

Bay Mills Indian Community: Priority Climate Action Plan

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1. Introduction

The Inter-Tribal Council of Michigan (ITCMI) received funding from the Environmental Protection Agency (EPA), to produce a Priority Climate Action Plan (PCAP) through the Climate Pollution Reduction Grant (CPRG) program, for Bay Mills Indian Community (BMIC or the “Tribe”). Bay Mills Indian Community is in Michigan’s Upper Peninsula, 15 miles west of Sault Ste. Marie, Michigan. BMIC has 2,258 members across three service counties; Chippewa, Mackinac and Luce counties. Bay Mills Indian Community has a total of 3,501.681 acres in trust land, in Northern Chippewa County. Bay Mills Indian Community has developed numerous programs/ projects to combat climate change. Projects include installation of electric vehicle charging stations at Bay Mills Resort and Casino, energy efficient buildings in new construction and assessments on how the Tribe can approve facilities and practices to combat climate change¹.

The Inter-Tribal Council of Michigan is a non-profit organization that represents twelve federally recognized tribes in Michigan. ITCMI is divided into several different divisions which includes Behavioral Health Services, Childhood and Family Services, Economic Development, Head Start, Health Education and Chronic Disease, Maternal and Early Childhood Services and Environmental Services. Each division is dedicated to act as a forum for member Tribes, to advocate in the development of programs and policies which will improve the economy, education, and quality of life for member Tribes, and to provide technical assistance to member Tribes in the development of Tribal regulations, ordinances and policies applicable to health and human services².

1.1 CPRG Overview

Participating in the CPRG program will produce two deliverables at the end of this program. The first deliverable is to create a PCAP by April 1st 2024. In the PCAP, ITCMI and BMIC will produce a generalized Green House Gas (GHG) inventory using existing national and state data. The PCAP will focus on implementation ready activities. In the PCAP a benefit analysis will be conducted to show benefits of GHG reduction measures. This PCAP will provide potential projects that BMIC can adapt to reduce GHG emissions. In development of this PCAP, ITCMI worked directly with the Bay Mills Biological Services Department to verify the Tribe’s goals in this program were met. The development of this PCAP, can open the door for the Tribe to apply for funding sources to help implement GHG reducing projects.

After the completion of the PCAP, ITCMI and BMIC will begin working on the Comprehensive Climate Action Plan (CCAP). The CCAP will consist of a complete GHG inventory for BMIC. This GHG inventory will be strictly for the entire Tribe. CCAP will provide GHG projections for near term (2030-2050) and long term (2050) projections. These projections will also include projections if no GHG reduction measures are taken. The CCAP will be published in fall 2026.

¹ [BMIC](#)

² [ITCMI](#)

1.2 PCAP Overview and Definitions

Below are the following components to Bay Mills Indian Community PCAP

- GHG Inventory: A generalized GHG inventory was created. This GHG inventory includes implementation ready sectors and some data will be collected from BMIC. ITCMI will use already published data from U.S Greenhouse Gas Emissions and Sinks by State and National Emissions Inventory (NEI). ITCMI used EPA's Tribal Greenhouse Gas Inventory tool.
- Quantified GHG reduction measures: A list of near term, high priority implementation ready measures are identified in this PCAP, for implementation activities suggested in this PCAP.
- Benefit Analysis: An analysis was conducted to assist benefits of GHG reduction measures. This analysis consisted of both base year estimates of co-pollutants and anticipated co-pollutant emission reductions. This assessment will include improved health outcomes, economic benefits, increased climate resilience, and improved air quality. This analysis also includes any dis-benefits resulting from implementation efforts listed in this PCAP
- A Review of Authority to Implement: A timeline was created to give BMIC key entities to implement projects listed in this PCAP.
- Identification of Other Funding Mechanisms: This section explores possible funding sources, the Tribe can seek to fund projects listed in this PCAP.

1.3 PCAP Development Approach

Below is ITCMI approach to the development of the PCAP.

- Stakeholder Engagement: Through the development of this PCAP, ITCMI worked directly with BMIC Biological Services and Administration. Quarterly meetings were held. Goals and objectives were given by the Tribe to ITCMI, to help develop this PCAP.
- Public Stakeholder Engagement: Public input was a major component in developing the PCAP. A public stakeholder meeting was held for Bay Mills Indian Community. In this meeting ITCMI and Bay Mills Biological Services presented the CPRG Program and how it would benefit the community. Public consensus from the stakeholder meeting was the following:
 - To update tribal homes and tribal facilities to be more energy efficient.
 - To introduce alternate sources of energy for the Tribe.

2. Organization and Considerations

2.1 PCAP Team

Table 1. Shows ITCMI PCAP team and roles that contributed to developing this PCAP.

Role	Reasonability
Project Manager- ITCMI	Manages operating project activities, host public stakeholder engagement meetings, complete reporting requirements to the EPA, develop GHG inventory and develop PCAP
Technical Support-ITCMI	Complete GHG inventory, data interpretation and assist with PCAP development.
Quality Assurance Manager-ITCMI	Provides quality assurance for PCAP development and GHG Inventory data
BMIC Biological Services	Develops BMIC goals and objectives for PCAP development. Assist in public stakeholder meetings, provide any previous data that BMIC has conducted.
Bay Mills Indian Community Executive Council	Provide final decision on implementation projects listed in this PCAP.
Environmental Protection Agency	Provide technical assistance in PCAP development.

2.2 Sector Specific Goals

In the development of this PCAP, ITCMI and BMIC have created the following goals for this to be delivered after the completion of this PCAP.

- Goal One: To create a new waste transfer station for BMIC and to establish a waste reduction program.
- Goal Two: To install combined heat and power at Bay Mills Resort and Casino and Health Care Center.
- Goal Three: To update tribal homes and tribal facilities with energy efficient retrofits and new green energy sources. Ex. heat pumps, solar panels and combine heat and power
- Goal Four: To install 12MW solar farm on BMIC trust land, to make BMIC 100% renewable

2.3 Existing GHG Assessments

In 2022, BMIC conducted a Green Assessment on facilities BMIC owns and operates. In this assessment the Tribe contracted Superior Watershed Partnership to conduct energy audits and a

waste characterization study for the Tribe. Over a six-week period 24-hour energy audits were conducted using the Department of Energy Asset Score Tool on all tribally owned facilities. This study's findings are referenced in section 3.2 of this PCAP.

3. PCAP Elements

3.1 Greenhouse Gas (GHG) Inventory

3.1.1 Scope

The scope of this GHG Inventory will focus on the following sectors:

- A. Electric Power Sector
- B. Solid Waste Sector
- C. Commercial and Residential Sector

The baseline year used for this inventory is 2020, this year was chosen for a baseline due to the volume of data available.

3.1.2 Data Collection Sources

Data in this GHG Inventory originated from the following sources:

- National Emissions Inventory (NEI): NEI is a comprehensive and detailed estimate of air emissions of criteria pollutants, criteria precursors, and hazardous air pollutants from air emissions sources.
- State Inventory Tool (SIT): The SIT consists of eleven different GHG estimation models. These estimates are used in this PCAP using baseline year 2020.
- Green House Gas Inventory Data Explorer: Information obtained from this tool originated from the NEI data. This tool was used to decipher GHG emissions from different sections of the NEI.
- Tribal GHG Inventory Tool: This tool was used to generate the GHG Inventory for this project.
- State and Local Planning of Energy (SLOPE) Database: This tool was used to compare measures that can reduce GHG emissions to current conditions.
- BMIC Green Assessment: This assessment will be used to determine how much energy was consumed by BMIC facilities and how the Tribes facilities score on energy efficiency.

3.1.3 GHG Accounting Method and Global Warming Potential

In this GHG inventory, most of GHG's produced globally is Carbon Dioxide (CO₂). For this inventory CO₂ emissions are calculated in Million Metric Tons of CO₂ Equivalent (MMTCO_{2e}) or Metric Tons of CO₂ Equivalent (MTCO_{2e}).

Global Warming Potential

As GHG's are emitted to the atmosphere, these emitted gases act like a blanket that covers the Earth's atmosphere and cause warming. Each greenhouse gas emitted warms the Earth at different rates. Differences in rates are expressed in Global Warming Potential (GWP). GWP is the result of GHG's ability to absorb energy and how long it will stay in the atmosphere. The EPA primarily uses the 100-year GWPs from IPCC Fifth Assessment Report (AR5) per international reporting standards. 100-year GWP is based on energy absorbed by a gas over 100 years. Below is a summary of GWP to relevant GHG's listed in this inventory.

Table 2. GWP for greenhouse gases listed in this inventory in a 100 year period according to IPCC Fifth Assessment Report (AR5)³

Greenhouse Gases	Global Warming Potential
Carbon Dioxide (CO ₂)	1
Methane (CH ₄)	28
Nitrous Oxide (N ₂ O)	265

3.1.4 GHG Emissions by Sector

A. Electricity Generation and Consumption Sector

The following data is from the SIT⁴ using base year 2020.

Table's 3-6 shows residential, commercial and industrial electricity consumption data in 2020.

Table 3. 2020 Michigan Residential Electricity Consumption

Source	kWh	Total (MTCO ₂ e)
Space Heating	5,550,514,846	2,401,121
Air Conditioning	3,984,985,018	1,723,882
Water heating	4,269,620,805	1,847,014
Refrigeration	2,846,417,870	1,231,344
Other	19,213,320,622	8,311,573
Total	35,864,865,161	15,514,936

³ [Global Warming Potential](#)

⁴ [EPA State Inventory Tool](#)

Table 4. 2020 Michigan Commercial Electricity Consumption

Source	kWh	Total (MMTCO ₂ e)
Space Heating	997,792,974	431,640
Cooling	3,991,171,869	1,726,558
Ventilation	5,864,215,990	2,536,826
Water Heating	142,541,883	61,663
Lighting	6,556,925,257	2,836,489
Cooking	997,792,974	431,640
Refrigeration	5,274,048,577	2,281,523
Office Equipment	1,625,418,534	703,147
Computers	3,278,462,629	1,418,244
Other	6,984,550,818	3,021,477
Total	35,492,921,502	15,354,036

Table 5. 2020 Michigan Industrial Electricity Consumption

Source	kWh	Total (MMTCO ₂ e)
Conventional Boiler Use	393,796,870	170,354
Process Heating	2,879,793,900	1,245,782
Process Cooling and Refrigeration	2,108,908,085	912,302
Machine Drive	13,153,445,793	5,690,106
Electro-Chemical Process	1,739,799,795	752,627
Facility HVAC	621,255,853	268,752
Facility Lighting	2,095,694,010	906,585
Other Facility Support	1,687,907,767	730,179
Onsite Transportation	461,812,492	199,777
Other Non-Process Use	46,832,237	20,259
Other	306,061,291	132,400
Total	25,656,612,576	11,098,904

Table 6. Shows Michigan's total electricity consumption in MTCO₂e

Source	Total (MTCO ₂ E)
Residential	15,514,936
Commercial	15,354,036
Industrial	11,098,904
Total	41,967,876

Electricity Consumption Emissions for BMIC Service Counties

Table 7. Electricity emissions in MMTCO₂e for BMIC service counties in 2020 using SLOPE Data.⁵

County	Residential	Commercial	Industrial	Transportation
Chippewa	73,378	98,151	17,419	6,488
Mackinac	73,378	21,886	10,394	5,258
Luce	73,378	21,335	20,904	1,687
Totals	220,134	141,372	48,717	13,433

B. Solid Waste Sector

The following information is from the State Inventory Tool (SIT) ⁶using base year 2020 in Michigan. This data was determined by 2020 Michigan population of 9,966,555 and estimated of 7,523,620 tons of waste produced.

Table 8. Shows waste combustion from Carbon Dioxide (Co₂), Nitrous Oxide (N₂O) and Methane (CH₄) in Million Metric Tons of Carbon Dioxide Equivalent (MMTCO₂e).

Source	MMTCO ₂ e
CO₂	541,542
Plastics	355,058
Synthetic Rubber	53,452
Synthetic Fibers	133,032
N₂O	8,723
CH₄	369
Total Co₂, N₂O CH₄	550,634

Table 9. Shows plastic combustion in 2020 in MMTCO₂e

Plastics	State MSW Combusted (short tons)	MMTCO ₂ e
PET	725.692	43,274
HDPE	725.692	70,678
PVC	725.692	4,222
LDPE/LLDPE	725.692	96,369
PP	725.692	91,433

⁵ [State and Local Planning for Energy](#)

⁶ [EPA State Inventory Tool](#)

PS	725.692	27,305
Other	725.692	35,843
Total Plastics	5,079.84	355,058

Table 10. Shows Methane (CH₄) emissions from landfills in MMTCO₂e

Potential CH ₄	MMTCO ₂ e
Potential CH₄	10,967,194
MSW Generation	10,249,714
Industrial Generation	717,480
CH₄ Avoided	10,249,714
Flare	1,926,878
Landfill Gas-to-Energy	9,048,368
Oxidation at Industrial Landfills	71,748
Total CH₄ Emissions	645,732

Table 11. Shows total emissions from landfills and waste combustion in MMTCO₂e

GHG	MMTCO ₂ e
Ch ₄	0.646
CO ₂	0.542
N ₂ O	0.009
Total	1.196

Table 12. Solid waste emissions for BMIC service counties, Michigan from the 2020 NEI⁷. Emissions are in tons.

County	Emissions (tons CO ₂)
Chippewa	343.89
Mackinac	194.82
Luce	42.93

⁷ [2020 NEI Data Set](#)

C. Commercial and Residential Sector

The following data is fuel combustion use in BMIC service counties. This data was obtained from the 2020 NEI ⁸in Michigan.

Table 13. Michigan Residential fuel combustion for natural gas, wood, oil and other types of combustion in emissions tons for BMIC service counties

County	Natural Gas Emissions (tons)	Wood Combustion Emissions (tons)	Oil Combustion (tons)	Other fuel source (Tons)	Total Emissions (Tons)
Chippewa	56,657.60	2,785.92	3.59	32.26	59,477.85
Luce	8.07	604.06	.35	6.60	619.08
Mackinac	11.25	1,379.08	.96	16.92	1,168.21

Table 14. Michigan commercial and institutional fuel combustion for biomass, natural gas, oil and other fuel sources in emissions tons for BMIC service counties

County	Biomass	Natural Gas	Oil	Other Fuel Sources	Total Emissions
Chippewa	12.26	30.34	.92	1.94	45.46
Luce	1.94	4.81	.14	.30	7.19
Mackinac	3.07	7.60	.23	.48	11.38

Table 15. Emissions from commercial and institutional fuel combustion for biomass, natural gas, oil and other fuel sources in emissions tons for Michigan.

Biomass	Natural Gas	Oil	Other Fuel Sources	Total Emissions (tons)
4,937.38	12,215.68	373.90	782.66	18,309.62

Table 16. Emissions from natural gas, wood combustion, oil combustion and other fuel sources for Michigan.

Natural Gas (Tons)	Wood Combustion (Tons)	Oil (Tons)	Other Fuel Sources (Tons)
24,507.50	282,605.78	318.33	3,560.87

⁸ [2020 NEI Data Set](#)

3.2 GHG Reduction Measures

The following is Bay Mills Indian Community greenhouse gas reduction measures for this PCAP.

Greenhouse Gas Reduction Measure One: Build new a waste transfer station

Table 17. BMIC GHG reduction measure one overview

Measure 1: Build a Waste Transfer Station	Implementing Agency	Bay Mills Indian Community
	Applicable Sector	Solid Waste Sector
	Implementation Milestones	To build an adequate waste transfer station for Bay Mills Indian Community. This waste transfer station will offer a comprehensive waste collection and recycling program for BMIC.
	Location	Bay Mills Indian Community
	Cost	\$3,694,530.00
	Annual Estimated GHG Reduction and long-term reductions	10,501 MTCO ₂ e reduced every year. 2024 -2030: 63,006 MTCO₂e 2024 – 2050: 273,206 MTCO₂e

GHG Reduction One Summary: BMIC desires to build a new waste transfer station (WTS). This WTS will provide the Tribe’s members with one comprehensive location to dispose of household waste. The WTS will provide an adequate area for BMIC members to sort recycling. This recycling area will have areas for members to sort glass, plastic, cardboard and paper. This new WTS will provide one specific location for members to dispose of waste and recycle. This WTS will also provide members to dispose of tires, E-Waste and household hazardous waste. The creation of a new WTS will provide a location for outreach and education about the importance of recycling.

According to the 2020 BMIC Waste Transfer Station audit, on average BMIC annually produces an estimated 312 tons of waste a year. This estimation is a combination of waste from household membership, government buildings and from Bay Mills Resort and Casino (BMRC). An average of 15% of waste generated could be recycled. This measure will reduce GHG emissions by 10,501 MTCO₂e annually. GHG reduction calculation was determined by 2020 BMIC Waste Transfer Audit and EPA GHG Calculator⁹.

⁹ [EPA Greenhouse Gas Equivalencies Calculator](#)

GHG Reduction Measure Two: Retrofitting BMIC Facilities for Energy efficiency.

The following information and reduction measures is provided from the 2022 Bay Mills Indian Community Green Assessment. This assessment conducted energy audits on every facility owned by BMIC. This assessment provided recommendations for each building to become more energy efficient. GHG emission reductions for each building was determined from 2022 Bay Mills Indian Community Green Assessment and using EPA GHG Calculator¹⁰.

Tables 18-33. BMIC facility's energy efficiency upgrades.

Table. 18. Administration Building

Measure 2 : Retrofitting BMIC Facilities for Energy Efficiency	Building	Tribal Administration
	Applicable Sectors	Commercial and Residential Sector and Electricity Generation and Consumption
	Summary	Installation of LED lighting throughout the entirety of the building. Installation of energy efficient water heater.
	Location	12140 W Lakeshore Dr, Brimley, MI 49715
	Annual Estimated GHG Reduction and	0.159 MTCO ₂ e.

Table 19. BMIC Conservation and Biological Services

Measure 2 : Retrofitting BMIC Facilities for Energy Efficiency	Building	Conservation and Biological Services
	Applicable Sectors	Commercial and Residential Sector and Electricity Generation and Consumption
	Summary	Installation of LED lighting throughout the entirety of the building. Install air barrier improvements. Installation of occupancy sensors throughout the facility.
	Location	11801 W Plantation Rd. Brimley, MI 49715

¹⁰ [EPA Greenhouse Gas Equivalencies Calculator](#)

	Annual Estimated GHG and criteria air pollutant emissions reductions	0.07 MTCO ₂ e.
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Table 20. Advance Office of Technologies

Measure 2 : Retrofitting BMIC Facilities for Energy Efficiency	Building	Advance Office of Technologies
	Applicable Sectors	Commercial and Residential Sector and Electricity Generation and Consumption
	Summary	Installation of LED lighting throughout the entirety of the building. Improvements to the HVAC system. Instillation of occupancy sensors throughout the facility.
	Location	12061 W Lakeshore Dr, Brimley, MI 49715
	Annual Estimated GHG and criteria air pollutant emissions reductions	0.003 MTCO ₂ e

Table 21. Boys and Girls Club of Bay Mills

Measure 2 : Retrofitting BMIC Facilities for Energy Efficiency	Building	Boys and Girls Club
	Applicable Sectors	Commercial and Residential Sector and Electricity Generation and Consumption
	Summary	Installation of occupancy sensors throughout the facility. Installation of low flow water faucets to lower water usage.
	Location	12435 W Industrial Dr, Brimley, MI 49715
	Annual Estimated GHG and criteria air pollutant emissions reductions	.003 MTCO ₂ e

Table 22. Justice Center

Measure 2 : Retrofitting BMIC Facilities for Energy Efficiency	Building	Justice Center
	Applicable Sectors	Commercial and Residential Sector and Electricity Generation and Consumption
	Summary	Installation of occupancy sensors throughout the facility. Installation of LED lighting throughout the entire building. Improvements to the HVAC system.
	Location	12140 W Lakeshore Dr, Brimley, MI 49715
	Annual Estimated GHG and criteria air pollutant emissions reductions	0.0203 MTCO ₂ e

Table 23. Bay Mills Child Development Center

Measure 2 : Retrofitting BMIC Facilities for Energy Efficiency	Building	BMIC Child Development Center
	Applicable Sectors	Commercial and Residential Sector and Electricity Generation and Consumption
	Summary	Installation of occupancy sensors throughout the facility. Installation of LED lighting throughout the entire building. Improvements to the building HVAC system which include demand control ventilation,
	Location	12471 W Lakeshore Dr, Brimley, MI 49715
	Annual Estimated GHG and criteria air pollutant emissions reductions	0.0402 MTCO ₂ e

Table 24. Armella Parker Elder Center and History Department

Measure 2 : Retrofitting BMIC Facilities for Energy Efficiency	Building	Armella Parker Elder Center and History Department
	Applicable Sectors	Commercial and Residential Sector and Electricity Generation and Consumption
	Summary	Installation of LED lighting throughout the entire building. Improvements to the building HVAC system
	Location	12485 W Lakeshore Dr, Brimley, MI 49715
	Annual Estimated GHG and criteria air pollutant emissions reductions	0.002 MTCO ₂ e

Table 25. Cultural Department

Measure 2 : Retrofitting BMIC Facilities for Energy Efficiency	Building	Cultural Department
	Applicable Sectors	Commercial and Residential Sector and Electricity Generation and Consumption
	Summary	Installation of an air-side economizer to capture outside air for free cooler
	Location	12498 W Tower Rd, Brimley, MI 49715
	Annual Estimated GHG and criteria air pollutant emissions reductions	0.001 MTCO ₂ e.

Table 26. Bay Mills Housing Authority

Measure 2 : Retrofitting BMIC Facilities for	Building	BMIC Housing Authority
	Applicable Sectors	Commercial and Residential Sector and Electricity Generation and Consumption
	Summary	Replacing current fixtures with LED lighting.

Energy Efficiency	Location	3095 S Towering Pines, Brimley, MI 49715
	Annual Estimated GHG and criteria air pollutant emissions reductions	0.003 MTCO ₂ e

Table 27. Bay Mills Resort and Casino

Measure 2 : Retrofitting BMIC Facilities for Energy Efficiency	Building	Bay Mills Resort and Casino
	Applicable Sectors	Commercial and Residential Sector and Electricity Generation and Consumption
	Summary	Replace 161 Wall Mounter Packaged Terminal Air Conditioners (PTAC) with Heat Pump PTAC. Installation of a CHP system. Convert the entire resort lighting to LED lighting.
	Location	11386 W Lakeshore Dr, Brimley, MI 49715
	Annual Estimated GHG and criteria air pollutant emissions reductions	0.004 MTCO ₂ e.

Table 28. Wild Bluff Golf Course

Measure 2 : Retrofitting BMIC Facilities for Energy Efficiency	Building	Wild Bluff Golf Course
	Applicable Sectors	Commercial and Residential Sector and Electricity Generation and Consumption
	Summary	Update HVAC system to make system more energy efficient.
	Location	11335 W Lakeshore Dr, Brimley, MI 49715
	Annual Estimated GHG and criteria air	0.004 MTCO ₂ e

	pollutant emissions reductions	
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Table 29. Four Seasons Market and Deli

Measure 2 : Retrofitting BMIC Facilities for Energy Efficiency	Building	Four Seasons Market and Deli
	Applicable Sectors	Commercial and Residential Sector and Electricity Generation and Consumption
	Summary	Assessing potential leaking points from doors, windows, walls, attics and basements.
	Location	9253 W 6 Mile Rd, Brimley, MI 49715
	Annual Estimated GHG and criteria air pollutant emissions reductions	0.0008 MTCO ₂ e.

Table 30. Waishkey Bay Farm

Measure 2 : Retrofitting BMIC Facilities for Energy Efficiency	Building	Waishkey Bay Farm
	Applicable Sector	Commercial and Residential Sector
	Summary	Assessing potential leaking points from doors, windows, walls, attics and basements. Install occupancy sensors in the facility
	Location	10135 W Mills Rd, Brimley, MI 49715
	Annual Estimated GHG and criteria air pollutant emissions reductions	0.0002 MTCO ₂ e

Table 31. BMIC Maintenance Department

Measure 2 : Retrofitting BMIC Facilities for Energy Efficiency	Building	BMIC Maintenance Department
	Applicable Sector	Commercial and Residential Sector
	Summary	Assessing potential leaking points from doors, windows, walls, attics and basements. Update existing HVAC system.
	Location	5463 South Nbiish Road, Brimley, MI 49715
	Annual Estimated GHG and criteria air pollutant emissions reductions	0.004 MTCO ₂ e

Table 32. Bay Mills Community College

Measure 2 : Retrofitting BMIC Facilities for Energy Efficiency	Building	Bay Mills Community College
	Applicable Sector	Commercial and Residential Sector
	Summary	Assessing potential leaking points from doors, windows, walls, attics and basements. Update existing HVAC system. Installing occupancy sensors in the facility.
	Location	12214 W Lakeshore Dr, Brimley, MI 49715
	Annual Estimated GHG and criteria air pollutant emissions reductions	0.0004 MTCO ₂ e

Table 33. Total GHG reductions for this measure annually and long term

Year	MTCO₂e
2024	0.3149 MTCO ₂ e
2024 - 2030	1.889 MTCO ₂ e
2024- 2050	8.1874 MTCO ₂ e

GHG Reduction Measure Three: Installation of 11 MW Solar Farm for Bay Mills Indian Community

Table 34. BMIC GHG reduction measure three overview.

Measure 3: Installation of 11MWac Solar Farm	Implementing Agency	Cloverland Electric Cooperative and Bay Mills Indian Community
	Applicable Sector	Electricity Generation and Consumption
	Overview	To develop and install 11 MW solar farm on BMIC trust land. This solar farm will produce enough energy for BMIC tribal facilities to be 100% renewable.
	Location	Bay Mills Indian Community
	Cost	\$28,000,000.00
	Annual Estimated GHG and criteria air pollutant emissions reductions	7,302 MTCO ₂ e reduced every year.
	Long Term GHG Reductions	2024 – 2030: 43,812 MTCO ₂ e 2024 – 2050: 189,852 MTCO ₂ e

GHG Reduction Measure Three Summary: The Tribe with partnership from Cloverland Electric Cooperative is in the process of planning to install an 11 MW solar farm for BMIC. This solar farm will supply BMIC with enough electricity to power the Tribal government buildings and Tribal enterprises. Unused generated electricity from the solar farm will be purchased from Cloverland Electric Cooperative to distribute across the Eastern Upper Peninsula of Michigan. This project will keep BMIC Tribal Government 100% renewable. An estimated 16,879,262 kWh will be generated annually for this project, reducing GHG by 7,302 MTCO₂e every year. GHG emission reduction was determined using Cloverland Electric Cooperative and BMIC electricity use and EPA GHG Calculator ¹¹

¹¹ [EPA Greenhouse Gas Equivalencies Calculator](#)

GHG Reduction Measure Four: Installation of Combine Heat and Power for Bay Mills Resort Casino.

Table 35. Overview of GHG reduction measure four.

Measure 4: Installation of Combine Heat and Power (CHP) for BMRC	Implementing Agency	Bay Mills Indian Community
	Applicable Sector	Commercial and Residential Sector
	Overview	To install and combine heat and power system for Bay Mills Resort and Casino.
	Location	11386 W Lakeshore Dr, Brimley, MI 49715
	Annual Estimated GHG and criteria air pollutant emissions reductions	98.2 MTCO ₂ e reduced every year.
	Long Term GHG Reductions	2024 – 2030: 589.2 MTCO ₂ e 2024 – 2050: 2,553.2 MTCO ₂ e

GHG Reduction Measure Four Summary: The Tribe desires to install a CHP system for Bay Mills Resort and Casino (BMRC). This system will produce electricity and thermal energy in one location at the resort. This system would replace BMRC current systems. CHP systems produce significantly less GHG emissions. Average annual electricity consumption from BMRC is 4,503,340 kWh. With the installation of CHP, the total amount of kWh produced annually will be 4,730,400 kWh. Total GHG reduction from installation of a CHP is 98.2 MTCO₂e annually. GHG emissions reductions for this measure was determined by using EPA GHG Calculator¹² and data from bakertilly CHP Feasibility Study for BMIC.

¹² [EPA Greenhouse Gas Equivalencies Calculator](#)

GHG Reduction Measure Five: Installation of Combine Heat and Power at Bay Mills Health Center

Table 36. GHG reduction measure five overview.

Measure 5: Installation of Combine Heat and Power (CHP) for Bay Mills Health Center	Implementing Agency	Bay Mills Indian Community
	Applicable Sector	Commercial and Residential Sector
	Overview	To install and combine heat and power system for Bay Mills Health Care Center
	Location	12455 W Lakeshore Dr, Brimley, MI 49715
	Annual Estimated GHG and criteria air pollutant emissions reductions	67.5 MTCO₂e reduced every year.
	Long Term GHG Reductions	2024 – 2030: 405 MTCO₂e 2024 – 2050: 1,755 MTCO₂e

GHG Reduction Measure Five Summary: The Tribe desires to install a CHP system at BMIC Health Center. This system will produce electricity and thermal energy in one location at the Health Center. CHP systems produce significantly less GHG emissions. CHP will replace the Health Center current HVAC system. Total GHG reduction from installation of a CHP is 67.5 MTCO₂e annually. GHG emissions reductions for this measure was determined by using EPA GHG Calculator¹³ and data from bakertilly CHP Feasibility Study for BMIC.

¹³ [EPA Greenhouse Gas Equivalencies Calculator](#)

3.3 Benefit Analysis

The following is a benefit analysis for each GHG reduction measure listed in this PCAP. This benefit analysis will compare benefits and any potential drawbacks for each GHG reduction measure listed in section 3.2 of this PCAP.

GHG Reduction Measure One: Creation of a new waste transfer station for BMIC

- **Benefits**
 - 10,501 MTCO₂e reduced every year
 - 63,006 MTCO₂e GHG reduction between 2024-2030
 - 273,206 MTCO₂e GHG reduction between 2024-2050
 - Decrease of Methane (CH₄) and Nitrous Oxide (N₂O)
 - Lower cost for BMIC to manage waste
 - Creation of permanent jobs for the community
 - Total reduction in BMIC solid waste
 - Total increase of recyclable material for BMIC
 - Tribal Sovereignty
- **Drawbacks**
 - Large upfront cost
 - Land Degeneration
 - Habitat Loss

GHG Reduction Measure Two: Retrofitting BMIC Facilities for Energy efficiency.

- **Benefits**
 - A total 0.3149 MTCO₂e reduced every year
 - 1.889 MTCO₂e GHG reduced between 2024-2030
 - 8.1874 MTCO₂e GHG reduced between 2024-2050
 - BMIC facilities will become more energy efficient
 - Increase in jobs for the community working on upgrades
 - Lower energy cost for BMIC facilities
- **Drawbacks**
 - Large overall cost

GHG Reduction Measure Three: Installation of 11MW Solar Farm for Bay Mills Indian Community

- **Benefits**
 - 7,302 MTCO₂e reduced every year

- 43,812 MTCO₂e GHG reduced between 2024-2030
 - 189,852 MTCO₂e GHG reduced between 2024-2050
 - 100% renewable energy for Bay Mills Indian Community
 - Tribal sovereignty
 - Increase in jobs in the community
 - Overall revenue for BMIC
 - Unique partnership with Cloverland Electric Cooperative
- **Drawbacks**
 - Large startup cost
 - Land Degeneration
 - Habitat Loss

GHG Reduction Measure Four: Installation of Combine Heat and Power (CHP) for Bay Mills Resort Casino

- **Benefits**
 - 98.2 MTCO₂e reduced every year
 - 589.2 MTCO₂e GHG reduced between 2024-2030
 - 2,553.2 MTCO₂e GHG reduced between 2024-2050
 - Lower energy cost for and Bay Mills Resort and Casino
 - CHP will be 70% energy efficient compared to current systems that run at 50% efficiency
- **Drawbacks**
 - Large startup cost

GHG Reduction Measure Five: Installation of combine heat and power at BMIC Health Center

- **Benefits**
 - 67.5 MTCO₂e reduced annually
 - 405 MTCO₂e GHG reduced between 2024-2030
 - 1,755 MTCO₂e GHG reduced between 2024-2050.
 - Lower energy cost for the Tribe.
- **Drawbacks**
 - Large startup cost.

3.4 Review and Authority to Implement

Bay Mills Indian Community recognizes the importance of this PCAP and the GHG reduction measures that is included in this PCAP. With this importance the following miles stones will take place to make certain GHG reduction measures are implemented.

- Develop a PCAP that fits the needs and wants for BMIC: Through outreach meetings with tribal members and stakeholders, an adequate PCAP was developed.
- Presentation to BMIC Executive Council: After the completion of this PCAP members from BMIC Biological Services, BMIC Planning Department and ITCMI will present this PCAP to the Executive Council. Executive Council meets once a week. This presentation will clarify each section of this PCAP.
- Executive Council Vote: After the presentation from the PCAP team, Executive Council will vote on implementing measures in this PCAP

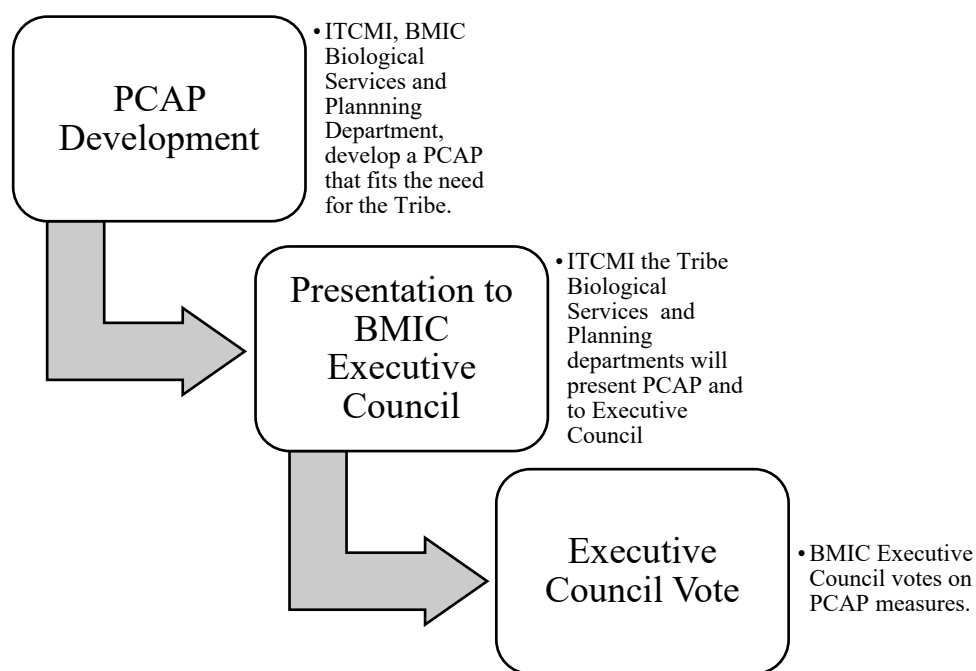


Figure 1. Flow chart for implementation of this PCAP

In the development of this PCAP, the Tribe has been transparent on the type of projects that will reduce GHG emissions. Through presentations to Executive Council, measures listed in this PCAP will be approved.

3.5 Identification of Other Funding Mechanisms

It is vital for Bay Mills Indian Community to have GHG reduction measures listed in the PCAP to be completed to help lower the Tribe's carbon footprint. To accomplish this goal, it is important for the Tribe to seek any funding sources available to possibly fund the Tribes GHG reduction measures.

The following are other sources of funding that the Tribe can apply for to help fund the Tribes GHG reduction measures.

Greenhouse Gas Reduction Fund (GGRF)¹⁴

Summary: \$27 billion investment to mobilize financing and private capital to combat the climate crisis and ensure American economic competitiveness. The GGRF will deliver lower energy costs and economic revitalization to communities, particularly those that have historically been left behind. Through the GGRF program, the EPA will allocate the fund through three competitions: Solar for All, National Clean Investment Fund (NCIF), and the Clean Communities Investment Accelerator (CCIA). Through these competitions, the fund aims to scale deployment of clean technologies nationally, build community clean financing capacity locally, and spur adoption of clean distributed solar energy in disadvantaged communities to achieve three broad objectives:

- Reduce greenhouse gas (GHG) emissions and other air pollutants.
- Deliver the benefits of greenhouse gas- and air pollution-reducing projects to American communities, particularly low-income and disadvantaged communities.
- Mobilize financing and private capital to stimulate additional deployment of greenhouse gas and air pollution reducing projects.

Community Change Grants¹⁵

Summary: The Inflation Reduction Act authorized the creation of the US Environmental Protection Agency's (EPA) new Environmental and Climate Justice Community Change Grants program. The program is designed to benefit disadvantaged communities through projects to reduce pollution, increase community climate resilience, and build community response capacity. The grants will be focused on community-driven initiatives to be responsive to community and stakeholder input.

¹⁴ [Greenhouse Reduction Fund](#)

¹⁵ [Community Change Grants](#)

Department of Energy Loan Programs Office State Energy Finance Institution Program

Summary: The Department of Energy's (DOE) Loan Programs Office (LPO¹⁶) finances large-scale energy infrastructure projects across the U.S. Through Title 17 Innovative Clean Energy Loan Guarantee Program (Title 17), DOE LPO provides loan guarantees for Innovative Clean Energy Projects, including through the designation of a State Energy Finance Institution (SEFI) to fund specific projects. A SEFI is a quasi-independent entity or an entity within a state agency or financing authority established by a state to satisfy two functions:

- Provide financial support or credit enhancements for clean energy projects, and
- Create liquid markets for eligible projects or take other steps to reduce financial barriers to the deployment of existing and new eligible projects.

4. Next Steps

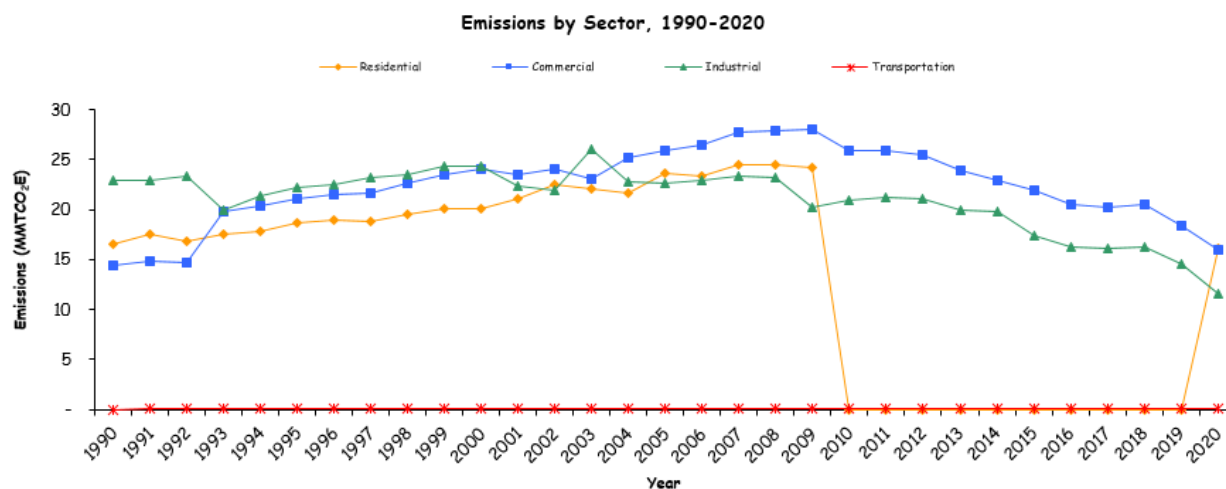
After the completion of this PCAP, work will begin on developing the CCAP for Bay Mills Indian Community. The CCAP will consist of developing a comprehensive GHG inventory for BMIC. This GHG inventory will consist of determining GHG emissions for the transportation sector, electricity power sector, the industrial sector, commercial and residential sector, land use and forestry sector, waste and materials management sector and agriculture sector. This GHG inventory will be unique for the Tribe. ITCMI will work directly with the Tribe to help determine GHG emissions for each sector of this inventory. A series of public stakeholder meetings will be held for tribal members. In the public stakeholder meetings, tribal members will have an opportunity to provide input on what type of GHG reduction measures should be included in the CCAP. During CCAP development, ITCMI will work with the Tribes Human Resources Department, to help develop positions to combat climate change. One of the main goals with the CCAP is to help create high quality jobs for the Tribe.

ITCMI will work directly with the Tribe, to develop additional and long-term GHG reduction measures. GHG reduction measures will address the main GHG emission sectors. After completion of GHG reduction measures for the CCAP, a complete benefit analysis will be conducted on each measure. This benefit analysis will look at benefits and drawbacks for each GHG reduction measure. At the end of the CCAP development, BMIC will have a comprehensive climate action plan that will help the Tribe combat climate change and meet the Tribes climate change goals.

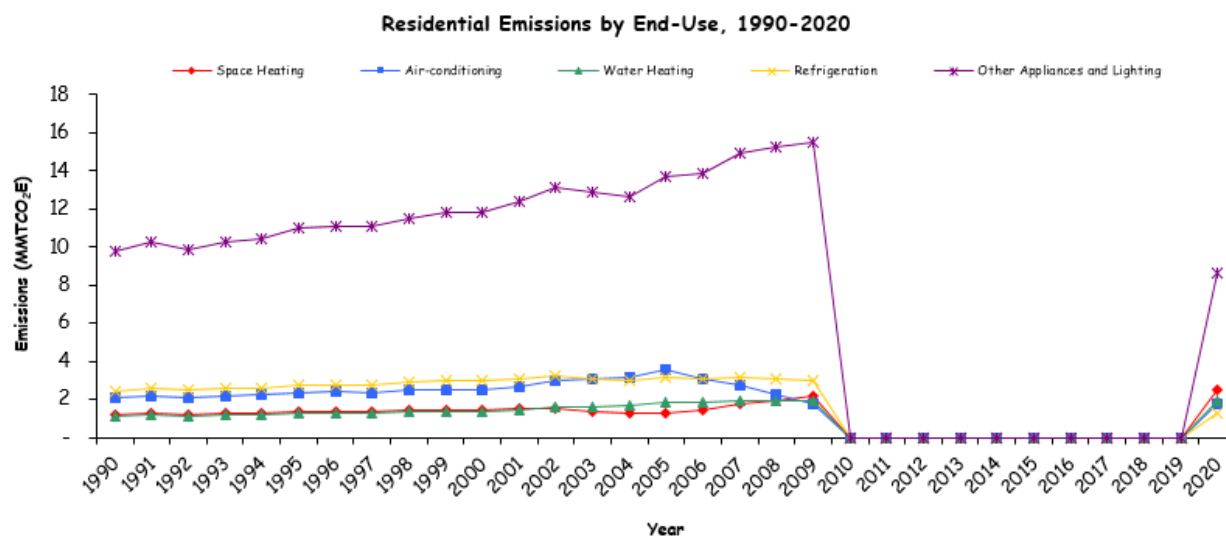
¹⁶ [DOE Loan Program](#)

Appendix A: Electricity Emissions for Michigan 1990-2020

Electricity emissions for the state of MI, using EPA State Inventory Tool¹⁷.

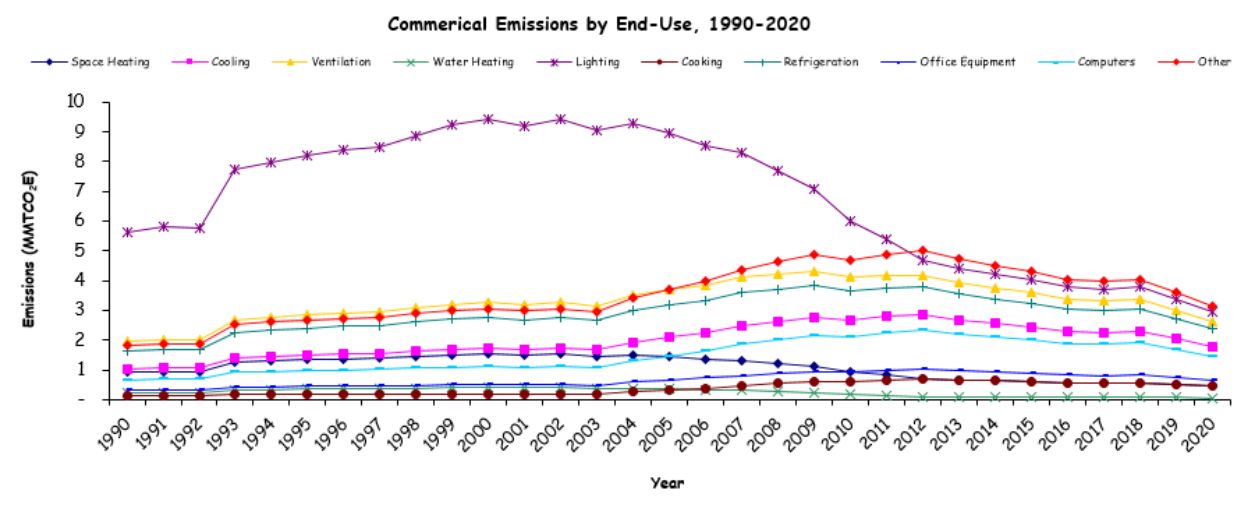


Appendix Figure 1. MI electricity emissions by sector. 1990-2020

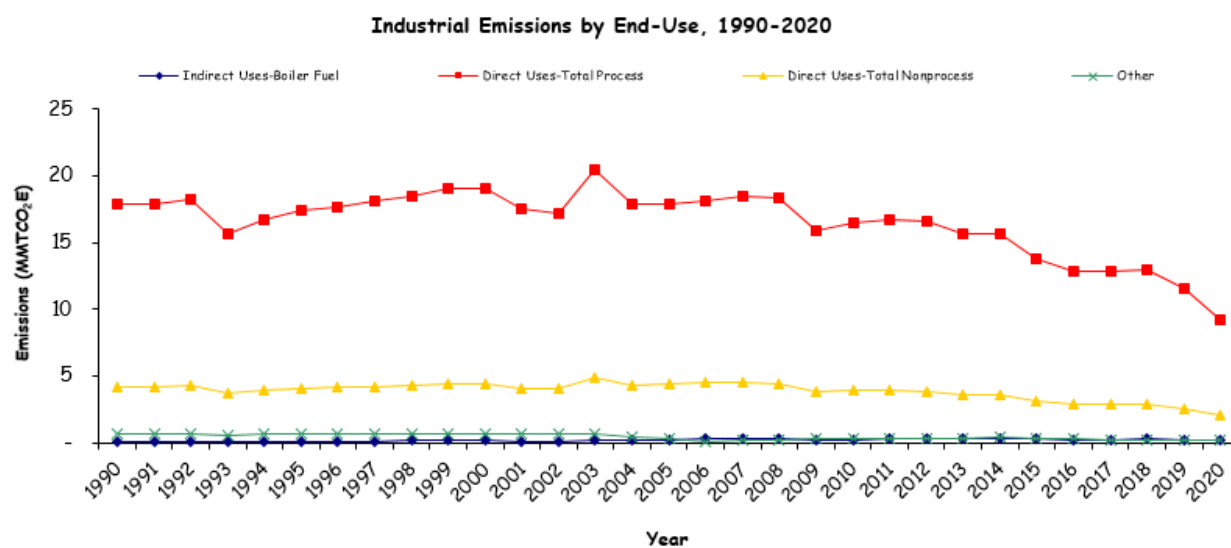


Appendix Figure 2. Residential emissions by end use, 1990-2020

¹⁷ [EPA State Inventory Tool](#)



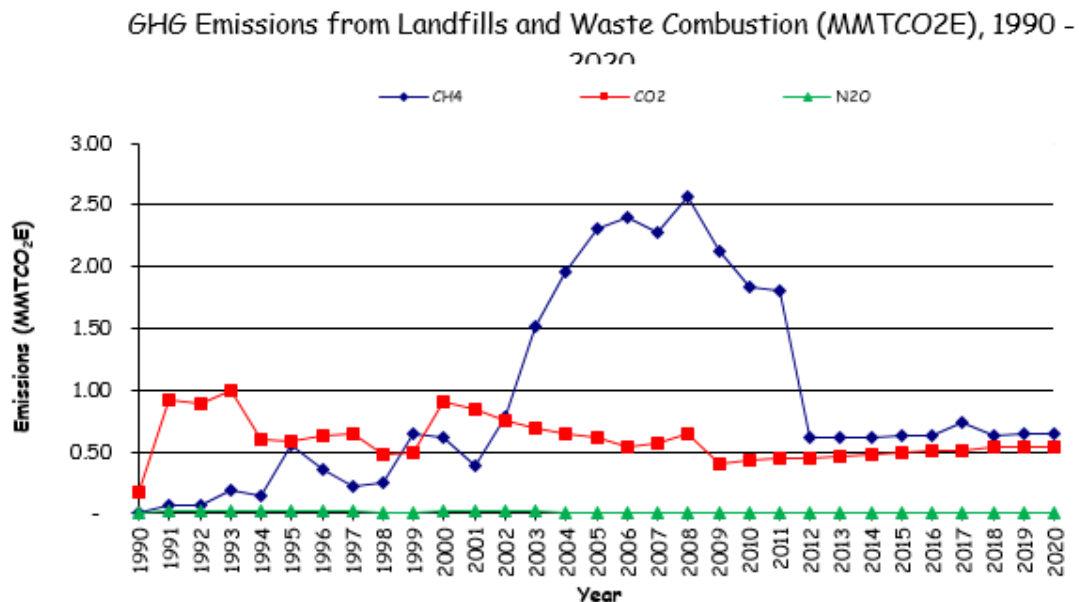
Appendix Figure 3. Commercial emissions by end-use, 1990-2020.



Appendix Figure 4. Industrial emissions by end-use, 1990-2020.

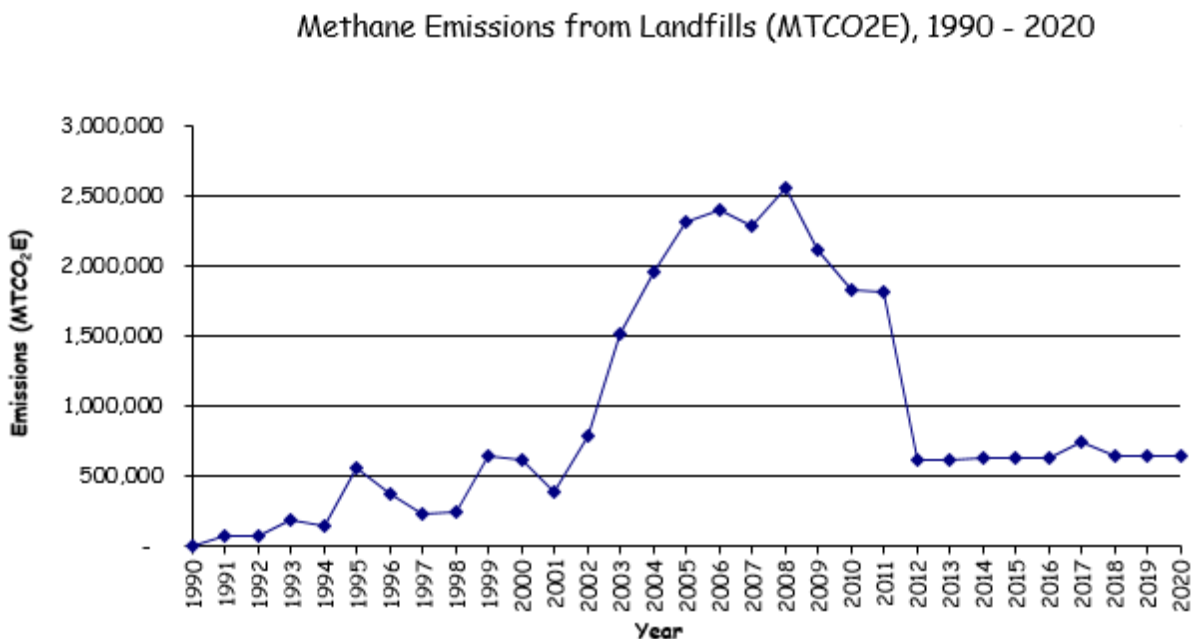
Appendix B. Solid Waste Emissions for the State of Michigan 1990-2020

Solid waste emissions for the state of MI, using EPA State Inventory Tool¹⁸.

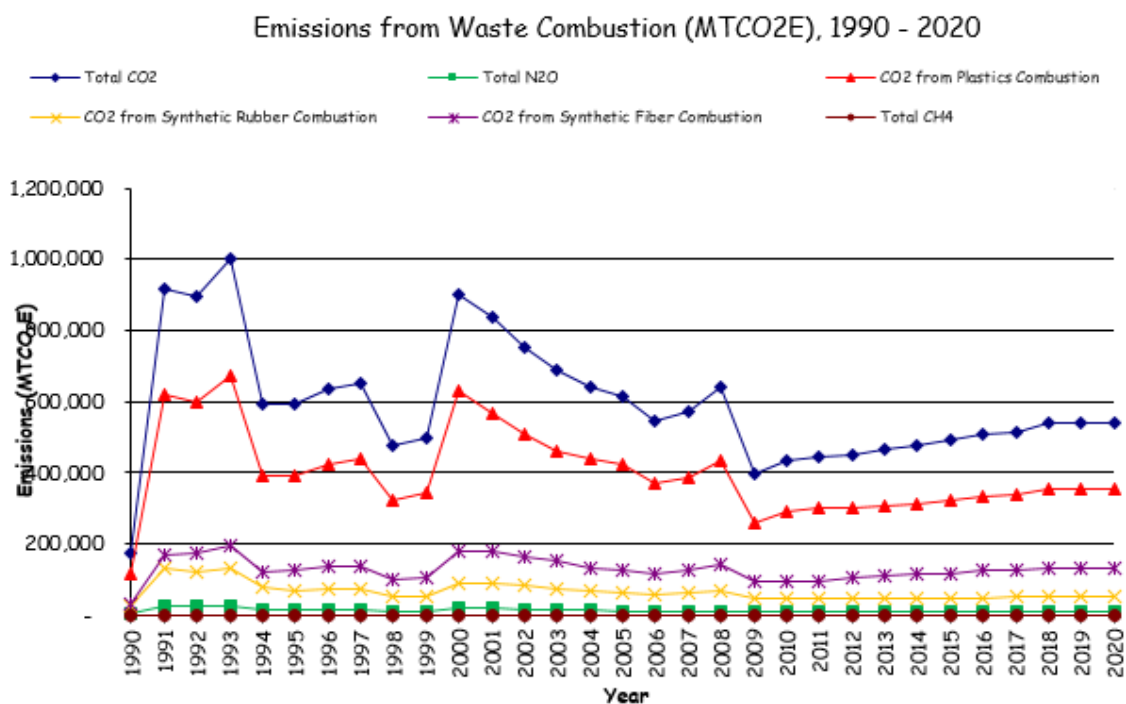


Appendix Figure 5. GHG emissions from landfills and waste combustion from 1990-2020

¹⁸ [EPA State Inventory Tool](#)



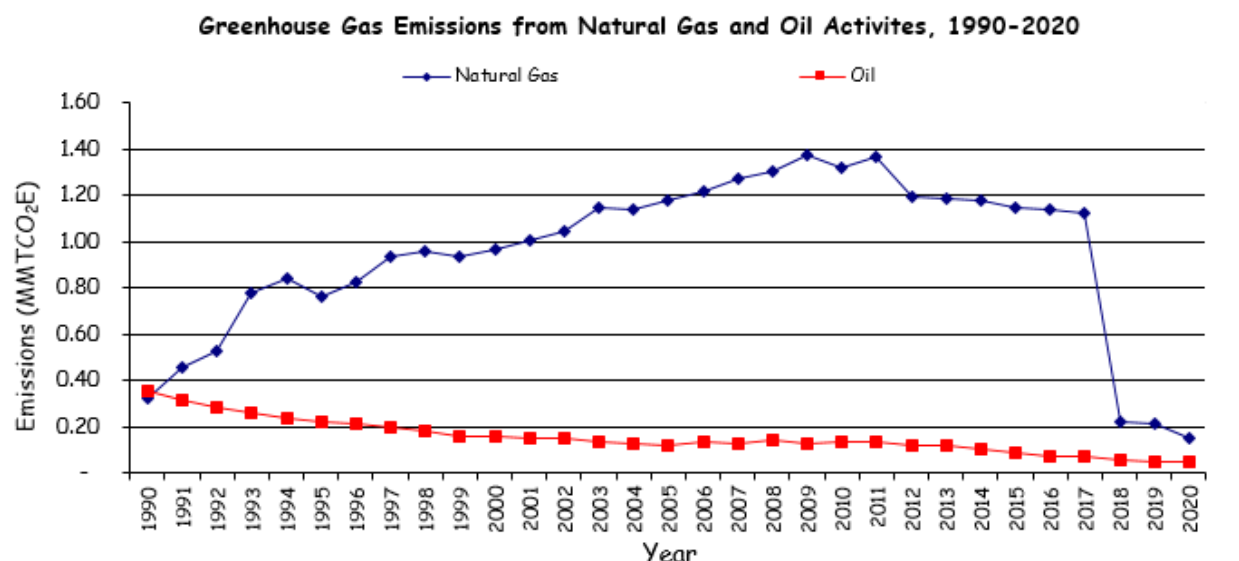
Appendix Figure 6. Methane Emissions from landfills, 1990-2020.



Appendix Figure 7. Emissions from waste combustion, 1990-2020.

Appendix C. Natural Gas and Oil Emissions for Michigan, 1990-2020.

Natural gas emissions for the state of MI, using EPA State Inventory Tool¹⁹.



Appendix Figure 10. Total greenhouse gas emissions from natural gas and oil activities for the state of Michigan in 1990-2020.

¹⁹ [EPA State Inventory Tool](#)