



**PRESIDENT'S COMMISSION
ON CARBON NEUTRALITY
UNIVERSITY OF MICHIGAN**

Summary of Report and Recommendations

Presentation to the Associate Deans

March 12, 2021

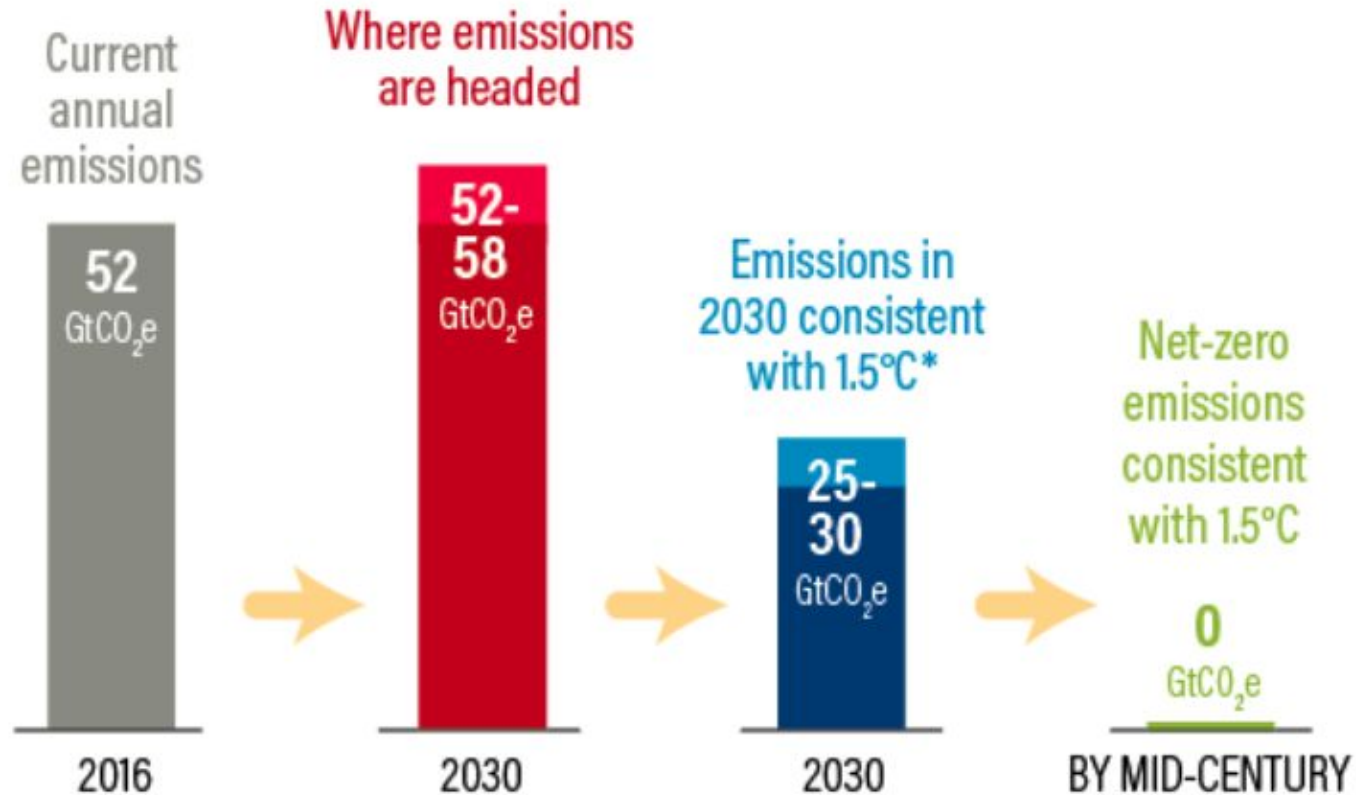
Objectives of this Meeting

- Provide a summary of the process and recommendations of the PCCN to be submitted to President Schlissel
- To answer any questions you might have on the recommendations and U-M's potential for achieving carbon neutrality
- To help the university to start thinking through the implications for our 3 campuses and units over the next two decades

Confidential - Preliminary & Advisory

Global Climate Imperative

The World Is Not on Track to Limit Temperature Rise to 1.5°C



Notes: *on average, no or low overshoot.



WORLD RESOURCES INSTITUTE

Global Climate Imperative

Climate impacts are already happening. Intense storms. Droughts. Record-breaking heat. Sea level rise.

Each year in the lives of our undergraduates has been well above the 20th Century average, with nine of the ten warmest years occurring since 2005.

Even limiting warming to 2 °C instead of 1.5 °C has starkly worse effects, e.g.:

- Loss of habitat for animals, plants and insects 2x-3x greater
- 37% of population exposed to severe heat waves - 2.6x worse
- Arctic permafrost thawing – 38% worse, releasing more methane

U-M (Ann Arbor) History on Climate Action

- 1963:** Converted Central Power Plant (CPP) from coal to natural gas
- 2006:** Launched Energy Management program in general fund buildings, which has decreased energy use by 17% while building space has increased by 2 million square feet (6%)
- 2011:** Established a goal to reduce scope 1 and 2 GHGs by 25% by 2025 below a 2006 baseline
- 2018:** Approved an expansion of the CPP that will get U-M halfway toward its 2025 goal
- 2019:** Signed agreement for 50% of purchased electricity to come from renewable resources in Michigan, which when combined with CPP expansion will achieve U-M's 2025 goal, likely in 2021
- 2019:** President Schlissel launched the President's Commission on Carbon Neutrality (PCCN) to develop recommendations for achieving carbon neutrality.

President's Commission on Carbon Neutrality

MISSION

To contribute to a more *sustainable and just world* by creating approaches and solutions regarding U-M carbon emissions that are environmentally sustainable, involve the regional community, and create scalable and transferable models

Defining Carbon Neutrality

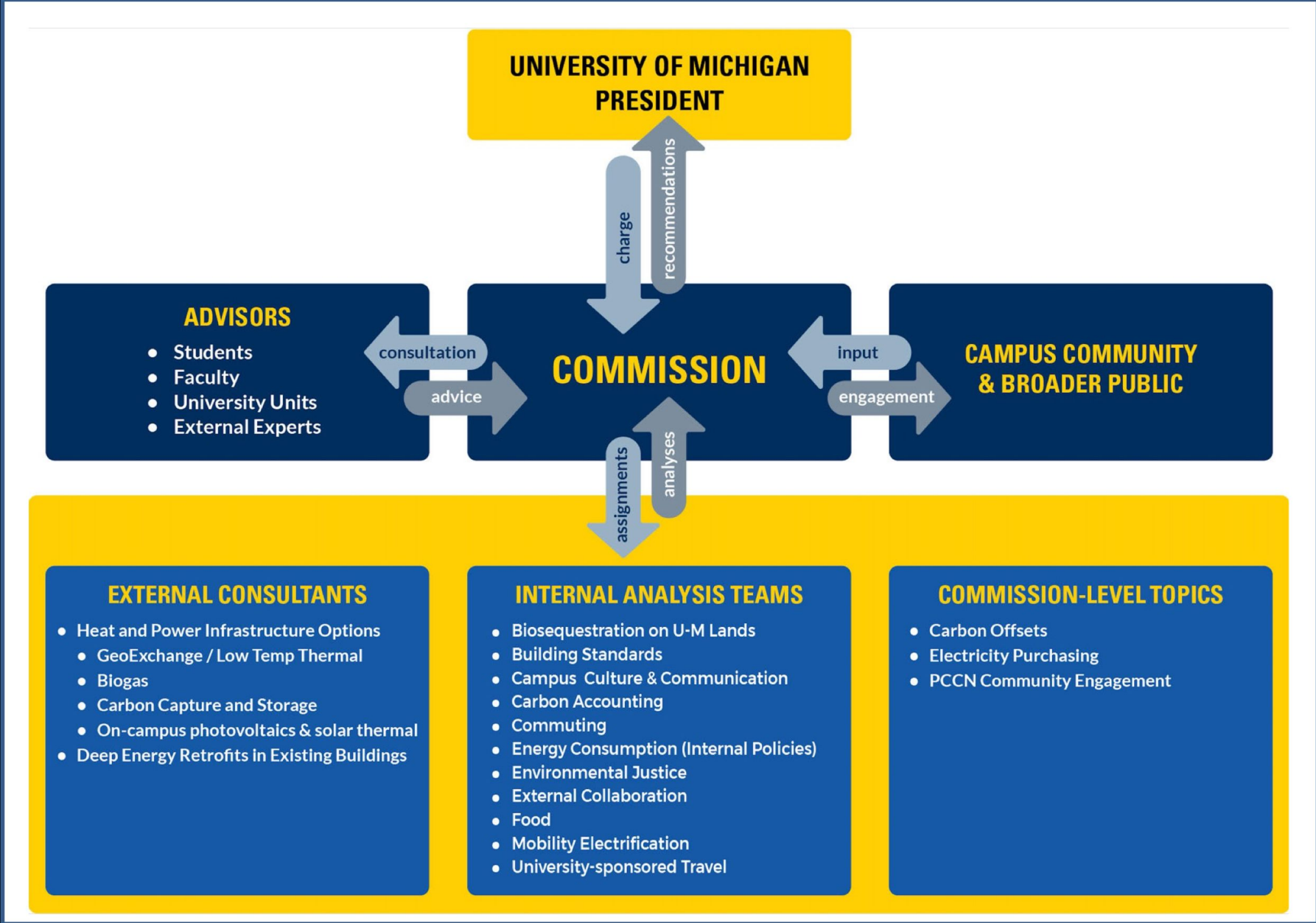
At a global level, carbon neutrality means having a balance between emitting carbon and absorbing carbon from the atmosphere in carbon sinks. At the level of an institution such as U-M, it means that all quantifiable greenhouse gas emissions (GHGs) attributable to that institution's activities are eliminated or offset by investments in carbon credits or sequestration projects.

PCCN Purpose and Objectives

Recommend to President Schlissel a plan that:

- Defines a goal for and clarify parameters of U-M carbon neutrality
- Outlines a timeline, pathway, and approaches for achieving the goal that:
 - are **environmentally sustainable**, involve the **regional community**, and create **scalable and transferable** models
 - include the participation and **accountability** of all members of the U-M community
 - are **financially responsible** in the context of U-M's mission of education, research & service

Commission Structure



Timeline

Phase One

(Feb '19 – Oct '19)

- Define the many dimensions of the challenge, and develop a structure and work plan to effectively address them
- Engage community members to educate them on the PCCN charge and to get their ideas for informing the work scope
- Secure the expertise needed to carry out robust analyses across multiple geographies and subject areas, and get that work underway
- Establish a shared baseline for understanding key issues among all commissioners, which will be critical when deliberations take place later in the PCCN process
- Draft and deliver interim progress report

Phase Two

(Nov '19 – June '20)

- Begin better defining terms embedded in the charge as they relate to each aspect of the challenge
- Continue establishing a shared baseline for understanding key issues among all commissioners
- Engage experts and key stakeholders in informing the various work streams
- Advise the many analysis teams and better understand the recommendations emerging from the various work streams
- Draft and deliver interim progress report

Phase Three

(July '20 – Mar '21)

- Deliberate extensively at the Commission level and develop a wide range of recommendations to be included in the final report
- Engage key stakeholders to better understand the impacts of potential recommendations emerging from the PCCN's work
- Draft final report and issue for public comment
- Review public comments and make report revisions.
- Deliver the final report to President Schlissel and release it publicly.

Greenhouse Gas Emission Scopes

U-M's current 2025 GHG reduction goal is limited to scope 1 and 2 emissions on the Ann Arbor campus. The PCCN's recommendations extend to scope 3 emissions and include the Flint and Dearborn campuses. Emission scopes are defined as follows:

Scope 1: includes GHG emissions from sources that are owned or controlled by U-M (e.g., power plant, boilers, buses).

Scope 2: includes GHG emissions created through offsite energy production where the product (e.g., purchased electricity) is used by U-M.

Scope 3: includes all other external GHG emissions (upstream and downstream) associated with U-M's activities (e.g., commuting, university travel, purchased goods).

Emission Categories Included in PCCN Goals

U-M's Ability to Directly Influence Emission Levels

	Higher	Medium	Lower
Higher	<ul style="list-style-type: none"> • Central Power Plant • Boilers & Other Stationary • UM Vehicle Fleet • Maintenance Equipment 	<ul style="list-style-type: none"> • Purchased Electricity • Waste Disposal 	
Medium		<ul style="list-style-type: none"> • Commuting • UM-sponsored Travel • Leased Space 	<ul style="list-style-type: none"> • Upstream (Electricity and Fuels)
Lower			<ul style="list-style-type: none"> • Food Purchasing • General Purchasing

*U-M's Ability to
Confidently Estimate
Emission Levels*

Color Key: *Scope 1* *Scope 2* *Scope 3*

Guiding Principles

- Sustainable
- Equity & Justice
- Regional community involvement
- Scalable and transferable
- U-M community participation and accountability
- Financially responsible

Organizational & Cultural Recommendations

LEADERSHIP STRUCTURES

Commit to using environmental justice guiding principles and expertise, including community input, within all future deliberations, decision making, and implementation efforts around U-M carbon neutrality.	\$	High
Create an executive leadership (EL) position reporting directly to, and advising the President, whose office and staff have responsibility for: planning and coordinating university-wide carbon neutrality efforts; working across all of the three campuses to integrate implementation and accountability mechanisms at the unit level; engaging with stakeholders (particularly those most affected); receiving and incorporating feedback from the community; facilitating partnerships and otherwise promoting the scaling and transfer of U-M carbon neutrality solutions; and reporting on goal progress and shortfalls.	\$\$	High
Establish an institutional advisory committee to support the EL's office in developing, implementing, and communicating effective strategies for actuating U-M's carbon neutrality priorities, with a focus on leveraging and aligning university structures and resources to support U-M's carbon neutrality goals.	\$	High
Establish a community advisory committee to support the EL's office in developing, implementing and communicating effective strategies for actuating carbon neutrality priorities, with a focus on understanding external stakeholder perspectives, learning from their experiences, and partnering whenever possible for mutual benefit.	\$	High

Organizational & Cultural Recommendations

CAMPUS PLANNING

Create and update campus and district-level master plans to reflect that greenhouse gas emissions mitigation is one of the university's top priorities, and update such plans at regular intervals with campus community input.	\$	Med
Prioritize central locations for construction projects, and expand affordable campus housing for students, faculty, and staff based on an evaluation of needs and demand, and considering issues of equity and climate change resilience.	\$	High

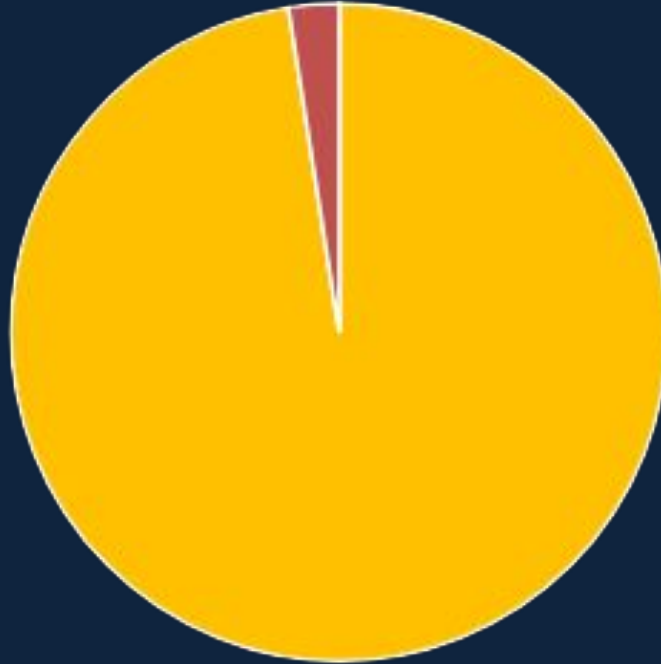
RESEARCH AND EDUCATION

Make significant investments in research and its deployment on routes to achieving carbon neutrality.	\$\$	Med
Expand and prioritize carbon neutrality curriculum, training and literacy programs to all members of the U-M community across all three campuses.	\$	High
Invest in institutional structures to expand and support carbon neutrality focused "living-learning labs" across all three U-M campuses.	\$\$	High

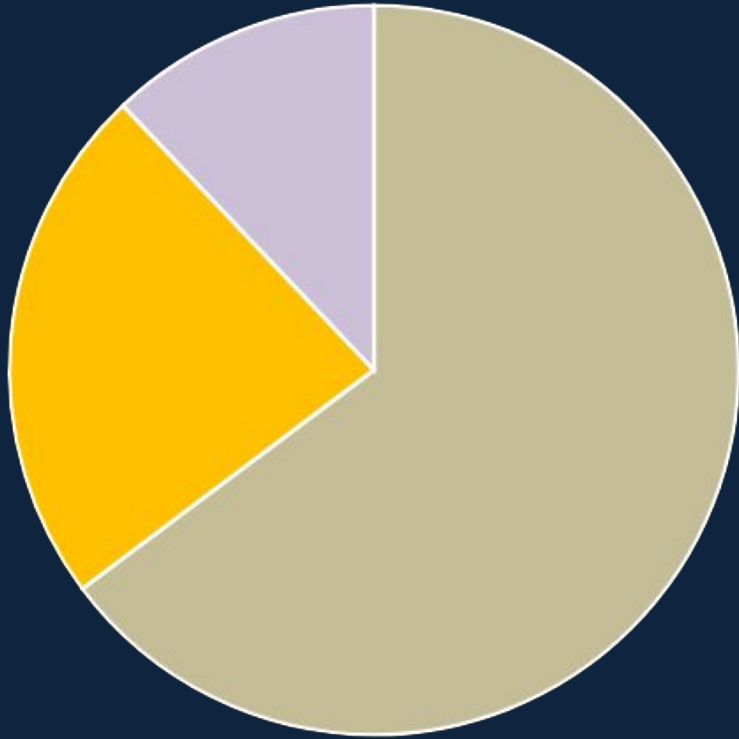
EXTERNAL COLLABORATION

Conduct targeted network mapping related to all carbon neutrality strategies and pursue intentional engagement with key stakeholders to inform implementation.	\$	Med
Tailor carbon neutrality communication and education, and expand opportunities for stakeholder input.	\$	Med

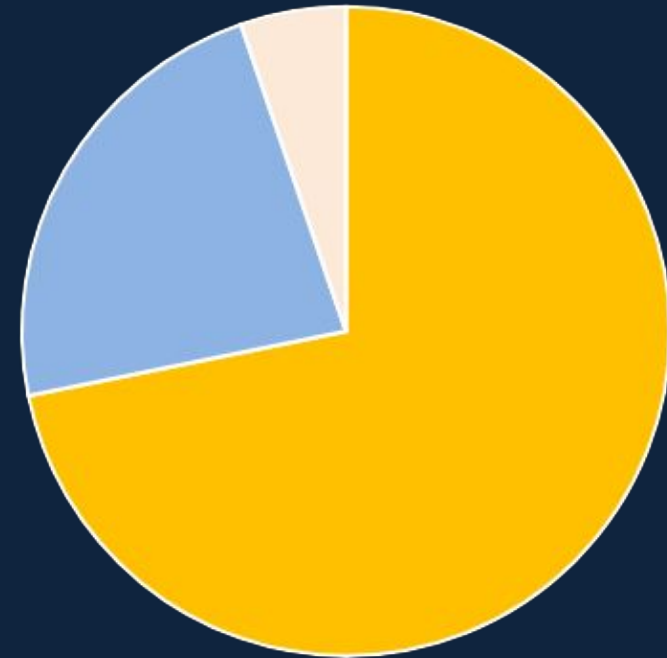
Scope 1 Emissions Breakdown



Scope 1 Natural Gas Usage Breakdown



Source (post CPP upgrade)



Use (post CPP upgrade)

Scopes 1 and 2 Neutrality Goal Recommendations

SCOPE 1 EMISSIONS

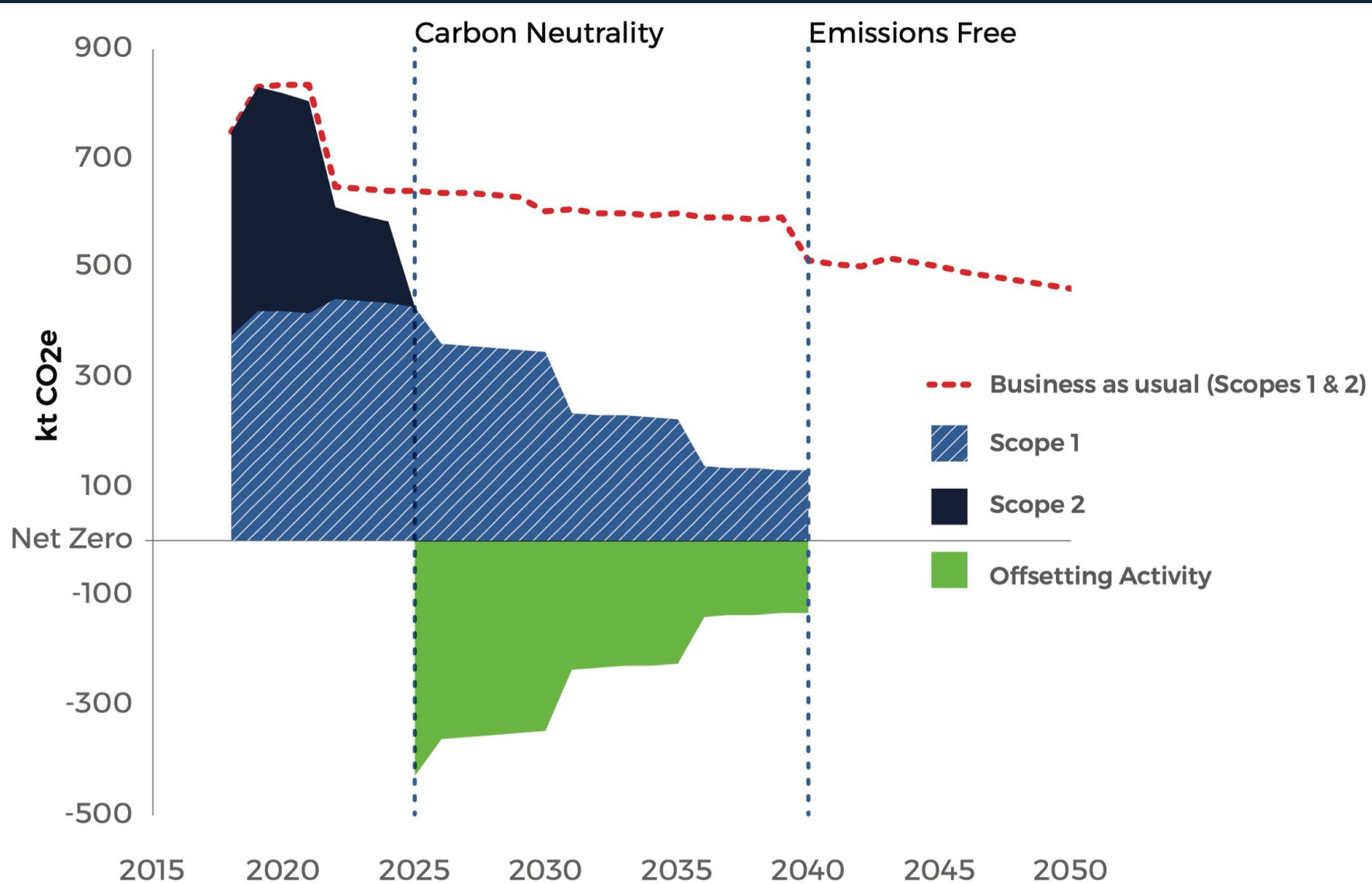
Commit to carbon neutrality (inclusive of offsets) for Scope 1 emissions across all three campuses by 2025.

Prioritize direct emissions reductions for Scope 1 by setting a goal of eliminating them across all three campuses by 2040, and exceeding global science-based targets via direct emissions reductions (i.e., without offsets) along the way.

SCOPE 2 EMISSIONS

Commit to carbon neutrality for Scope 2 emissions across all three campuses (i.e., Ann Arbor, Dearborn, and Flint) by 2025 or earlier.

Scopes 1 and 2 Neutrality Goal Trajectory



Strategy Recommendations for Scope 1

STRATEGY RECOMMENDATION	FINANCIAL INVESTMENT (\$ – \$\$\$\$\$)	GHG LEVELS ↓-↓↓↓↓↓	CULTURE SHIFT (L–M–H)
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HEAT & POWER INFRASTRUCTURE

Embark upon a phased, district-level approach to converting U-M’s heating and cooling infrastructure to be fossil fuel-free, beginning with electrified systems centered on geo-exchange with heat recovery chiller technology, and with the flexibility to pivot to other proven technological solutions as they emerge.

\$\$\$\$\$

↓↓↓↓↓

Low

FLEET VEHICLES AND EQUIPMENT

Fully decarbonize U-M’s transit system, vehicle fleet (buses, trucks, and automobiles), and maintenance equipment.

\$

↓↓

Low

Strategy Recommendations for Scope 2

STRATEGY RECOMMENDATION	FINANCIAL INVESTMENT (\$ – \$\$\$\$)	GHG LEVELS ↓—↓↓↓↓↓	CULTURE SHIFT (L—M—H)
PURCHASED ELECTRICITY			
<p>Issue a Request for Proposals (RFP) to procure all purchased electricity for U-M’s three campuses in a manner that generates Renewable Energy Certificates that are retired by U-M or on its behalf, aligns with the principles outlined by the Commission, and seeks the desired co-benefits outlined for carbon offsets.</p>	\$\$	↓↓↓↓↓	Low
<p>Engage with the cities of Ann Arbor, Dearborn, Detroit, and Flint, and other entities that are, or could be partners in advocating for renewable electricity policy changes in the State of Michigan to better understand their perspectives, conduct necessary due diligence, and potentially partner in advocacy efforts that reflect mutually-shared objectives, as well as actively explore ways to partner directly in pursuit of carbon neutrality goals.</p>	\$	n/a	Med

Demand-side Management Strategy Recommendations for Scopes 1 and 2

STRATEGY RECOMMENDATION	FINANCIAL INVESTMENT (\$ – \$\$\$\$)	GHG LEVELS ↓—↓↓↓↓↓	CULTURE SHIFT (L—M—H)
REVOLVING ENERGY FUND			
Create a Revolving Energy Fund on each of U-M's three campuses.	\$	↓↓↓	Med
CARBON PRICING			
Establish a carbon pricing system at the organizational unit level across U-M where revenue flows to the REF for new energy conservation measures.	\$	↓	High
BUILDING STANDARDS			
Establish best-in-class CO ₂ emissions targets across 9 building types for all new construction and major renovations.	\$\$\$	↓↓↓	Med

Scope 3 Neutrality Goal Recommendations

SCOPE 3 EMISSIONS

By no later than 2025, set carbon neutrality goal dates for each of the Scope 3 categories recommended for inclusion by the Commission, recognizing that goal dates may vary by category based on U-M's ability to measure and influence the associated emissions categories. The Commission also recommends that, in yearly intervals up until 2025 and beyond, U-M actively consider including additional Scope 3 categories in its goals.

In setting carbon neutrality goal dates for Scope 3 emission categories, establish targets (inclusive of offsets as needed) that are more aggressive than science-based targets and reach neutrality no later than 2040.

Strategy Recommendations for Scope 3

STRATEGY RECOMMENDATION	FINANCIAL INVESTMENT (\$ – \$\$\$\$\$)	GHG LEVELS ↓ – ↓↓↓↓↓↓	CULTURE SHIFT (L–M–H)
COMMUTING			
Proceed with the design and development of the Ann Arbor campus connector and integrate it with local/regional transit systems.	\$\$\$\$	↓↓	Med
Reform the parking policy on each of U-M’s three campuses by shifting to a daily fee system and establishing an equitable, income-based fee structure, while eliminating parking subsidies on the Ann Arbor campus.	\$\$	↓↓	High
Expand the availability of electric vehicle charging stations across all three U-M campuses.	\$\$	↓	Med
Invest in affordable and accessible alternatives to the personal vehicle commute, including rideshare, cycling, and free bus access on the Flint and Dearborn campuses.	\$\$	↓↓	Med
Embrace and incentivize flexible telecommuting options for employees whose job roles can be performed remotely.	\$	↓↓	Med

Strategy Recommendations for Scope 3

STRATEGY RECOMMENDATION	FINANCIAL INVESTMENT (\$ – \$\$\$\$\$)	GHG LEVELS ↓ – ↓↓↓↓↓↓	CULTURE SHIFT (L–M–H)
UNIVERSITY TRAVEL			
Provide and incentivize low-carbon ground transport options (e.g., trains, hybrid/electric buses and passenger vehicles) for university-sponsored travel.	\$\$	↓↓	Med
Promote video conferencing as an alternative to in-person meetings and travel.	\$	↓↓	High
Implement a carbon price for faculty, staff and students who travel on university business, with the revenue being used to support the reduction or offsetting of U-M emissions.	\$	↓	High
FOOD			
Pursue plant-forward food procurement and consumer diets across all three U-M campuses.	\$	↓↓	High

Strategy Recommendations for Scope 3

SOLID WASTE & WASTEWATER			
Scale up food waste diversions and reductions, increase capacity for composting on U-M's campuses, and launch a campus-wide composting program at UM-Dearborn and UM-Flint	\$\$	↓	High
Explore improved water efficiency and site design standards for all new construction to reduce both upstream and downstream emissions from water treatment.	\$	↓	Low
LEASED BUILDINGS			
Strive to meet additional space needs through better utilization of permanent space (including co-working spaces) and leased space that is intentionally designed as flexible co-working facilities for staff across multiple units who, for example, telecommute three or more days per week.	\$	↓↓	High
Prioritize leasing arrangements that allow the university to pay electric and gas utility bills directly.	\$	↓	Low
Develop and implement language in all leasing policy documents that requires high energy efficiency and a low GHG footprint, ideally in alignment with U-M building standards, and require property owners/managers to provide detailed information on their efforts to implement energy efficiency	\$	↓	Med

What is a Carbon Offset?

Carbon offsetting occurs when an organization counter-balances its direct emissions by investing in, or purchasing credits associated with, verifiable emissions reduction or sequestration efforts somewhere on the planet.

Carbon Offsetting Recommendations

REQUIREMENTS

As a minimum threshold of consideration, all carbon-offset investments made by U-M should be real, measurable, additional, permanent, leakage avoidant, verified, enforceable, and compliant with social and environmental safeguards.

CO-BENEFITS

Clearly define and prioritize desired co-benefits criteria associated with carbon offsetting, and prioritize offset investment opportunities accordingly.

U-M PROJECTS

Identify opportunities for biosequestration projects on U-M lands that have significant carbon sequestration potential and meaningful achievements across prioritized co-benefit categories.

ADVISORY COMMITTEE

Establish a standing committee with diverse expertise and perspectives, to review the offset guidance recommended by the Commission; ensure environmental justice expertise is represented; routinely solicit input and validation from reputable external experts and stakeholders to establish minimum requirements for offsetting Scope 1 and Scope 3 emissions; develop clear guidance on desired co-benefits criteria; ensure engagement with impacted communities when U-M is involved in project development; and periodically issue broad calls for proposals that meet all threshold requirements and address desired co-benefits criteria. This committee will advise U-M leadership annually on its ability to use offsets to meet or surpass existing carbon neutrality goals. It will also monitor developments in this rapidly-evolving field and advise of emerging opportunities for U-M to lead regionally and nationally in this area.

Questions for Today

- What cultural/leadership changes do you think your unit will need to implement early on to help drive it toward carbon neutrality?
- What are the biggest challenges your unit will confront in implementing these recommendations?
- How well positioned is your unit to incorporate climate change education into your curriculum?
- Are there actions U-M should take now to prepare ourselves to take advantage of inevitable new research opportunities that are going to emerge as the government moves toward a carbon neutral future?
- What do you think the intensity and impact of student advocacy will be on your unit in this coming year? And the years ahead? What is the level of alumni engagement?
- How can your unit support carbon neutral faculty travel?
- How can your unit benefit most from a carbon price/Revolving Energy Fund program?
- What advice would you give to the upper administration to help you most in achieving the goals set forth in the PCCN report?