliverables:

Draft Sustainability Action Plan

Final Sustainability Action Plan

Plan Presentation

INGHAM COUNTY ENVIRONMENTAL AFFAIRS COMMISSION

BY-LAWS

ARTICLE I

NAME, MEMBERS, HOW SELECTED

Section I: Name: The official name of this entity shall be the Ingham County Environmental Affairs Commission (hereinafter referred to as the "Environmental Affairs Commission") as authorized by Resolution #21-195.

Section II: Membership: The membership of the Environmental Affairs Commission's composition shall be determined by the Board of Commissioners. Pursuant to Resolution #21-195, the Ingham County Board of Commissioners will appoint the individuals in accordance with the procedure set forth in the resolution.

Section III: Selection: The Ingham County Board of Commissioners shall select the members to sit on the Environmental Affairs Commission as required by the Board of Commissioners' resolution.

Section IV: Automatic Resignation: Members of the Environmental Affairs Commission, other than those members who are also members of the Ingham County Board of Commissioners, will automatically be deemed to have resigned their membership on the Environmental Affairs Commission if their absenteeism constitutes a violation of the County policy regarding attendance for advisory boards and commissions.

ARTICLE II

OFFICERS - TERM OF OFFICE, ELECTIONS, & DUTIES

Section I: The Officers of the Environmental Affairs Commission shall be the Chair, Vice-Chair, and Secretary.

Section II: Term of Office: Pursuant to Resolution #21-371, the term of office for the members shall be for three (3) calendar years expiring December 31.

Section III: Elections: Officers shall be elected by majority vote of the full Environmental Affairs Commission at the first regular meeting of each calendar year.

Section IV: Duties of the Chair: The Chair shall be responsible for preparing the agenda and presiding at the meetings. Upon approval of the Environmental Affairs Commission, the Chair will speak for the Environmental Affairs Commission and represent the Environmental Affairs Commission at meetings of official and community groups when appropriate to participate. The Chair shall maintain communication with the Board of Commissioners.

Section V: Duties of the Vice-Chair: The Vice-Chair shall assume the duties of the Chair in the Chair's absence or by delegation. The Vice-Chair is also responsible for overseeing the implementation of the By-Laws by Environmental Affairs Commission members.

Section VI: Duties of the Secretary: The Secretary shall ensure that minutes are prepared for the Environmental Affairs Commission, make sure copies are distributed to the members, and shall place one copy on file in the Controller's Office. The Secretary shall be responsible for ensuring that the Open Meetings Act, 1976 PA 267, as amended, is adhered to. The Secretary shall assume the duties of Vice-Chair in the absence thereof.

Section VII: Environmental Sustainability Manager: Appointed by the Controller's Office and supervised by the Deputy Controller/Administrator, the Environmental Sustainability Manager is an employee of Ingham County and shall:

1. Implement the general direction and policies of the Environmental Affairs Commission.
2. Not be a member of the Environmental Affairs Commission.
3. Abide by County Purchasing policies and procedures, and all other applicable County policies.
4. Conduct orientations with Environmental Affairs Commission appointees on County Ethics, Purchasing, Living/Prevailing Wage, Equal Employment Opportunity Plan, Travel, and Open Meetings Act Policies as appropriate, per Ingham County Board of Commissioners' Resolutions #06-115 and #19-255.
5. Perform duties provided in the Environmental Sustainability Manager's job description which may be amended from time to time.

ARTICLE III

ORGANIZATION - DUTIES AND RESPONSIBILITIES OF THE ENVIRONMENTAL AFFAIRS COMMISSION

Section I: Organizational Duties:

A. The Environmental Affairs Commission shall elect its officers and hold regular meetings as established hereunder.

B. Committees: The Environmental Affairs Commission is authorized and empowered to create standing committees (sub-committees and special committees) as it may determine from time to time to be in the best interests of the community, and to assign and delegate to such committees such duties and responsibilities as may be deemed appropriate. The Chair shall appoint all members to committees, sub-committees, and special committees, and remove any members at the Chair's discretion.

Section II: Duties: Pursuant to Resolution #21-195, the Environmental Affairs Commission shall make recommendations to the Board of Commissioners on the implementation of programming designed to reduce energy usage, to promote sustainability, to protect land, air, and water resources, and to reduce greenhouse gas emissions. The Environmental Affairs Commission shall recommend programs related to the operational reduction of energy usage, sustainability, biodiversity, and reduction of greenhouse gas emissions. The Environmental Affairs Commission shall ensure that related initiatives are guided by the principles of environmental justice, racial justice, equity, and just economic transitions. The voices and needs of those most impacted by climate change, including children, seniors, vulnerable individuals, Black, Indigenous, and People of Color (BIPOC) community members, and working families shall be duly considered and effectively centered. The Environmental Affairs Commission shall

review the impact of carbon neutrality on the existing energy infrastructure and the workers who support it and make recommendations to limit and reduce the negative impact on that workforce. The Environmental Affairs Commission shall inform the community and the Board of Commissioners of environmental and sustainability programs.

Section III: The Environmental Sustainability Manager serves as the primary staff liaison to the Environmental Affairs Commission. The Environmental Sustainability Manager advises and assists the Environmental Affairs Commission in its duties defined in Section II or that are consistent with the scope identified in Resolution #21-195. Environmental Affairs Commission members do not supervise or otherwise direct the Environmental Sustainability Manager, but are encouraged to make recommendations regarding environmental and sustainability initiatives. Such recommendations should be communicated to the Environmental Sustainability Manager via motion or resolution of the Environmental Affairs Commission. The Environmental Sustainability Manager will then determine which recommendations are appropriate and how to implement them in accordance with the County's policies and procedures.

Section IV: Environmental Affairs Commission Members may pursue recommendations for advocacy efforts that relate to the specific duties assigned to the Environmental Affairs Commission in Section II or that are consistent with the scope identified in Resolution #21-195. Such recommendations should be communicated to the Environmental Sustainability Manager or the Board of Commissioners via motion or resolution of the Environmental Affairs Commission. An individual member may be involved in advocacy efforts independent of the Environmental Affairs Commission, views and opinions do not necessarily reflect the views or positions of Ingham County. Individual members may only represent Ingham County in an advocacy capacity when formally authorized to do so by the Board of Commissioners.

ARTICLE IV

MEETINGS, REGULAR MEETINGS, & SPECIAL MEETINGS,

NOTICE AND SCHEDULE OF MEETINGS, QUORUM AND MINUTES

Section I: Meetings: The Environmental Affairs Commission shall meet at least once a month unless canceled in advance by the Chair of the Environmental Affairs Commission. The time and place of regularly scheduled meetings shall be determined at the first meeting in January, following the election of officers. A yearly calendar will be presented in February to the Environmental Affairs Commission and the Board of Commissioners.

Section II: Special Meetings: The Environmental Affairs Commission may meet in special meetings at the call of the: Environmental Sustainability Manager, Chair, or a majority of the Environmental Affairs Commission members—if they file a written request addressed to the Environmental Sustainability Manager at least twenty-four (24) hours in advance. The Environmental Sustainability Manager shall notify all Environmental Affairs Commission members as soon as possible of the special meeting. Public notice shall be given for all special meetings as required by the Open Meetings Act, 1976 PA 267 by the Environmental Sustainability Manager.

Section III: Order of Business: The agenda for Environmental Affairs Commission meetings shall be:

1. Call to Order
2. Approval of Previous Month's Minutes
3. Additions to the Agenda
4. Limited Public Comment (not to exceed three minutes)
5. Agenda and Discussion Items.

6. Announcements
7. Public Comment (not to exceed three minutes)
8. Adjournment

Section IV: All meetings of the Environmental Affairs Commission shall be open to the public as required by the Open Meetings Act, 1976 PA 267, excepting that closed sessions may be held for reasons provided for in the Open Meetings Act in accordance therewith.

Section V: Quorum: A quorum of the Environmental Affairs Commission shall consist of a majority of the members appointed by the Board of Commissioners. For the final passage of any measure, a majority of all of the appointed members shall be required.

Section VI: Minutes: The Environmental Affairs Commission shall cause minutes to be kept of each meeting and such minutes shall be kept on record at the Controller's office as required by the Open Meetings Act.

ARTICLE V

RULES AND ORDER OF BUSINESS AT MEETINGS

Section I: When not otherwise provided for by these By-Laws, Mason's Manual of Legislative Procedure shall govern the process and procedures of Environmental Affairs Commission meetings.

Section II: Environmental Affairs Commission members may abstain from voting with the approval of the Chair.

ARTICLE VI

AMENDMENTS TO BY-LAWS; SUSPENSION OF RULES

Section I: Amendments to By-Laws: The power to make, alter, amend, change, modify, and/or repeal By-Laws of the Environmental Affairs Commission is vested in 1.) the Environmental Affairs Commission, upon approval of the Ingham County Board of Commissioners and 2.) the Ingham County Board of Commissioners. No amendment by the Environmental Affairs Commission of all or any part of these By-Laws shall be considered or acted upon at any meeting unless the proposed change has been submitted to the entire Environmental Affairs Commission in writing not less than seven (7) days prior to the meeting at which the change is to be considered and acted upon. The affirmative vote of two-thirds (2/3) of the total Environmental Affairs Commission shall be necessary for the Environmental Affairs Commission to change, alter, modify, repeal, or amend all or any of these By-Laws contingent upon approval of the Board of Commissioners.

Section II: Suspension of Rules: The rules provided hereunder may be suspended at an Environmental Affairs Commission meeting by a vote of two-thirds (2/3) of the appointed members.

Section III: Effective Dates: These By-Laws shall take effect at the next regular meeting after adoption by the Board of Commissioners. Any amendment, change, modification or repeal of these By-Laws shall also take effect at the next regular meeting after such amendment, change, modification, or repeal of the same.

Section IV: If there is any conflict between a provision contained in these By-Laws and state law or Board of Commissioners resolution, then the state law or Board of Commissioners resolution shall supersede said provision or provisions.

Section V: The Environmental Affairs Commission shall adhere to County Ethics, Purchasing, Living/Prevailing Wage, Equal Employment Opportunity Plan, Travel, and Open Meetings Act Policies as stated in Ingham County Board of Commissioners' Resolutions #06-115 and #19-255.