February 25, 2025

COUNCIL ON CLIMATE SOLUTIONS

EGLE

Agenda

1:00 pm – Welcome, Attendance, Business

1:15 pm – Office of Climate and Energy Update

1:45 pm – Office of Future Mobility and Electrification

2:15 pm – Geologic Resources Management Division – Orphan Well Program

2:45 pm – Next Steps and Discussion

3:00 pm – Adjourn

OCE Quarterly Update

Julia Field and Sayon Ghosh
Office of Climate and Energy

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2024 MI Healthy Climate Plan Annual Report

Highlights -

- Implementing 2023 clean energy laws
- Lowering energy costs with new legislation
- Investing in impactful climate efforts
- Bringing home federal funding
- Driving public service work in communities

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2024 MI Healthy Climate Plan Annual Report Sector-Specific Updates

EJ & Just Transition: Environmental Justice Impact Grants provided 43 awards to improve public health, monitor pollution, enhance indoor air quality.

Electricity: The MPSC awarded nearly $21 million in grants to schools, community groups, tribes, and other organizations to fund renewable energy and electrification infrastructure.

Transportation and mobility: Michigan schools received $23.98 million through the EPA's Clean School Bus Program rebate competition to purchase clean-powered school buses.

Built environment: The Michigan State Housing Development Authority announced a third wave of $7.4 million in Michigan Housing Opportunities Promoting Energy Efficiency (MI-HOPE) grants to local governments and nonprofits supporting energy efficiency investments by homeowners.

Industry: The U.S. Department of Energy announced $355 million in awards to help four companies expand EV battery manufacturing and energy storage in Michigan, creating or retaining up to 929 permanent jobs and 1,435 construction jobs.

Natural and working lands: The Michigan Department of Natural Resources announced the Michigan the Beautiful initiative to conserve, restore and connect at least 30% of Michigan's lands and waters by 2030 in accordance with the MHCP.

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MI Solar for All – Program Update

- MI Solar for All Workplan approved by the U.S. EPA, includes pilots during 2025 planning period
- Virtual Listening Sessions
  - Feb 6 – MI Solar for All Overview & Pilots
  - Feb 27 – Community Engagement and Workforce Development
  - March 20 – Residential Solar, Enabling Upgrades, Storage
  - April 10 – Residential-Serving Community Solar, Enabling Upgrades, and Storage
  - May 14 – Geographic Distribution and Equitable Deployment & Prioritization in Program Design and Project Selection

MI Healthy Climate Conference
"Road to 2030"

Join us at the third annual MI Healthy Climate Conference!

April 22 - 23
Huntington Place, Detroit, Michigan

Council Luncheon with Michigan Advisory Council on Environmental Justice

- Tuesday, April 22, 11:30 a.m. - 12:30 p.m.
- RSVP to Haley Hill (HillH7@michigan.gov)

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Michigan Credit Unions Awarded

- Inclusiv, national Greenhouse Gas Reduction Fund (GGRF) Clean Communities Investment Accelerator (CCIA) awardee, selected 64 credit unions serving more than 3.8 million Americans across 26 states for a combined $464 million in subawards
- Michigan awards:
  - 6 credit unions, $48.7 million
  - Serving 256,000+ members
  - To offer affordable financing for clean technology projects in Michigan households, organizations, and businesses

EXECUTIVE BUDGET RECOMMENDATION

FY 2026, Supplementals, Transfer Adjustments

MI Healthy Climate Plan Aligned Highlights

$129.1M Climate Pollution Reduction Grant (EGLE)
$35.8M Transmission Siting and ED Grant (LEO)
$25M Michigan Energy Assistance Program (DHHS)
$25M Arc Wire Removal (TREAS)
$22.6M Retooling Grant (LEO)
$10M Clean Fuel and Electric Vehicle Infrastructure (EGLE)
$5.3M Lake Michigan Circuit (EGLE)
$5M Energy Revolving Fund (DTMB)
$4.4M Clean Heavy-Duty Vehicle Infrastructure (EGLE)
$4.13M Energy Efficiency Contractor Training (EGLE)
$3.05M Energy Code and Benchmarking (LARA)
$3M Clean Ports Program (EGLE)
$2M Smart Manufacturing and Recycling Tactics
$1.98M Renewable Energy Academy (EGLE)
$1.3M Green Stormwater Project in Ox Creek (EGLE)
$953k Clean Energy Corps (EGLE)
$700k Food Waste Prevention Grant (EGLE)
$685k Clean Diesel Program (EGLE)
$370k Energy Programs Capacity – ongoing (EGLE)

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Implementing the MI Healthy Climate Plan: Comprehensive Climate Action Plan

- Held 5 virtual listening sessions November through January
- Finished draft 2021 GHG Inventory by economic sector
- Formed Council on Climate Solutions Subcabinet
- EGLE's Northern Michigan Environmental Conference - hosting Climate & Energy Workshop on March 13 at NMU
- Comprehensive Climate Action Plan due to EPA December 2025

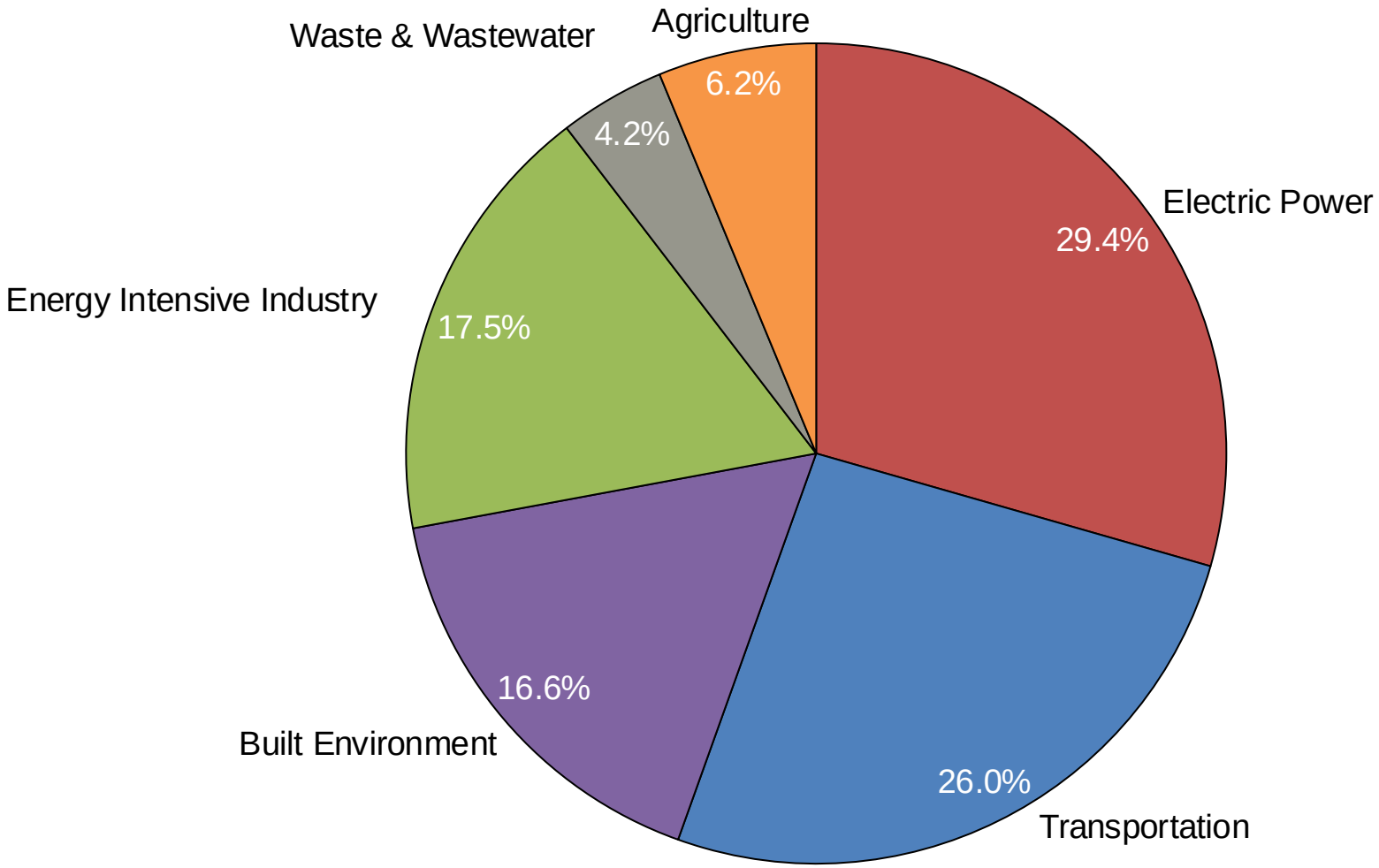
2021 GHG Inventory

Comprehensive Climate Action Plan

EGLE

Total Emissions by Economic Sector in Michigan - 2021

This data allows us to see the proportion of total emissions (181.18 MMTCO2eq in 2021) from all sectors in Michigan
Note: These totals do not include sinks from natural lands



Source: EPA SIT, EPA Inventory by State (default data)

Data and Methods

EPA State Inventory Tool (SIT) –The SIT includes default activity data and estimates that states can use as a starting point for compiling a state-level GHG inventory

EPA Inventory by State and EPA FLIGHT used to complement EPA SIT with additional emission sources to present the most conservative (“default safe”) scenario

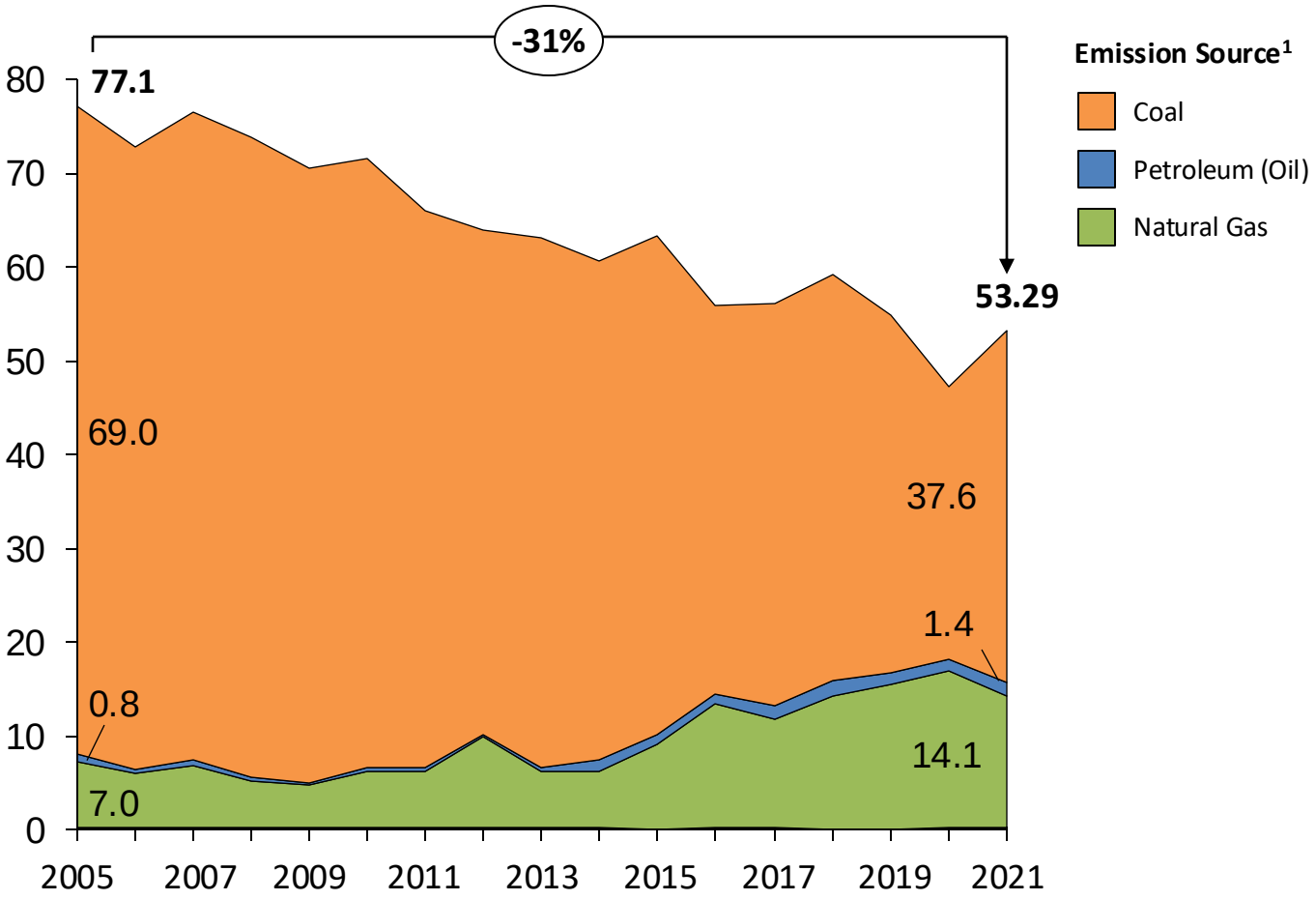
SIT Modules used (v2024.2)

Agriculture
CO2 from Fossil Fuel Combustion (CO2FFC)
Industrial Processes
Land Use, Land Use Change, and Forestry
Mobile Combustion
Natural Gas and Oil
Solid Waste
Stationary Combustion
Wastewater

Michigan's Emissions from Electric Power

Electricity Sector Emissions in Michigan Have Declined 31% Since 2005

Million Metric Tons of Carbon Dioxide Equivalent ($MMTCO_{2e}$) Emitted by Year



Analysis & Key Takeaways

Decline in Coal Use for Electricity:

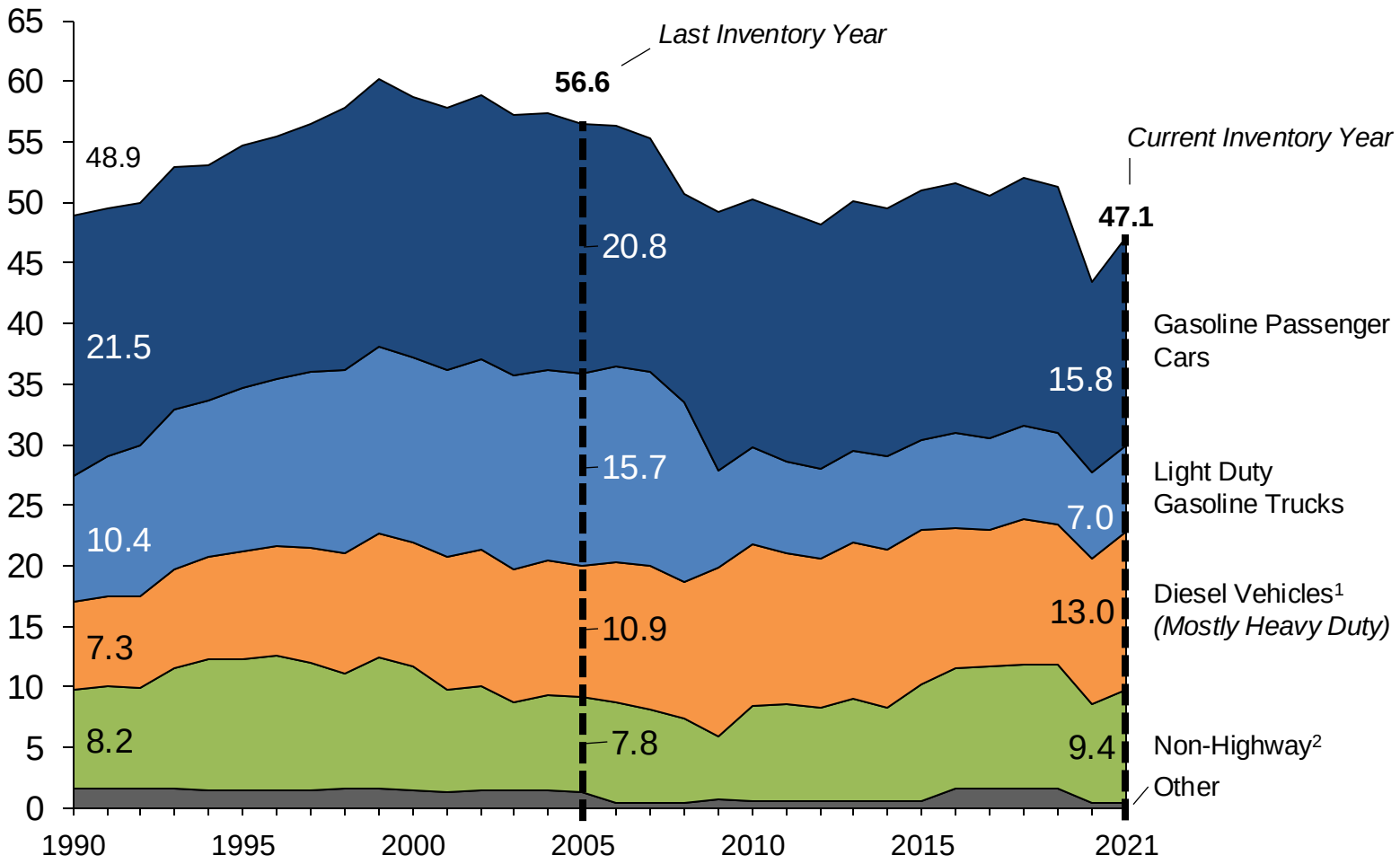
- Coal use for electricity generation is **steadily decreasing** in Michigan.
- Major coal plant closures are scheduled for 2025, 2028, and 2032. **By 2032, Michigan's grid is expected to be coal-free**.
- Reducing coal use is crucial for achieving net-zero goals, as **coal is the highest-emitting source of power generation**.

[1]Totals include emissions from Wood (Biomass) and Grid Leakage, which contributed less than 0.3 $MMTCO_{2e}$ in 2005 and less than 0.15 $MMTCO_{2e}$ in 2019

Michigan's Emissions from Transportation

In 2021, Transport Emissions Reached 1990-Era Levels Despite Growing Diesel and Nonhighway Emissions

$MMTCO_{2e}$ Emitted by Vehicle Group and Year



Analysis & Key Takeaways

Decline in Vehicle & Light Truck Contributions: Gasoline Passenger Cars and Light-Duty Trucks accounted for roughly 2/3 of total sector emissions in 1990, but only about half of emissions in 2021 as **these vehicles became more fuel efficient**

Increase in Diesel Vehicle Emissions: Emissions from Heavy-Duty Diesel Vehicles and Other Diesel (like light-duty trucks) saw notable growth, **increasing to 28% of total emissions** in 2021

Stable Non-Highway Vehicle Emissions: Emissions from Non-Highway Vehicles, including Aircraft, Boats, Construction & Farm Equipment, and Utility Vehicles remained mostly stable, **accounting for a 1/5 (20%) of sector emissions** in 2021

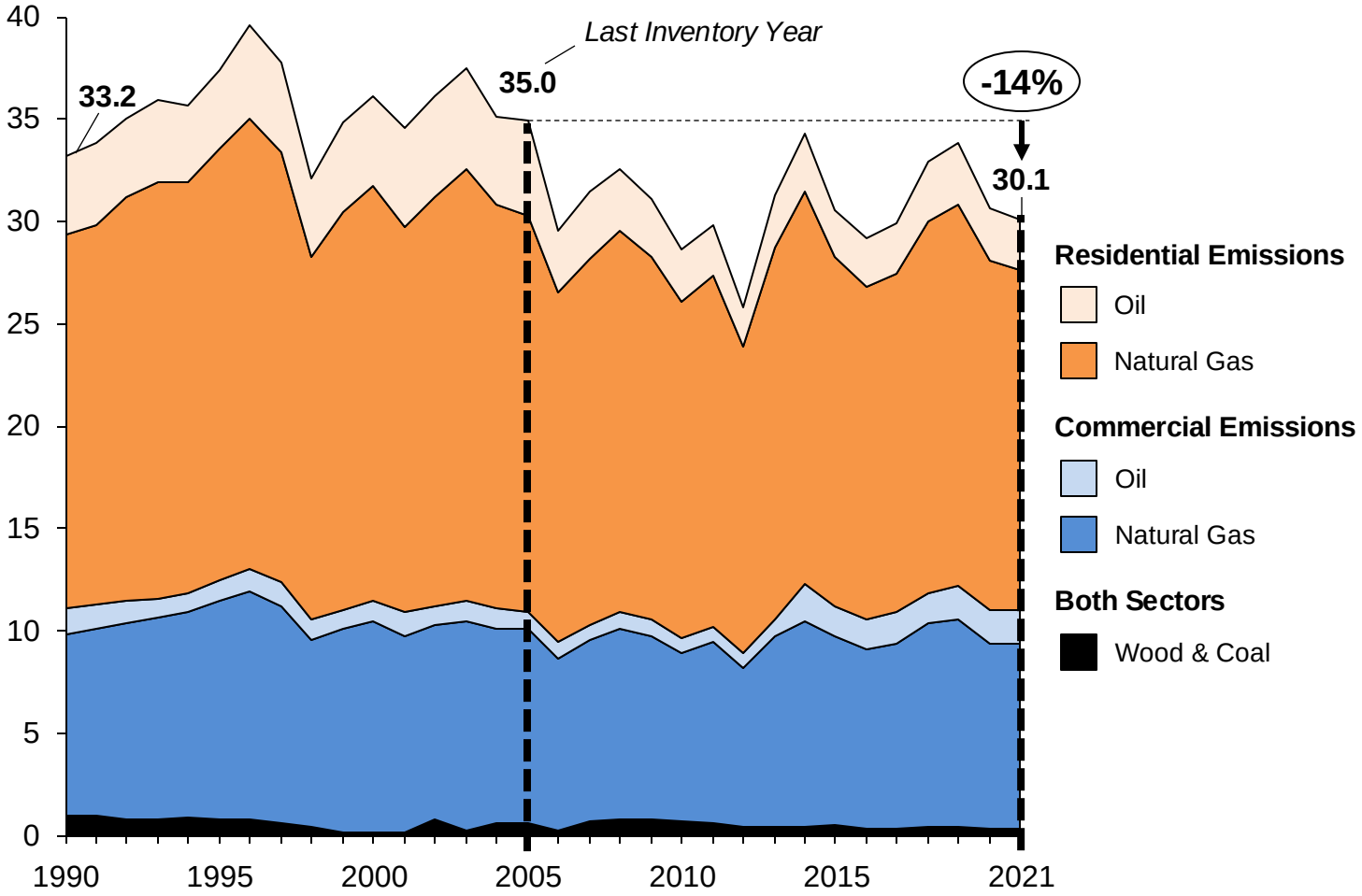
Gradual Diversification of Emission Sources: While overall emissions decreased, moderate **increases in Diesel Vehicle emissions and minor increases in Non-Highway Vehicle emissions muted Michigan's progress in this sector**

[1]Diesel vehicles include Heavy Duty Trucks, Buses, Light Duty Trucks, and Passenger Cars
[2]Non-Highway vehicles include Boats, Locomotives, Farm Equipment, Construction Equipment, Aircraft, and Utility Vehicles
[3]Other vehicles include Alternative Fuel Vehicles, Motorcycles, and Heavy-Duty Gas Vehicles

Michigan's Emissions from Buildings

Emissions from buildings in Michigan have fluctuated, but are down 14% since our last GHG Inventory

$MMTCO_{2e}$ Emitted by Building Classification, Fuel Type, and Year



Analysis & Key Takeaways

Natural Gas emissions: **Used for space heating, water heating, and cooking** in homes and businesses.

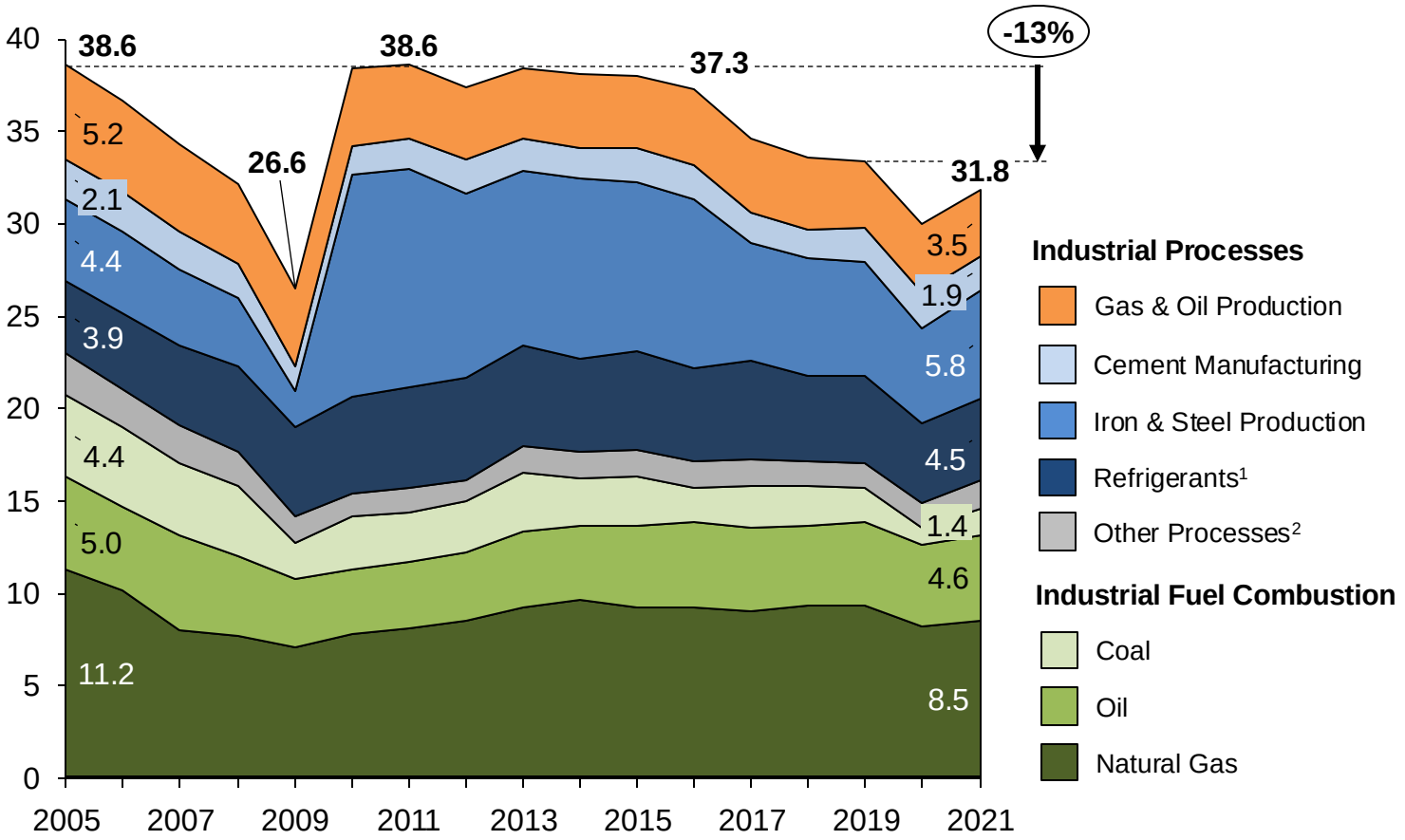
Secondary Use of Oil: Oil-based fuels, such as heating oil and propane, are **more commonly used in rural and northern regions of Michigan**, where natural gas infrastructure may be less accessible.

Emission Trends: Building emissions have fluctuated over the years but show an **overall decline of 14% since the last inventory**. This reflects **improvements in energy efficiency** and a gradual shift toward cleaner energy sources.

Michigan's Emissions from Industry

Industrial Emissions in MI Have Declined 13% Since 2005

$MMTCO_{2e}$ Emissions by Sector Component and Year



Key Takeaways

Slight Decline in Total Emissions

- Industrial emissions in Michigan have **decreased by 13% since 2005**, dropping from 38.6 $MMTCO_2e$ to 31.8 $MMTCO_2e$ in 2021

Significant Dip in 2009

- A temporary, **sharp drop in emissions occurred in 2009** likely due to reduced demand during the Great Recession

Sector Contributions

- **Natural Gas & Oil emissions have seen a decrease** over time
- Most industrial process emissions come from **Cement Manufacturing, Iron & Steel Production, and Refrigerants;** Cement Manufacturing emissions decreased since 2005 while the other two increased.

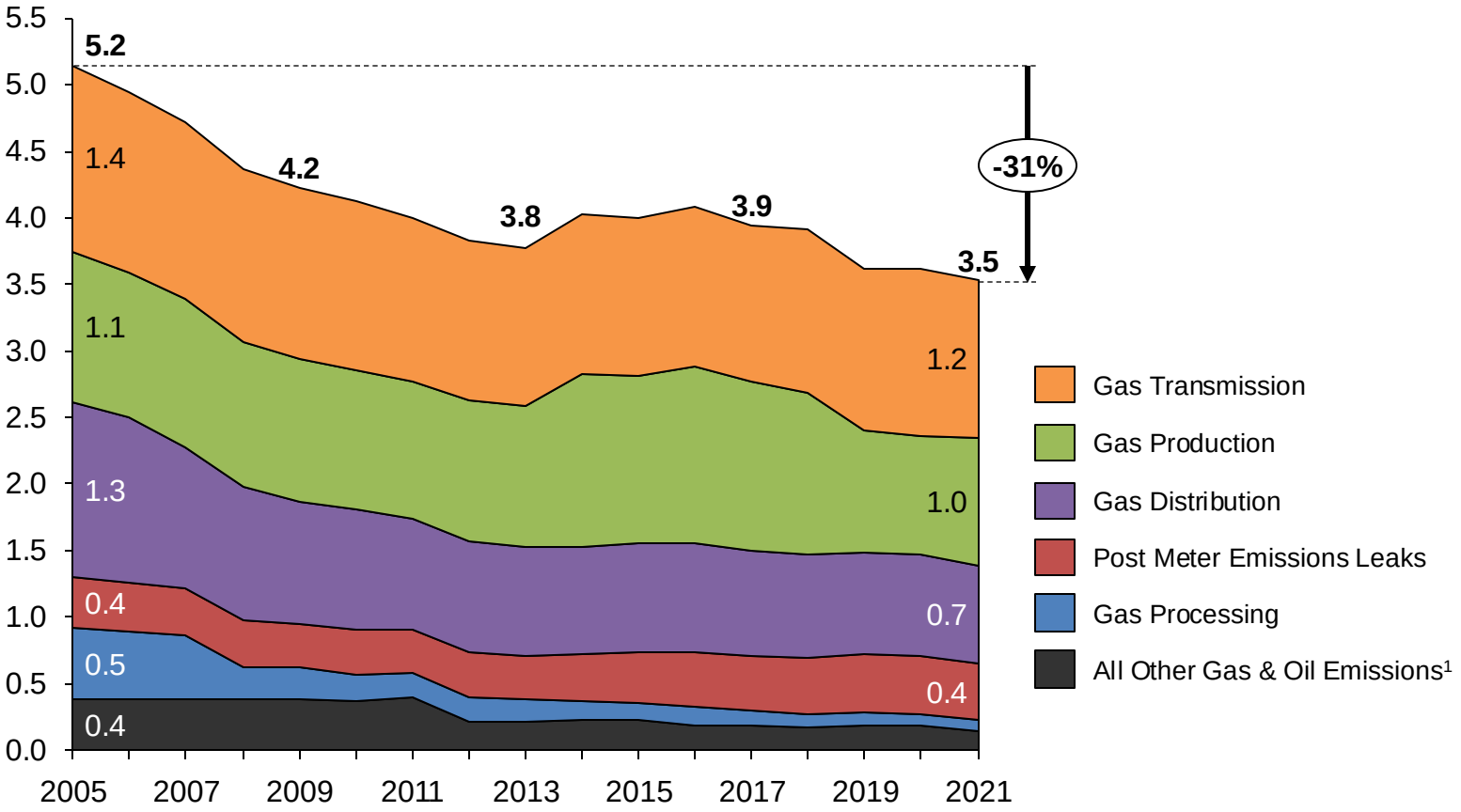
[1]Includes emissions from Refrigerants, Air Conditioning equipment, Foams, and Aerosols.

[2]Other processes include Lime Manufacture, Limestone & Dolomite Use, Urea Consumption, Magnesium Production, Ferroalloy Production, Carbide Production, Glass Production, and Semiconductor Manufacturing

Sub-sector: Oil & Natural Gas Emissions

Natural Gas & Oil Emissions in MI Have Declined 31% Since 2005

$MMTCO_{2e}$ Emissions by Sector Component and Year



Key Takeaways

Substantial Decline in Emissions

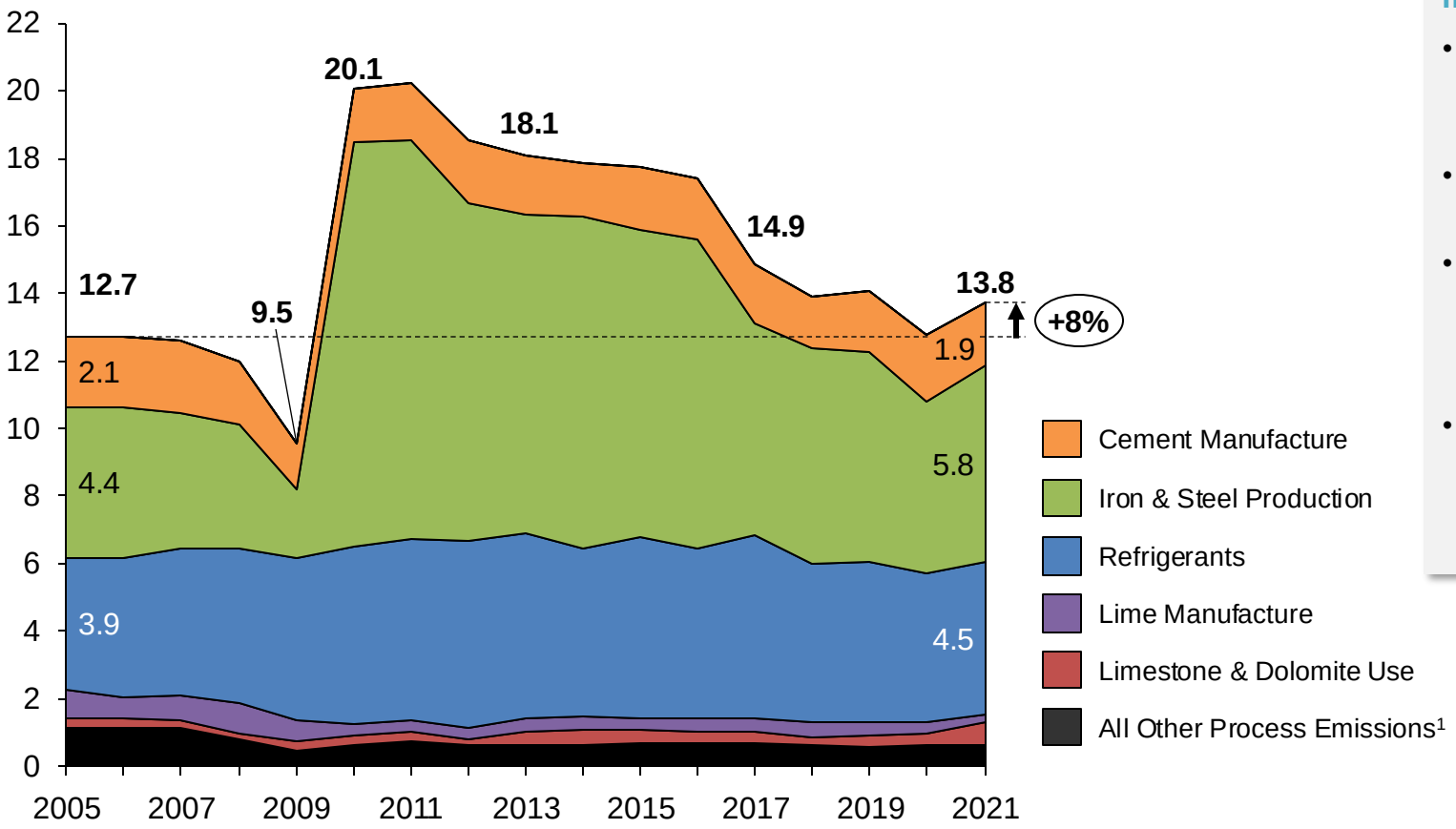
- Emissions from Oil & Gas in Michigan have **decreased by 31% since 2005**, dropping from 5.2 $MMTCO_2e$ to 3.5 $MMTCO_2e$ in 2021.
- Declines have been driven by **reduced emissions from transmission and distribution**, likely due to newer infrastructure and reducing "leaks" in equipment.

[1]Other emissions include Petroleum Production, Refining, Transportation, and Exploration; Natural Gas Exploration and Flaring; and Abandoned/Orphaned Oil & Gas Wells

Sub-sector: Industrial Process Emissions

Industrial Process Emissions in MI Have Increased 8% Since 2005

$MMTCO_{2e}$ Emissions by Sector Component and Year



[1]Other process emissions include Urea Consumption, Magnesium Production & Processing, Ferroalloy Production, Carbide Production, Glass Production, and Semiconductor Manufacturing

Key Takeaways

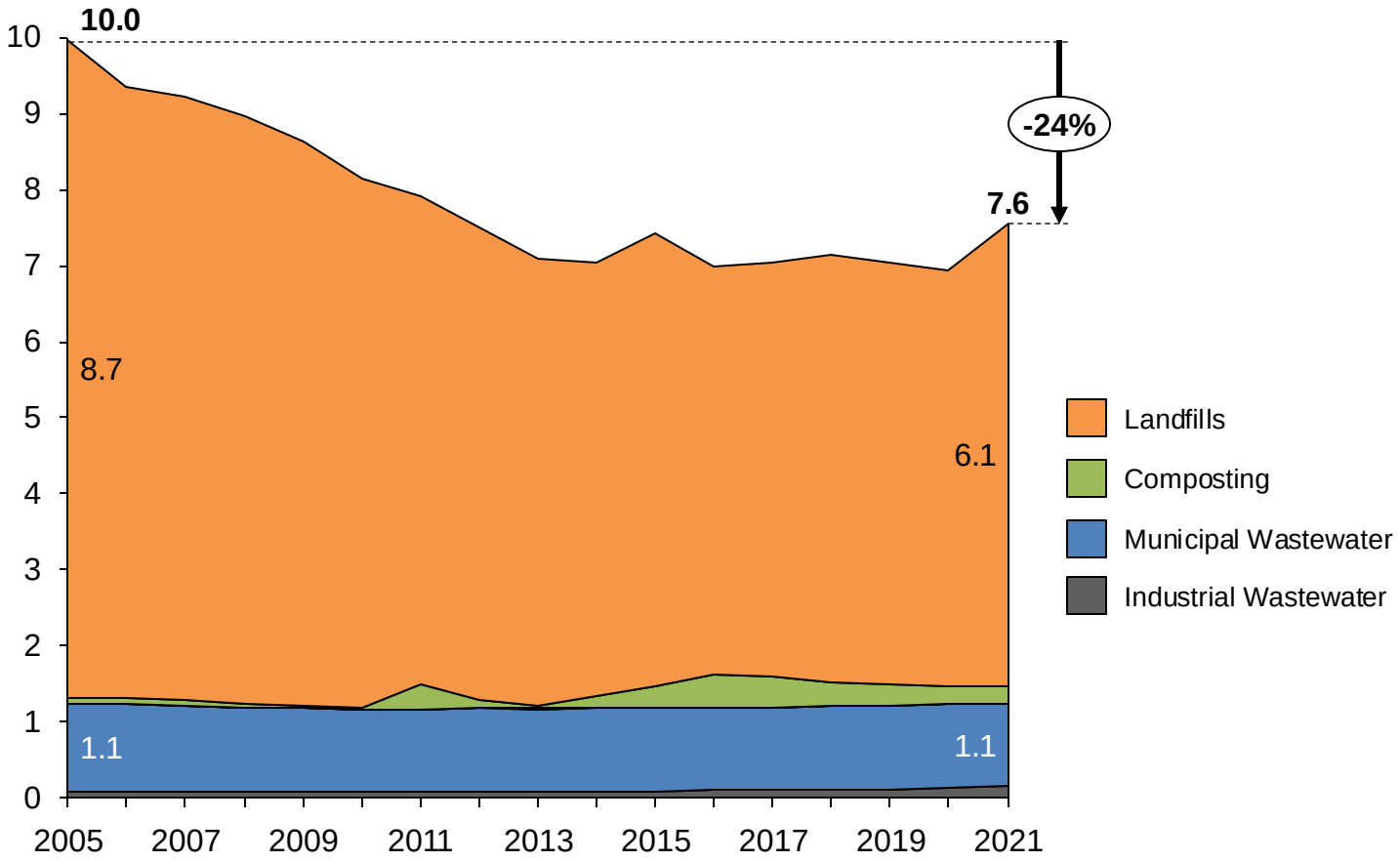
Increase in Emissions

- Emissions from Industrial Processes in Michigan have **increased by 8% since 2005**, rising from 12.7 $MMTCO_2e$ to 13.8 $MMTCO_2e$ in 2021.
- Increases driven by **Iron & Steel production and Refrigerants emissions** when compared to 2005 levels.
- Refrigerants, also known as Ozone Depleting Substance (ODS) Substitutes, are used in a variety of industrial applications such as refrigeration, air conditioning equipment, solvent cleaning, etc.
- Increased emissions in the Iron & Steel sector have declined since 2010 peaks.

Michigan's Emissions from Waste

Waste Emissions in MI Have Declined 24% Since 2005

$MMTCO_{2e}$ Emissions by Sector Component and Year



[1]Other Emissions from Anaerobic Digestion are included in sector totals but are too small to appear on the graph.

Key Takeaways

Substantial Decline in Landfill Emissions

- Emissions from waste in Michigan have **decreased by 24% since 2005**, dropping from 10 $MMTCO_2e$ to 7.6 $MMTCO_2e$ in 2021.

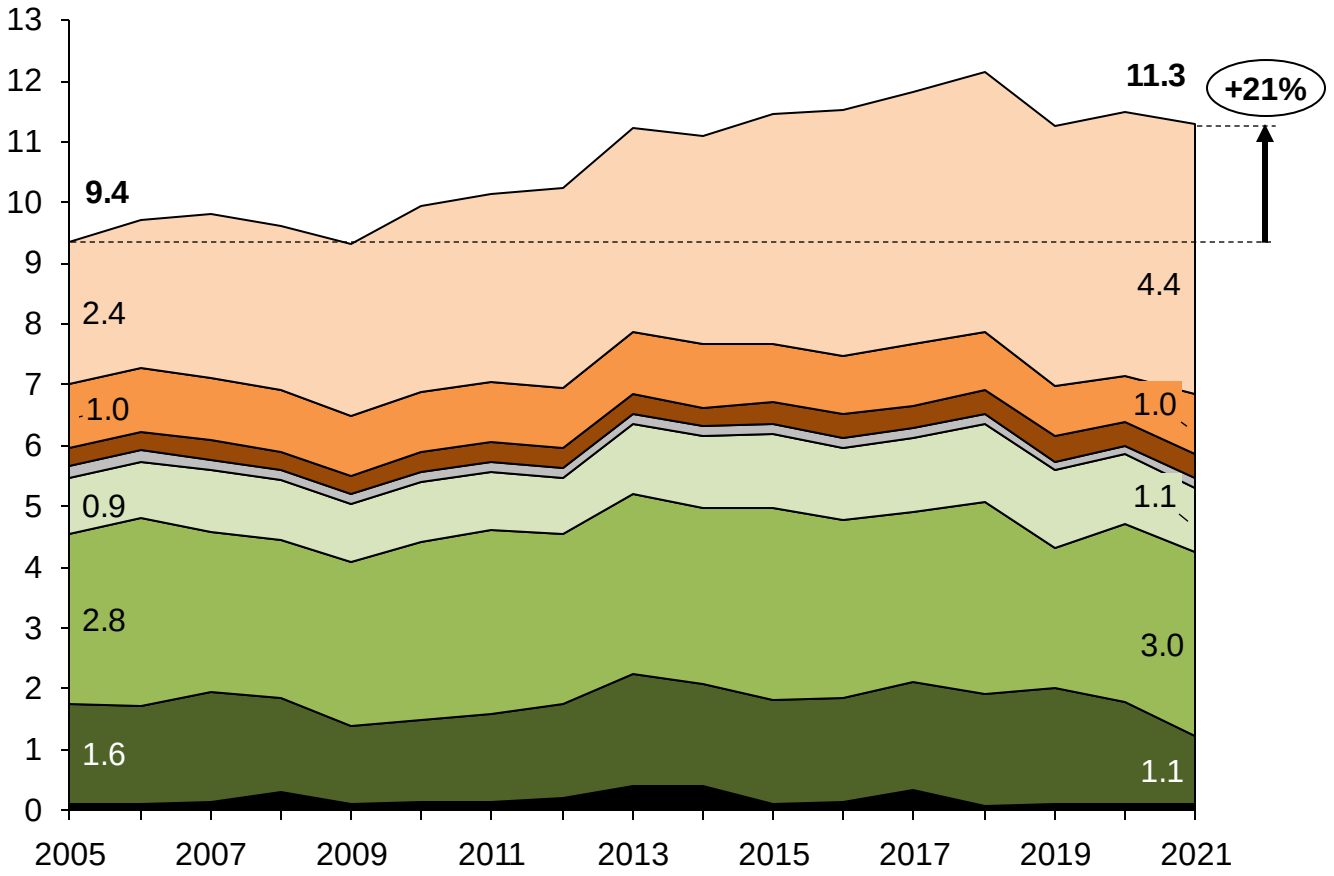
Stable Wastewater Emissions

- Emissions from Wastewater – both municipal and industrial – have seen **little change since 2005** and contribute just over 1 $MMTCO_2e$ to sector totals.

Michigan's Emissions from Agriculture

Agricultural Emissions Have Increased by 21% Since 2005 In Michigan

$MMTCO_{2e}$ Emitted by Sector Component and Year



[1]Other Animals include Turkeys, Sheep, Goats, Chickens, and Horses

[2]Other Emissions include those from Agricultural Residue Burning, Liming, and Urea Fertilization

Key Callouts

- Agricultural emissions in Michigan have **increased by 21%** from 2005 to 2021, rising from 9.4 $MMTCO_2e$ to 11.3 $MMTCO_2e$.
- **Animal Emissions:**
  - Includes Methane (CH_4) and Nitrous Oxide (N_2O) from practices such as Manure Management and Enteric Fermentation (animal belching and flatulence)
- **Direct Soil Emissions:**
  - Includes N_2O from animal manure and urine deposits in soil, crop residues (organic material left in fields after harvests), and fertilizer deposited in soil
- **Other Emissions:**
  - Includes Carbon Dioxide (CO_2) from Liming and Urea Fertilization, animal manure and urine deposits, and CH_4 and N_2O from the burning of crop residues

Animal Emissions

- Dairy Cows
- Beef Cows
- Pigs
- All other Animals[1]

Direct Soil Emissions

- Grazing Soils
- Crop Residues
- Fertilizer Use

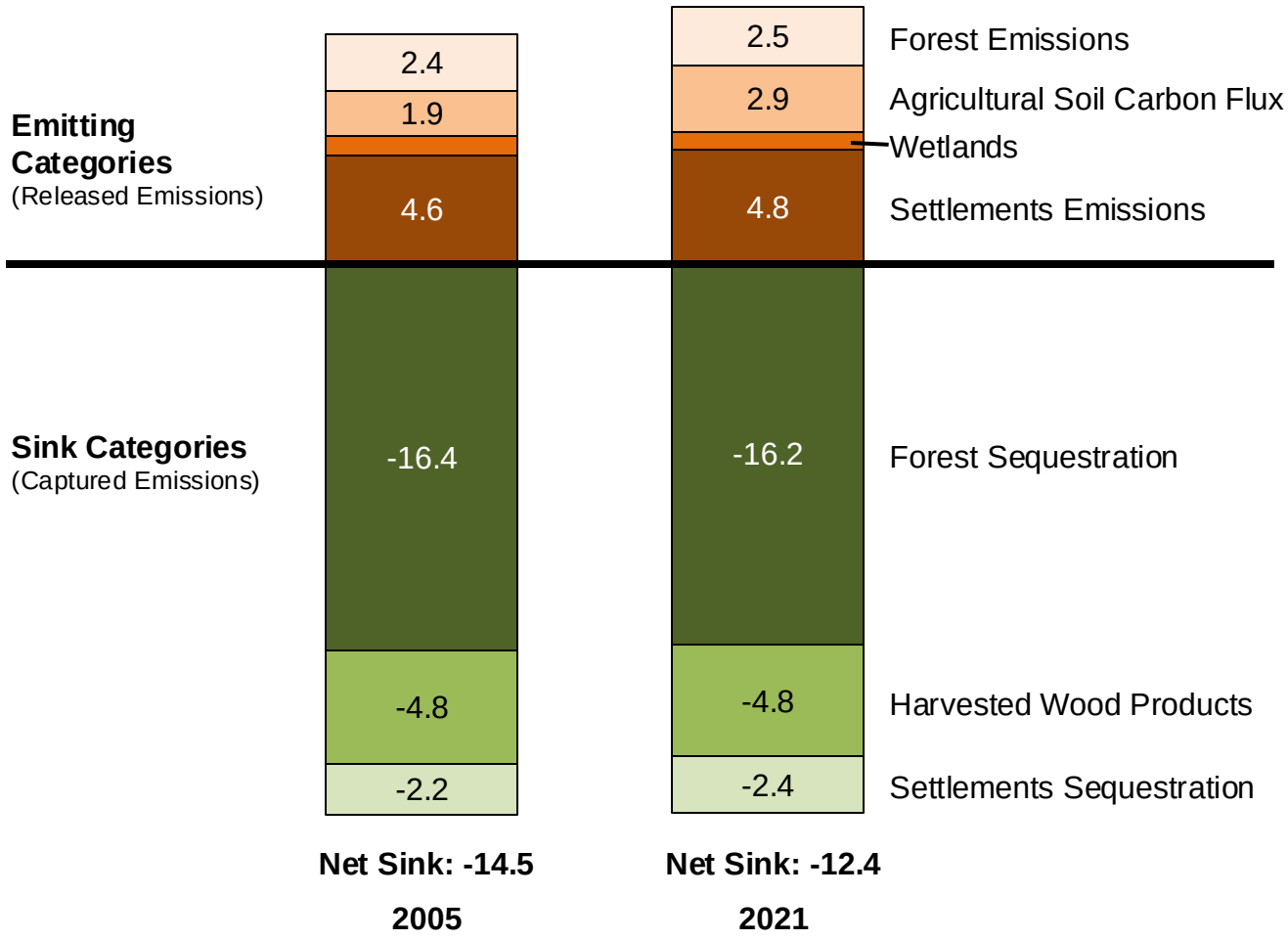
Other Miscellaneous

- Other Emissions[2]

Michigan's Sinks & Emissions from Natural Lands

Michigan's Natural Lands Remain a Robust Source of Emissions Abatement

$MMTCO_{2e}$ Emissions or Sinks by Sector Component and Year



Key Callouts

- Natural lands are a net sink and offset 12.4 $MMTCO_2e$ in 2021
- **Emitting Categories:**
  - Forest emissions include emissions from fires, soil flux, and land-use change
  - Agricultural soil carbon flux emissions are related to carbon cycling in cropland/grasslands
  - Wetlands both store carbon (a carbon sink) and release carbon as carbon dioxide (CO_2) and methane (CH_4); in 2021, wetlands emitted 0.73 $MMTCO_2e$, a slight decrease from 0.77 $MMTCO_2e$ in 2005
  - Settlements emissions come from human developments and associated land-use changes
- **Sink Categories:**
  - Forest sequestration includes carbon stored in biomass, dead wood, organic matter, and soil
  - Harvested wood products include carbon stored in lumber and other wood products
  - Settlements sequestration includes urban trees and yard trimmings in landfills that act as carbon sinks

Michigan Leading on Climate - Notable Headlines

- https://www.michiganbusiness.org/news/2025/01/clean-energy-leadership-showcased-on-global-stage/
- Nearly $5 million for hosting renewable energy projects will fund community projects in seven cities and townships
- MPSC posts request for proposals for nearly $5M in renewable energy and electrification grants
- Michigan wants to insulate 15,000 homes but needs hundreds of contractors
- New Report: Michigan is No. 1 in the Nation in Winning Federal Investments Resulting in Over 26,000 Good-paying Jobs
- State Police Pilots First Battery Electric Vehicle in Patrol Fleet
- 15 EV recycling trucks to hit the streets in 2025
- First of its kind Partnership to Create New State-Of-The-Art EV and Semiconductor Technical Learning Program

EGLE

Office of Future Mobility & Electrification

Kathryn Snorrason
Vice President and Associate Chief Mobility Officer
MEDC

EGLE

MICHIGAN OFFICE OF

FUTURE MOBILITY & ELECTRIFICATION

FUTURE MOBILITY PLAN 2.0

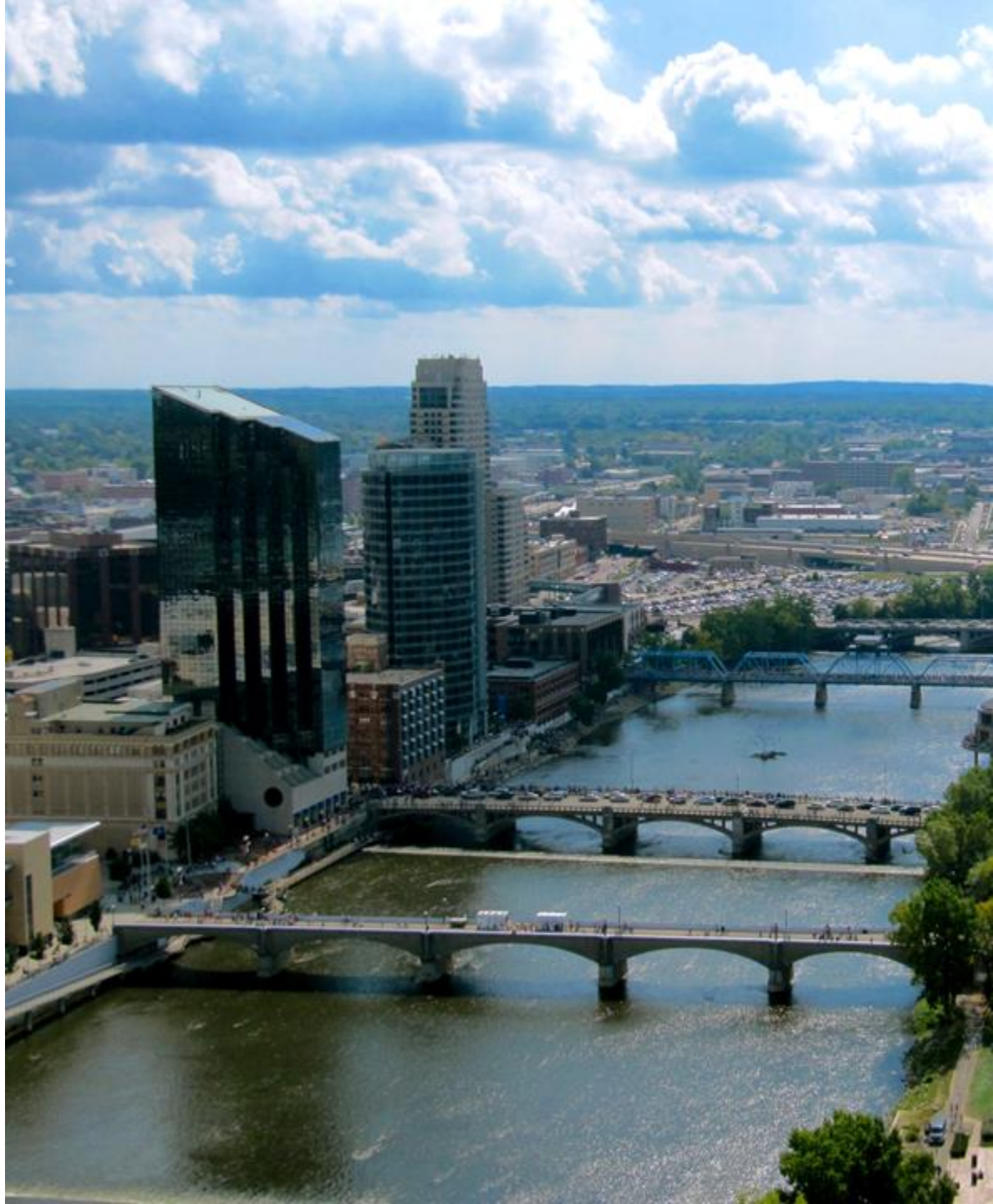
MI Future Mobility Plan Purpose

Align resources and action to:

Maintain and strengthen Michigan's position as a global leader in mobility technology and manufacturing.

Pioneer innovative approaches and service models that enhance mobility and access for all people.

Provide policy leadership to cultivate clean mobility innovation that advances Michigan's policy objectives.



MI Future Mobility 1.0 Goals

Transition and Grow Our Mobility Industry Workforce

- 20,000 new jobs by 2026 (and increase median wage) [Achieved]
- +7,000 workers with mobility credentials by 2030 [Achieved]
- Resilient automotive manufacturing sector supporting at least 170,000 jobs through 2030 [Achieved]

Provide Safer, Greener and More Accessible Transportation

- Deploy 100,000 EV chargers by 2030 and improve access to H2 infrastructure.
- >80% EV charging off-peak [Achieved]
- Reduce congestion and traffic crash rates by 2026
- Consistent access to MaaS across all 77 MI transit agencies by 2025

Lead the World in Mobility Policy Innovation

- #1 state ranking for mobility and electrification R&D spend. [Achieved]
- Top 10 state for growth in VC funding by 2026 [Achieved]
- Top 10 state for federal mobility & electrification investment [Achieved]
- Lead the nation in EV/AV friendly policy

MI Future Mobility 1.0 Goals - Remaining

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MI Future Mobility Plan 2.0 will…

ASSESS the current clean mobility landscape to identify key areas of strategic focus for Michigan.

ENGAGE agency partners and industry stakeholders to understand needs, opportunities and critical roles for the Office of Future Mobility and Electrification.

DEVELOP updated goals and a strategic, action-oriented framework to advance and uphold Michigan as a global leader in mobility talent, innovation and policy.

COMMUNICATE Michigan's leadership and opportunity through compelling and effective storytelling.

PARTNERS IN ACTION

OFFICE of Future Mobility and Electrification

Catalyst for **collaboration** between state departments with responsibility for shared outcomes for mobility industry, workforce, climate, energy, infrastructure and transport.

COUNCIL of Future Mobility and Electrification

Advisory body providing the **policy leadership** crucial to maintaining Michigan's position as the epicenter of clean mobility innovation, production and adoption.

PROJECT TIMELINE

	Sep '24- Jan '25	Jan '25 - Feb'25	Feb'25 - Mar '25	Apr'25 - May '25
Project Stage	**Discovery/ Engagement** Engage with CFME, State agencies and external partners to understand priorities, and challenges	**Planning** Developing Vision, Goals, Objectives and Action Items	**Communications Strategy** Develop messaging and outreach strategies to promote the plan	**Implementation** Execute on the objectives and actions laid out in the plan
CFME ROLE	**Focus Groups and Interviews** - Provide insight and perspective on current state and future priorities	**Feedback** - Provide feedback and recommendations on goals, objectives and action items	**Input** - Provide feedback on drafting messaging and communication to key partners and public	**Execution and Communication** - Work with OFME to support the execution of plan goals

ENGAGEMENT OVERVIEW

Stakeholder Meetings

10 Focus Groups

6 Interviews

40+ participants

- Industry leaders
- Startup founders
- Higher education representatives
- Local government staff
- Workforce development agencies
- State Agency Directors
- CFME Members

Upcoming Engagements:

State Agency Staff
(February - March 2025)

CFME Goal Review
(February - March 2025)

KEY FINDINGS

UNPARALLELED OPPORTUNITY

Intersectional by nature, OFME can convene and support cross-departmental collaboration, creating a multiplier effect and amplifying impact.

Designed for innovation, OFME provides an essential proving ground for innovative public initiatives to demonstrate and scale future mobility solutions.

KEY TAKEAWAYS - STAKEHOLDER ENGAGEMENT

Support is needed to connect existing programs & resources across Michigan

Manufacturing is a strength but difficult for early stage companies to engage

State agencies need more connection points across agencies to solve multi-sector challenges

Strong pilot ecosystem & innovation incubation, but limited support for scaling and continued growth

KEY TAKEAWAYS - LANDSCAPE ASSESSMENT

Clean Energy Sector - Globally, clean energy jobs account for more than half of energy sector employment, and MI is ranked 6th in the nation for clean energy jobs.

Mobility Startup Funding - Globally funding for mobility startups has grown 550% over the last decade.

Diversification of Vehicle Types - Demand for smaller-scale electric mobility has boomed in recent years. E-bike and micromobility device sales have grown four-fold over the past 5 years with a forecast of continued growth of 10-18% CAGR.

KEY TAKEAWAYS - LANDSCAPE ASSESSMENT

California leads the nation in clean transportation initiatives with substantial investments in electric vehicle infrastructure, zero-emission technologies, and sustainable transit projects.

Florida is a leader in connected and automated vehicles (CAV), with significant investments in infrastructure, regulatory support, and pilot programs to advance CAV technology and deployment.

North Carolina is a leader in modal integration initiatives, focusing on creating a responsive, diverse, and inclusive transportation system.

Ohio leads in advanced air mobility, driven by significant investments in infrastructure, research collaborations, and initiatives like the National Advanced Air Mobility Center of Excellence.

NEXT STEPS

FEBRUARY

- Project team drafts framework and goals for review
- CFME & Stakeholders review and provide feedback
- Project team incorporates feedback into first draft

MARCH

- Project team incorporates OFME and State Agency feedback into final draft
- Project team develops and executes communications plan to convey the plan’s goals, initiatives and outcomes

Technology Deployment	Talent Pipeline Building	Research	External Engagement
Uncrewed Triple Challenge	Changing Lanes	Maritime Study	Mobility Meetup
Truck Stop of the Future	Michigander Scholars Expansion	EV Charger Type Study	Mobility Conference
2025 One-Time Mobility Fund			

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Thank you!

Next Steps & Discussion

- Meeting materials and other resources can be found at Michigan.gov/Climate
- Written comments can be submitted via email to EGLE-ClimateSolutions@Michigan.gov.