



External Collaboration at the University of Michigan

**A Report Developed for and Supported by the
U-M President's Commission on Carbon Neutrality
Revised July 7, 2020**

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Published in the United States of America by
Michigan Publishing

DOI: <http://doi.org/10.3998/mpub.12094561>

ISBN 978-1-60785-689-4 (open access)

This publication is a result of work sponsored by the University of Michigan (U-M) President's Commission on Carbon Neutrality (PCCN) to inform the PCCN's final recommendations to U-M President Mark Schlissel. This publication does not reflect Commission-level recommendations, and should not be interpreted as being recommendations of the PCCN nor carrying its endorsement.



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EXECUTIVE SUMMARY

A carbon neutrality strategy that builds effective stakeholder engagement into its core operations can position the University of Michigan as an exemplar leader in community engagement at a time when many cities and peer universities are now launching their carbon neutrality strategies. Done well, the University of Michigan will benefit from support, information, and participation from a wide array of key external constituents. Done poorly, the University will miss critical greenhouse gas reduction opportunities, face community opposition, and make decisions with more limited information. This report utilized in-person interviews with key University of Michigan stakeholders, phone interviews with administration officials at peer universities, workshops and trainings with University of Michigan personnel and community-engaged learning experts, an online survey to an initial list of over 150 recipients and an ultimate yield of 214 responses, and literature reviews.

The two key priorities of external collaboration are to ensure that the proper skills, knowledge, and support are brought to the University and to create an inclusive process that allows impacted and vulnerable communities to be aware of this effort and have voice in its implementation. Two associated priorities are to 1) identify collaboration opportunities to be gained and potential obstacles to be overcome and 2) build buy-in among critical stakeholders.

The overwhelming majority of our survey respondents (72%) valued the University of Michigan's carbon neutrality plan as either "extremely important" or "very important," and 96% expressed a desire to be involved in the University's efforts going forward. Alumni (16%) were the most frequent respondents to our survey, followed by Non-Profit Groups (15%), Private Industry Members and Groups (14%), Other Universities and Colleges (10%), and City Government and Policy Groups (9%). Topics of most interest included "external collaboration" and "social and environmental justice" as well as sustainable and long-term financing mechanisms, setting clear goals and timelines, commuting and staff/students traveling, and education.

The global pandemic creates budgetary and operational challenges that place a premium on external collaboration and partnerships. This report recommends four specific strategies that can help the University engage its wide network of external stakeholders in carbon neutrality efforts, listing specific attributes and acknowledging distinct challenges regarding development of metrics and cost projections.

First, the University should integrate carbon neutrality priorities and the external engagement activities needed to sustain them into both new senior level administrative positions and existing organizational structures and community engagement initiatives. We also recommend the University combine campus culture and external engagement under one heading of communication and education and seek to turn all such activity into an educational opportunity where possible.

Second, the landscape of the external community for the top priority emissions reductions should be more carefully mapped, establishing priorities and typologies of constituent communities.

Third, specifically tailored engagement strategies should be developed with a consideration of the varied interests of different stakeholder groups as well as consideration of the resource differentials among the three U-M campuses.

Fourth, and finally, clear feedback channels should be created to allow "passive engagement": the ability of constituents to provide input and feedback on their own initiative and not always in response to University outreach efforts.

Though effective external engagement is a long-term process, there are numerous opportunities for significant yet early wins that can be accomplished in the short term. This report outlines those next steps, which include considerations for staffing, strategy, and operations.



FINAL REPORT

Overview of the External Collaboration Challenge

Effective external collaboration is critically important because carbon reduction requires partnerships to be successful. Done well, the University will benefit from support, information, and participation from a wide array of external constituents. Done poorly, the University will miss reduction opportunities, face opposition, and make decisions with more limited information. External collaboration involves multi-directional partnerships that must be selected strategically and involve both engagement and communication with stakeholders. It is our hope that the University will establish a model of leadership for community engagement that other universities will choose to emulate. With that aspiration in mind, the key priorities of external collaboration for carbon neutrality are fourfold:

1. Assure that the proper skills, knowledge, and support are brought to the University to achieve carbon neutrality (e.g., energy, buildings, food, commuting, and operations), both on the University of Michigan campuses (Ann Arbor, Flint, and Dearborn) and through multi-directional partnerships with local and regional communities.
2. Create an inclusive process that allows impacted and vulnerable communities to be aware of this effort and have voice in its implementation.
3. Identify collaboration opportunities and potential obstacles that can be overcome.
4. Cultivate an environment in which all relevant stakeholders' concerns and objections are addressed and accounted for, throughout the project, to ensure the delivery of viable proposed solutions for the overall long-term success of the project, taking into account the complex social, political, technical, and economic landscapes in which the University acts and operates.

The global pandemic creates budgetary and operational/physical plant challenges that place a premium on external collaboration and partnerships. In addition, there are several challenges for this team in developing its conclusions that are unique among the internal analysis teams (IATs):

1. External collaboration is not an effort that will directly reduce greenhouse gas emissions in the same way that other efforts can (such as building standards or energy consumption). However, external collaboration and communication are critically important to the success of such efforts. For that reason, we see the role of this team and any future effort as both to a) coordinate with other President's Commission on Carbon Neutrality (PCCN) teams and identify and prioritize external partners with whom to collaborate and b) engage additional external partners that are critical for the success of the University's carbon neutrality efforts.
2. The timing and tone of external collaboration must be done with sensitivity to the differing needs and interests of the various stakeholders, both in the external community and across the three campuses (Ann Arbor, Dearborn, and Flint). In our work, we were careful not to initiate contact that would set expectations within external communities that would not be fulfilled in the short term.
3. We must recognize the effect that the COVID-19 pandemic has had on efforts at external engagement and the ongoing role it may play in future engagement activities. For example, all our team meetings as of early March were conducted virtually, and our survey data was collected while the world was experiencing the onset of the COVID-19 pandemic. Although our team was still able to collect data and visit representatives of the UM-Dearborn campus community, we regrettably were not able to do the same at UM-Flint. Future engagement activities must be designed with the expectation that some level of restraint on in-person interaction may remain in place.



These challenges aside, this final report summarizes the team's findings and offers recommendations for future efforts at external collaboration. For background, see Appendix A for the Start-up Report and Appendix B for the Interim Report.

Key Findings and Conclusions

Three key topics give structure to the External Collaboration Internal Analysis Team's efforts and this report: 1) *Whom* to engage, 2) *What* to engage about, and 3) *How* to engage. To address these topics, the team consulted with experts, reviewed the literature of established protocols, conducted a detailed network mapping exercise, performed a review of peer school activities (see Appendix C for a list of peer institutions and Appendix D for our peer school analysis process), implemented a web-based survey for external constituents (see Appendix E for details of the survey questions and Appendix F for survey results), and coordinated with other PCCN IATs. With this work completed, we offer key findings and conclusions in each of the three topic areas.

1. Whom to engage?

External collaboration can strategically engage partners who play critical roles in emission mitigation efforts by having authority, influence, or control over emissions and their reduction. Having a data-driven constituency map and emissions reduction strategy must guide this work. The PCCN is developing emissions projections and cost-effectiveness estimates that will guide the priority of various strategies, and external collaboration is a key to successful implementation. As part of our network mapping exercise to identify key strategic partners, we identified categories of stakeholder type, specific constituents within each category, and their relevance for the University's transition to carbon neutrality. The categories are: Government Officials,¹ Business and Vendors,² Non-Profit and Community Groups,³ Academic Unit Advisory Boards,⁴ U-M Alumni,⁵ Peer Universities,⁶ Unions,⁷ Foundations,⁸ and others.⁹ A detailed spreadsheet of this mapping is available in the PCCN MBox in the folder "Confidential Materials for Internal Use Only."

To further develop a database of external stakeholders, a survey of organizations was sent by email on February 28, 2020, to constituents identified in this mapping spreadsheet (see Appendix E for survey instrument). Survey distribution was aided by U-M Business Engagement, Government Relations, Alumni Relations, and Foundation Relations; by social media and web promotion by the Graham Institute and the City of Ann Arbor; and by a request to recipients to both share the survey and suggest additional organizations we should contact (60 additional contacts were received in this way). We offered incentives for completion (a gift card raffle to 10 randomly chosen respondents). In total, 214 fully or partially completed responses were analyzed on April 10, 2020. The survey of organizational respondents, which was considered exempt research by the Institutional Review Board (IRB), remained open through the summer of 2020, and a follow-up analysis will be provided if the number of new responses warrants it.

Question 1 of the survey collected detailed contact information for 138 organizations who have voluntarily agreed to participate in future efforts (the full survey results are available in the PCCN MBox in the folder "Confidential Materials for Internal Use Only"). For survey question 2, Alumni (16%) were the most frequent respondents, whereas Unions (1%) and University Service Providers (1%) were least represented. The rest of the participation was as follows: Non-Profit Groups (15%), Private Industry Members and Groups (14%), Other Universities and Colleges (10%), City Government and Policy Groups (9%), and Community Groups (8%) (see Appendix F, Figure 1, Q2, $n = 187$).



2. What to engage about?

While the three campuses represent distinct social, political, and technical environments, and thus different sets of partnership opportunities and challenges, our survey revealed specific issues that can guide future efforts:

The majority of respondents (72%) valued the University of Michigan's carbon neutrality plan as either "extremely important" (43%) or "very important" (29%) (see Appendix F, Figure 2, Q4, $n = 101$).

Social issues, such as "External collaboration" and "Social and environmental justice" were the topics in which respondents felt their input would be most valuable. More technical issues, such as "Carbon offsets," "Campus building standards," and "Campus commuting" were issues in which respondents showed the least interest (see Appendix F, Figure 3, Q3, $n = 269$).

An overwhelming 96% of respondents expressed a desire to be involved in the University's carbon neutrality efforts (see Appendix F, Figure 4, Q5, $n = 101$).

The majority of respondents (72%) expressed interest in engaging with the Ann Arbor campus, whereas 17% expressed interest in the Dearborn campus, and 12% expressed interest in the Flint campus (see Appendix F, Figure 5, Q6, $n = 127$).

Seventy-eight respondents offered commentary and suggestions on carbon neutrality related issues and concerns of potential barriers (see Appendix F, Figure 6, Q7, $n = 78$). The issues mentioned most frequently included:

- Nineteen respondents had concerns about building a **sustainable and long-term financing mechanism** for the U-M carbon neutrality plan and divesting from fossil fuel companies.
- Fifteen respondents mentioned the importance of **setting clear goals and timelines** for achieving U-M carbon neutrality with ambitious targets that take early actions to address the urgency of climate change.
- Nine respondents expressed concern about the carbon impact of **commuting and staff/students traveling**, stressing the need for improved commuting options that reduced or eliminated related carbon emissions.
- Nine respondents identified culture and behavior change across the entire campus as an imperative that could be achieved through **education**.
- Eight respondents felt that U-M should take the resilience of multiple communities into consideration, engage vulnerable groups in the discussion, and address **environmental and social justice** in the plan.
- Eight respondents mentioned the operational and administrative challenges of carbon neutrality and suggested U-M create an **executive-level officer** to drive implementation.
- Seven respondents mentioned that U-M should **collaborate** with city and county governments as well as solution providers to achieve carbon neutrality.
- Four respondents thought that U-M should support the **research efforts** on carbon neutrality related to commuting, food, the social cost of greenhouse gas (GHG) emissions, and offsets to bring the power of our research abilities to bear.
- Three respondents suggested that U-M be **transparent** about disclosing information, in communicating with the public, and by providing an open feedback process for stakeholders.
- Several **solution providers** suggested opportunities in collaboration on data analysis, community engagement, energy sourcing, housing, and commuting.



3. How to engage?

To achieve its goals, the University will need to collaborate with many stakeholders regarding specific carbon mitigation strategies that require external action, commercially available solutions, key performance indicators, boundary or scope issues, symbolic or pilot actions, financing, education, and inclusive communication regarding a wide range of points of view among diverse stakeholders. External collaboration can take a wide range of partnership forms, from technology demonstrations to fundraising to recognition programs.

Process questions related to engagement are of the utmost importance in developing an outreach plan. Internal (campus culture) and external engagement should go hand in hand. The University has established protocols for vendor contracting, but commercial entities will also want to participate in stakeholder processes. Conflicts of interest must be managed in a transparent fashion. Regarding community-based or government engagement, many scholarly frameworks,¹⁰ such as those from the U-M Ginsberg Center and U-M Center for Academic Innovation, can guide broader engagement, particularly with underrepresented constituencies. The post-COVID-19 situation will make the burden of participation more difficult for many of our typical constituencies. Though very few specifically discuss external engagement in the context of climate change and sustainability, we consulted with experts¹¹ and reviewed established protocols for external communication¹² to develop an engagement framework that covers three phases of climate-related multi-directional community engagement: 1) Best Practices for Entering Communities, 2) Best Practices for Engaging Communities, and 3) Best Practices for Closing Engagement with Communities (see Appendix G for more details). The process of engagement will be discussed in more depth in our recommendations.

Prioritized External Collaboration Recommendations Summary

We make four recommendations to help the University of Michigan effectively engage its wide network of external stakeholders in carbon neutrality efforts. We also recommend removing barriers between internal and external engagement. While these recommendations are intertwined, we discuss a series of prioritized steps. First, U-M should integrate carbon neutrality priorities and the external engagement activities needed to sustain them into both new and existing organizational structures and community engagement initiatives. Second, to connect to the most effective mitigation measures, the landscape of the external community for the top priority emissions reductions should be more carefully mapped, establishing priorities and typologies of constituent communities. Third, specifically tailored engagement strategies should be guided by a consideration of the interests of both the stakeholder and the University as well as consideration of the resource differentials among both stakeholders and the three U-M campuses. Finally, clear feedback channels should be created to allow constituents to provide input and feedback on their own initiative and not always in response to U-M outreach efforts.

Within each of the recommendations listed below, we discuss specific attributes (such as organizational structure considerations, equity, and justice considerations) while also acknowledging distinct challenges in the development of external engagement metrics and cost projections, both of which are challenges we found in our peer school analysis.

For costs, Appendix I provides an overview of some available data on the financial costs for external engagement, but a few special considerations are important to address. In particular, we see an overriding objective of economizing on this effort, using as many in-house resources as possible (particularly in our post-COVID-19 financial reality); a distinct need for funds to be provided to the Flint and Dearborn campuses as available capacity may be limited; and a benefit of contracting out certain activities to obtain professional standards of engagement.



Ultimately, the financial calculation for external collaboration must be done by U-M Finance once decisions are made about the targets, likely needed collaborations, and their form.

For metrics to measure the success and impact of certain external engagement strategies, we found that peer universities were also struggling. Throughout all the reports gathered and interviews conducted, no institution seems to have a handle on measurement tactics. Corey Hawkey, the Assistant Director of Sustainability Practices at Arizona State University, which is ranked #1 in terms of sustainability innovation, even spoke to the gap in available research and methodology: “We [ASU] haven’t fully mastered whether our engagement is successful yet, and to be honest I don’t really know who’s done this well.”¹³ Regardless, he also touched on some potential indicators of whether or not programs are successful at engaging stakeholders. Cornell and Penn State University also have programs that could be models. These indicators are dependent on what the University is trying to accomplish through outreach and could include: *carbon reductions, stakeholder relationship strength, duration of involvement in programs, number of participants in programs, satisfaction rates, production measures, and amount of resources applied.*¹⁴

Recommendation #1: Develop Organizational Capacity for External Collaboration

Our analysis of peer institutions found no “one-size-fits-all” approach to external engagement. Many peer universities included “external/public engagement” in their mission statements and sustainability planning frameworks toward achieving carbon neutrality, but approaches varied. Our organizational capacity recommendations are that U-M 1) develop both centralized and decentralized capacity, 2) utilize existing capacity where possible, 3) combine campus culture and external engagement under one heading of communication and education, and 4) seek to turn all such activity into an educational opportunity where possible. Some peer universities have Offices of Sustainability or Sustainability Committees that handle external engagement on sustainability alongside existing duties to oversee program planning, metric tracking, and campus coordination. Those with particularly strong frameworks for planning and engagement highlight a “transdisciplinary approach” and view this approach as demonstrating a “holistic co-creation of knowledge between disciplines to solve real-world problems.”¹⁵

As such, we recommend U-M create a dedicated senior-level executive position for carbon neutrality for the overall U-M system, with a dedicated position at each of the U-M campuses. This executive role would assume responsibility as primary spokesperson for communication to both internal and external constituencies and lead an organization that should also allow specific academic units or functional units (i.e., PCCN building efficiency, commuting, or energy purchasing) to develop their own engagement plans for connecting with vendors and others impacted by their efforts. There is a commonality between the executive team proposed in this report and the M-LIST proposal in the Campus Culture and Communication Internal Analysis Team report. In many ways, the distinction between internal and external communication is blurry at best, and efforts could be redundant. We therefore recommend that future communication be highly coordinated if not merged between these functions and teams under the heading of communication and education.

To provide mission clarity and leadership, the proposed U-M executive would need to be an advocate for the carbon neutrality goals and program by acting as the visible spokesperson of the effort to both internal and external communities and by coordinating across all University of Michigan campuses and operations (including online instruction to the extent that these operations have the potential to add to the carbon emissions). As a change agent, the executive would need business acumen, leadership qualities, and a strong, diverse network. The executive would need to understand the unique operations of a large university with a large health system and athletic program and to work with the deans and campus administration as



well as external partners. The office's unique position ensures that sustainability is incorporated into educational mission, on-campus operations, and budgetary affairs as well as other critical externally facing university activities and relationships. The executive will purposefully connect to local and state governmental agencies, regional energy providers, Big 10 sustainability offices, peer institution sustainability offices, regional environmental NGOs, and regional social justice and environmental justice initiatives in Flint, Dearborn, and southeast Michigan. These connections will be critical in creating and sharing new knowledge and achieving emissions reductions, scaling best practices, collaborating, funding student- and faculty-initiated projects, co-curricular events, etc.

The executive will lead the mission, acting as the organizer, change catalyst, and synergist between current sustainability entities and efforts on campus while respecting the decentralized organization of the university community. Importantly, the executive is tasked with setting short-term and long-term goals while managing the specifics of reaching carbon neutrality. Accordingly, the executive would oversee the carbon accounting methods to measure, track, and report U-M's progress toward its carbon neutrality goals. In the short term, the executive would be developing plans for the most cost-effective carbon reductions and focusing on engagement with stakeholders (internal and external) to achieve those goals. With respect to external collaboration, network and power mapping would come first. The office would map key partners and stakeholders U-M should engage to best achieve carbon neutrality goals while maintaining its goals of inclusivity in close coordination with existing U-M units.

The University has staff experts who routinely engage and have long-standing relationships with many stakeholders. Thus, the following administrative units should be integral to the partnership and communication strategy for carbon neutrality: U-M Government Relations, U-M Business Engagement and Unit-Specific Staff, U-M Alumni Association and Unit-Specific Staff, U-M Foundation Relations, U-M Office of Sustainability, and U-M Parking and Transportation Services. Each of these entities has extensive customer management databases of contacts.

In addition to the proposed central leadership office, on-the-ground capacity on each U-M campus is needed to understand and respond to unique situations. As U-M moves toward carbon neutrality, U-M needs to respect the Flint and Dearborn campuses' autonomy while providing equitable resources. U-M should also think about the business models for how faculty, staff, and students understand what their structural needs might be (e.g., commuter versus residential student body, budget implications of work on the carbon neutrality activities for faculty, staff, and stakeholders). The PCCN's initial visits to these campuses for virtual town halls or other engagement should be followed up to gain valuable campus-specific input and buy-in for next steps.

The Campus Culture and Communication Internal Analysis Team recommends that engagement with the campus community be done in a fashion that turns the campus into a "living-learning lab." We recommend that the alignment of carbon neutrality efforts with the University's teaching and research mission be expanded to include engagement with the broader community of stakeholders, many of whom are critical to our emission reduction success on U-M campuses.

Community-engaged learning is already a part of the mission and philosophy in some U-M units. However, academic research on community engagement efforts in universities "rarely articulated a coherent conceptual framework for how these initiatives will be used to support social change efforts. Nor do they consistently integrate these efforts into the reward structures of university culture to increase the sustainability of the efforts."¹⁶ Therefore, integrating carbon neutrality priorities into new and existing community-engaged learning activities can build important buy-in among staff, faculty, and administration. Our interviews confirmed that carbon neutrality priorities are cross-cutting, intersecting other important issues like resilience, equity,



and emergency preparedness—therefore, they should not contradict existing University priorities.

Special attention should be paid to engaging underrepresented communities most at risk to climate change impacts or impacted by U-M mitigation decisions. Each U-M campus (Ann Arbor, Dearborn, Flint, online learning communities, and future Detroit campuses) must be engaged in carbon neutrality efforts for them to be successful. Our efforts could be bolstered by broader cooperation with other universities.

For external collaboration in particular, peer institutions and the literature did not offer much in the way of key metrics for effectiveness beyond a variety of operational measures (e.g., number of engagements, participation level, satisfaction surveys, etc.). In the peer universities we examined (Penn State and Cornell University stand out as possible exemplars), external collaboration was discussed as a key to success, particularly with municipalities. But overall, this is a fairly new domain, making established metrics hard to come by. For the success of U-M's efforts, maintaining communication with peer institutions will be an opportunity for developing more concrete metrics and a list of best practices. In addition, U-M's DEI initiative has been able to create both top-down and bottom-up approaches that can inform our carbon neutrality efforts. And finally, U-M has learned a lot in managing the COVID-19 pandemic about culture change, communication, and collaboration across units in short periods of time.

Potential metrics to assess progress could include carbon emissions reduced by efforts with partner engagement; the number and type of external partners engaged; the number of faculty, student, or staff FTEs devoted to this task; the extent to which carbon neutrality engagement is incorporated into the reward structures of existing functions on campus; satisfaction surveys of engaged partners; and the volume and efficacy of carbon neutrality education and research.

Specific Strategies:

1. Create a senior administrative position on Communication and Education that spans both internal and external constituencies. Such a position, and associated working groups, should be developed at each campus (Ann Arbor, Flint, and Dearborn) with an exchange of information and expertise among them.
2. Articulate a clear framework for how community engagement efforts contribute to University goals around teaching, research, and service.
3. Develop a set of public engagement criteria and associated metrics as an integrated strategy to fulfill engagement goals with centralized data tracking while paying attention to environmental justice issues surrounding mitigation strategies.
4. Recognize that the COVID-19 pandemic will make in-person engagement more difficult and virtual methods will become more important.

Recommendation #2: Initiate Targeted Network Mapping and External Engagement

The general attitude toward U-M carbon neutrality among survey respondents was positive. However, the stakeholders contacted for the study were not comprehensive. There was likely a self-selection bias (i.e., those with the strongest opinions were likely to respond), and the results likely favor constituents that have had a prior relationship with the University or are already engaged with sustainability issues. Furthermore, our objective was to develop a snapshot of the external constituent landscape without beginning full engagement.

Based on these limitations, U-M should make a more concerted effort to identify and characterize the interests of the U-M external stakeholder community while also identifying missing groups such as underrepresented communities and constituents linked to the Dearborn and Flint campuses. We recommend starting with our database of key stakeholders developed through our network mapping exercise and survey. Faculty at the UM-Dearborn and UM-Flint



campuses should be likewise consulted. Using a “snowball mapping” process, the University can then utilize these relationships to further broaden its network of external partners. Furthermore, internal functions, such as those mentioned under Recommendation #1, can assist in identifying and contacting key constituencies. Once developed, the landscape analysis should include the creation of a power map¹⁷ of constituents based on priority and type. For example, it has become clear to us through our interviews that partnerships with the local municipalities in which each campus is situated is of paramount importance.

The COVID-19 response and economic downturn will complicate engagement with constituencies around the U-M campuses, particularly with the Flint community. Through our past experience and consultation with experts, the best entry into the Flint community would be to seek Flint partners who invite U-M personnel to join with them. To identify these partners, U-M will want to use the network mapping exercise to connect the purpose of the engagement to the groups that have a stake in participation. The U-M School of Public Health, for example, has long-standing relationships at the Dean’s Advisory Committee level with Genesee County government and local community-based organizations like Community Based Organization Partners (CBOP) and Community Organizations for Family and Youth (COFY), and the public schools. Other U-M academic units and faculty that have similar long-standing research partnerships should be sought out, and the faculty principal investigators (PIs) might provide advice and introductions.

Regarding virtual engagement, the California state government recently provided a training conference with best practices for community engagement.¹⁸ For the general public in Flint, faith-based organizations, Flint organizations’ social media, public TV, and radio can be helpful in addition to outreach with key leaders. On sustainability topics, many of the relevant stakeholders have been organized around water and justice issues.

Flint is a sophisticated community in terms of working in equitable community-academic partnerships. In the public health field, community review boards for proposed research projects have been initiated, and NGOs understand that they should be engaged at all phases of project development and should also have a budget for their involvement and for participants’ time. Flint residents have a complicated relationship with U-M and other external partners. U-M has taken up prominent real estate in town, which is not contributing to the community through taxes but in other ways. Because of the Flint water crisis, Flint residents are also more likely to be reluctant to engage with outside entities and will be seeking self-determination arrangements. Therefore, care must be taken with outreach, and the virtual requirements created by the COVID-19 pandemic make such efforts even more paramount.

Potential metrics to assess progress could include the number of stakeholders contacted and level of participation in each stakeholder category (e.g., labor union, state government, NGOs). Standardized metrics will vary across stakeholder groups and activities, especially in a post-COVID-19 environment in which several important groups will not have capacity for engagement. A further discussion of the Association for the Advancement of Sustainability in Higher Education (AASHE) STARS rating systems and public engagement metric tracking (which measures universities’ performance on a scale of 20 on activities such as participation in public policy, community service, continuing education, inter-campus collaboration, and more) can be found in Appendix L.

Specific Strategies:

1. Re-establish contact with constituents identified through the external collaboration team’s efforts to date (e.g., stakeholder interviews and survey) and other PCCN activities and expand the database to capture as clear a view of the landscape as possible.



2. Identify areas of interest and concern and stakeholder types and develop a power map of the landscape of relevant constituents (thereby identifying the level of interest and influence that stakeholders have regarding carbon neutrality). Consider risk management analyses.
3. Consult all relevant constituents with targeted outreach; focus on engaging stakeholders who will be most impactful to meeting the carbon neutrality goals. In particular, while some constituents who provide technical services to the University may be fairly easy to identify, those from underrepresented communities in and around the University may require a more concerted and proactive effort. Inclusivity considerations should be as important as technical and commercial considerations.

Recommendation #3: Tailor Carbon Neutrality Communication and Education

National opinion polls confirm that a majority of Americans (including in Michigan) support action to mitigate climate change.¹⁹ However, our interviews with external U-M stakeholders confirmed that the term *carbon neutrality* is not well-understood or prioritized for many. Differing levels of environmental awareness and views are prevalent among communities to be engaged by the University's carbon neutrality efforts. Therefore, we recommend that any communication and outreach efforts be tailored to meet the distinct needs of various communities and should be multi-directional in nature.

Some stakeholders may be hesitant to engage with the University, either because they lack the time or resources, or they have been over-burdened by past engagement (e.g., communities suffering environmental injustices such as Flint, non-profits that frequently support student projects). Similarly, some stakeholders possess a deep knowledge of climate change and the methods for addressing it, while others may have limited or no knowledge. Outreach and communication efforts should recognize these obstacles and develop incentives, protocols, and processes that meet each community's particular needs.

These considerations also apply to the three U-M campuses. Our interviews confirmed the presence of stark resource capacity differentials between each U-M campus, including staffing, financial resources, and structural incentives for faculty or student involvement in these topics. In addition, demographic and cultural differences between the three campuses demand a tailored carbon neutrality strategy for each campus rather than a "one-size-fits-all" approach. We recommend that the One University platform²⁰ be used to open communication channels with each campus regarding carbon neutrality and sustainability initiatives to utilize existing capacity.

Strategies exemplified by peer institutions feature close collaboration, coordination, and resource sharing with the cities and communities in which they exist. Examples include public "town hall" forums or conferences; community service projects that provide learning or research opportunities; partnerships with third-party constituents that promote sustainability initiatives; newsletters and social media campaigns that share knowledge; and "living-learning labs" that provide places for students, faculty, and the public to convene, explore, and collaborate on solutions for sustainability topics and issues. Metrics would follow for such activities, tracking the number of outreach efforts undertaken, the number of constituents engaged, the types of communities those constituencies represent, and the effectiveness or quality of the engagement activity.

Specific Strategies:

1. Develop tailored communication and outreach programs for reaching the various stakeholder groups that are relevant to the U-M carbon neutrality goals. Acknowledge differences in baseline sustainability and carbon neutrality issues; meet stakeholders



where they are and facilitate education while employing cultural humility and shared decision-making.

2. Utilize the One University platform as an existing capacity to open communication channels with each campus regarding carbon neutrality and sustainability initiatives.
3. Create flexible engagement strategies with the input of underrepresented communities in and around the U-M campuses managed by the senior representative in recommendation #1; attend to social and environmental justice implications of mitigation strategies, as survey respondents ranked this factor highly.

Recommendation #4: Expand Opportunities for External Stakeholder Input

Multi-directional feedback from external stakeholders allows for metric tracking, negotiation, and input from diverse community organizations, recognizing the differentials in power, influence, knowledge, and access to decision-making. Feedback channels play a crucial role in providing a platform for public and community voices. The PCCN has provided access to public forums, updates and reports, media information, and established public forums have provided public comment to university decision-makers. In addition, the public engagement web page on the U-M Planet Blue website²¹ functions as a central platform for community ideas for the on-campus community. However, the platform may not be widely recognized or accessed by the full community as the hub for all carbon neutrality-related matters, and technical or other barriers may exist for impacted communities to participate in this fashion.

We recommend the University create and adapt feedback channels that invite input from the external community in an inclusive manner. While we have highlighted environmental justice considerations in each of the prior three recommendations, this fourth recommendation brings such concerns to the forefront. While the University has a set structure for interactions and solicitations from vendors and service providers, other stakeholders currently provide feedback on U-M activities through surveys, town halls, Regents meetings, and other discussions with the University. We recommend that special consideration be devoted to engaging communities that may lack the resources, knowledge, or familiarity to communicate with the U-M campuses. Open feedback channels and clear/reliable communication with external stakeholders will ensure that individuals who are unable to participate in these forms can still weigh in. Ensuring that feedback channels can be easily accessed by *all* stakeholders is not just best practice from an equity perspective; it can also save the University time and money spent managing conflicts that may occur from lack of representation or process concerns.

This recommendation creates some resource challenges of its own, but gatekeeping should be minimized. U-M personnel have identified that they have been at times overwhelmed with external inquiries regarding sustainability matters. We recommend that specific processes be put in place to archive, prioritize, and monitor these requests and comments to ensure that the University is capitalizing on all potentially beneficial partnerships.

Lessons from peer institutions and other entities (e.g., the UK health system) have shown the value in being open to considerations and evidence-based ideas from “solution holders” as well as underrepresented groups. By allowing for engagement initiated by others, some peer universities have uncovered new pathways for resource discovery and have been able to identify knowledge gaps in addressing stakeholder concerns. Such passive engagement has been most helpful and welcomed when universities are looking into new options for engagement activities. Key metrics for such engagement could include stakeholder relationship strength, duration of involvement in programs, number of participants in programs, satisfaction rates, production measures, amount of resources applied, etc.²² Detailed interview notes from Arizona State University on passive engagement and partnership formation can be found in Appendix M (Peer University Interview Notes).



Specific Strategies:

1. Build technical and organizational capacity for passive engagement to accept and respond to solution-holding constituencies not previously identified by the University.
2. Examine existing U-M feedback channels and adapt them as needed to encourage all stakeholders to appropriately weigh in, being especially attentive to climate justice considerations.
3. Widely advertise and communicate online feedback channels for external input while carefully managing expectations to avoid over-promising or diluting focus.

Next Steps

Drawing from our set of recommendations above, we highlight four next steps to be taken in the short term to initiate the External Collaboration aspect of the carbon neutrality program:

1. Create senior administrative positions on Communication and Education that span both internal and external constituencies at each campus (Ann Arbor, Flint, and Dearborn) with an exchange of information and expertise among them.
2. For high-priority emissions reductions, re-establish contact with organizations identified through the external collaboration team's efforts (e.g., stakeholder interviews and survey) and U-M engagement experts (e.g., Business Engagement, Government Relations) and expand the database to capture as clear a view of the landscape as possible.
3. Develop tailored communication and outreach programs for reaching the various stakeholder groups that are relevant to the U-M carbon neutrality goals. Acknowledge differences in baseline sustainability and carbon neutrality issues; meet stakeholders where they are and facilitate education while employing cultural humility and shared decision-making.
4. Build technical and organizational capacity for passive engagement to accept and respond to constituencies not previously identified by the University, especially attentive to climate justice considerations and solutions holders.

A full High-Level Summary Matrix is provided in Appendix J.



APPENDIX A: Scope of Work and Start-Up Report

External Collaboration Team

Project Start-Up Report, October 23, 2019

Faculty Leads: Andrew Hoffman and Patricia Koman

Project Team: Gopichand Alla, Amelia Brinkerhoff, Zoie Chang, Wenjie Liu, Erin O'Shaughnessy, Mara Page, and Anya Shapiro

Proposed Scope of Work

To evaluate opportunities for collaborations focused on scaling and replicating high-impact solutions, the External Collaboration Internal Analysis Team (IAT) will a) coordinate with other PCCN IATs and to identify and prioritize external partners with which to collaborate for emissions reduction project development, review and implementation and b) identify and prioritize additional external partners that are critical for the success of the University's Carbon Neutrality efforts. In this way, this team will act as both a catalyst partner for the other more topic-focused PCCN IATs and a boundary-spanning function to highlight additional communities and partners that should be engaged to anchor carbon neutrality more firmly within our communities and contribute to long-lasting beneficial relationships. We will strategically seek to establish new ties and take advantage of external ties which are already established through other units within the University with the goal of supporting the carbon neutrality emissions reductions and assessment of replicability and scaling.

The key priorities will be four-fold: 1) to assure that the proper skills, knowledge and support are brought into the Carbon Neutrality effort to assure success of the various components of this project (e.g., buildings, food, commuting, and operations), both on the University of Michigan campuses (Ann Arbor, Flint, and Dearborn) and their local and regional communities, 2) to create an inclusive process that allows impacted and vulnerable communities to be aware of this effort and have voice in its implementation (this will consider environmental justice and economic equity considerations), 3) to flesh out collaboration opportunities and identify potential obstacles which can be overcome, and 4) to create an environment in which all relevant stakeholder's concerns and objections are addressed and accounted for throughout the project in order to ensure the delivery of viable proposed solutions for the overall long-term success of the project; thus, taking into account the complex social, political, technical and economic landscapes in which the University acts and operates.

One unique challenge for this team will be to coordinate with other PCCN IATs and other PCCN initiatives as they develop their methods and reports. Each of the IATs will presumably be reaching to external groups as well, and a key challenge will be to coordinate this effort and maximize insights gathered for scalability and replicability. The initial analysis will seek to identify both short-term and long-term relevant stakeholders for the overall objectives of the PCCN initiative and its various sub-components. After that first step is complete, a second round of analysis will consider other parties that are missing from this analysis. Once identified, and communicated to the various teams, initial outreach will seek to establish contact, interest



and possible avenues for collaboration. For this to succeed, this team requires some form of open on-going communication with the other IATs and broader university constituents in the PCCN initiative.

Another area of emphasis for scaling and replication will be forming networks with other Universities. Our team will coordinate with the PCCN on university consortia as well as seek other ways in which the University already has relationships with other colleges and universities. Because of the global nature of this work, we will seek to make the U-M solutions accessible to the other communities through our networks and maximize the impact of PCCN.

By April 2020, the External Collaboration IAT will deliver a proposed framework of strategies, solutions and best practices for the PCCN to consider moving forward in regards to encouraging and welcoming stakeholder input, managing affected party relations and forming valuable partnerships, and scaling and replicability of high-impact solutions in order to facilitate the future lasting success of the project. We anticipate a report that depicts both in graphical and narrative forms the most impactful approaches to achieve PCCN goals, metrics to be used, and the network of relevant external constituents to the efforts of the PCCN (e.g., local communities, subject matter experts, alumni, corporations, government, non-governmental organizations). Ultimately, this effort will include an array of possible outcomes presented from the team's research, which will provide the PCCN with various options to adjust the scope of collaboration through an analysis of associated impact factors. The External Collaboration IAT will recognize areas in which the PCCN may have the ability to create a national or international impact among other highly regarded institutions, and identify opportunities where leadership and innovation in environmental stewardship would be beneficial for the University of Michigan to examine and act upon.

Student Staffing Requirements

The External Collaboration IAT needs a cohesive team of students who possess a certain demeanor or personality for reaching out and understanding the needs of external collaborators. These individuals will possess the skills for communicating orally and in writing, negotiating, understanding organizational or social structures and systems, and collaborating well with others. We anticipate needing one student skilled with spreadsheet-type analysis, data visualization and/or graphic design, and project management. Leadership skills as evidenced from leadership roles in student organizations are also highly desirable.

We are pleased to have students from the UM-Dearborn campus, and we note a need across the IATs to reach out to the UM-Flint campus.



APPENDIX B: Interim Report

External Collaboration Team

Interim Progress Report, January 29, 2020

Faculty Leads: Andrew Hoffman and Patricia Koman

Project Team: Gopichand Alla, Amelia Brinkerhoff, Zoie Chang, Wenjie Liu, Erin O'Shaughnessy, Mara Page, and Anya Shapiro

Provide a brief summary of work to date.

The goals of the external collaboration team (from the charter) are to evaluate opportunities for collaborations focused on scaling and replicating high-impact solutions. Examples may include local and regional partnerships, collaborative education initiatives, and mitigation and resilience policy. Activities to date:

A. Began foundations for engagement for each of the three campuses: 1) Visited the UM-Dearborn campus and met with university faculty and staff, town officials, and student sustainability groups. Our IAT has two UM-Dearborn students; 2) Reached out to internal U-M units with outreach foci, such as business engagement, government affairs, alumni relations and foundation relations; and 3) Planning to visit the UM-Flint campus after PCCN chairs' visit in February.

B. Coordinated across IATs to understand engagement needs: 1) Organized a Fall 2019 gathering of all student PCCN team members, and are planning a Winter Term gathering; 2) Began building relationships and capacity across the IAT student teams through team liaisons that attend other team meetings as needed; 3) Organized an external collaboration workshop with the U-M Ginsberg Center; and 4) Conducted initial needs survey of IAT faculty.

C. Conducted research: 1) Met weekly as a team, established sub-teams and communication channels; 2) Began developing an external constituent database; 3) Created interview guides and FAQ sheets for external engagement; 4) Participated in other outreach efforts to learn best practices (such as the City of Ann Arbor carbon neutrality events; the Commuting Team Transportation Town Hall in both Dearborn and Ann Arbor); 5) Began an analysis of peer campus activities related to carbon neutrality and external engagement; and 6) Developed a flowchart, action plan and report template to take us to completion on April 10.

What will the team be working toward the next few months? What key outcomes do you hope to have accomplished by mid-winter term 2020?

To provide options for future external collaboration that builds support for solutions, we have developed a final report template that will serve as our guide for the remaining time on this project. It comprises five main components: 1) Overall purpose, objectives and importance of external collaboration for the University's efforts on carbon neutrality; 2) A network spreadsheet and map of relevant external constituents as well as contacts, interests and a hierarchy of priorities; 3) Information on best practices and options with regards to external collaboration (such as organizational structure, events or Key Performance Indicators); 4) An analysis of what



peer schools are doing on external collaboration and carbon neutrality; and 5) A cost estimate (based on dollars and time) of a range of future external collaboration options.

Provide a brief summary of the team's key findings and preliminary thoughts on potential approaches to solving the challenge your team is addressing.

External collaboration will be critical to the success of any efforts that the University takes on carbon neutrality. We must coordinate and collaborate with key constituents that: 1) Possess certain skills, capabilities, and solutions that will be needed; 2) Are necessary partners for the accomplishment of our goals; and 3) May be impacted both materially and socially by the University's activities, as an objective of inclusivity will be tremendously important for the future acceptance and success of our efforts. Our approach is to build on existing University relationships and to bring carbon neutrality issues to the fore, where appropriate. Many University of Michigan faculty have long-standing relationships with key external partners. The University of Michigan also has talented staff responsible for maintaining relationships with many of the key constituencies (e.g., government relations, alumni engagement, business engagement and foundation relations).

Joint action is necessary to achieve the goals of carbon neutrality. In some cases, a partner other than the University has the authority or responsibility for emissions reductions or other aspects of implementation (such as the city governments of Ann Arbor, Dearborn and Flint). In order to build and share knowledge, early engagement is imperative as more time yields the development of a fuller solution set by working through barriers and finding resources. Some external partners (e.g., city governments and direct energy service providers) may be especially interested in the particulars of the University's decisions about the timing and approach to carbon neutrality. Other external partners may be more interested in providing solutions or understanding impacts once a framework is in place. A tailored approach aligned with the PCCN's processes could generate a more positive response.

Early engagement may also be beneficial in terms of boosting community support, spearheading educational initiatives, providing vendors with needed lead time, and exhibiting transparent information sharing within the communities that encompass the three campuses. Educational programs and community-based outreach events concerning sustainability and carbon neutrality may be valuable in terms of fostering long-term relationships with meaningful and positive impacts for all those that our efforts will affect. Using a credible messenger to engage is important (e.g., Shared Services procurement official with purchase authority to convey needs to vendors).

It is likely that a tailored approach to external engagement may be necessary for each of the three University campuses and that key faculty and staff from the Dearborn and Flint campuses should provide consultation on the relevant differences and needs of each campus community. Attention will need to be paid to the internal and external structural incentives for participation, which may operate differently on each campus.

Briefly describe the team's engagement and consultation efforts to date and how they might evolve over time.

See above.



Through the team's work, have any new major challenges to the analysis become apparent?

We have been cognizant of the unique task of our team compared to that of others. While other IATs will conduct their own outreach, we see the major challenges in external engagement as centering on the need to be as inclusive as possible and to coordinate outreach so as not to overload external constituents. Timing of the engagement and its boundaries are an issue. We have been hesitant in our initial outreach efforts, not wishing to begin preliminary engagement with a constituent and then have no contact until the project is undertaken in full sometime in late 2020 or 2021 or to be unable to provide specifics about options under consideration before decisions have been made.

We have considered the diverse situational contexts of the Dearborn and Flint campuses and recognize the need to open discussion with them. We are actively learning from these unique environments through workshops and direct consultation. We need to be sensitive to balance inclusion with appropriate contact (both timing and participants). We also have concerns about how to coordinate our effort with potential important stakeholders such as the City of Ann Arbor and peer institutions who have already taken actions ahead of the University. While addressing efforts in external engagement, engagement with internal teams of students, faculty and staff should also be taken into consideration for future mobilization work.

We have begun to develop a survey rather than individual interviews to determine: 1) The level of interest in being involved with future carbon neutrality efforts; 2) The topics on which external constituents would like to be engaged (structured around the present PCCN team model); 3) The name and contact information for a person to be the main contact point; and 4) Assistance in identifying other external constituents who we should reach out to.

Our team has also discussed the issues surrounding confidentiality and the restrictions that the public nature of the report presents in gathering sensitive information. Although we are in favor of transparency and believe that sharing information with the public is beneficial for our efforts, we are cognizant of these restraints, and therefore wish to respect our stakeholder's perspectives and are hesitant to guarantee confidentiality through our interview process which could present future challenges in our work.

How is the team including equity considerations in the work? Where have these considerations become apparent in the analysis thus far? What additional support or information does the team require to fully incorporate equity and climate justice considerations?

We see the inclusivity aspect of our task to be centrally focused on equity. We see a strong need to be as inclusive as possible in our external collaboration activities so as to assure complete and transparent communication with all stakeholders in our external community and to support options that include a climate justice perspective.

How is the team going about calculating costs and/or savings of the potential recommendations? How well prepared is the team to calculate these costs or savings? What additional support or information does the team require to calculate these costs and/or savings? What are the specific cost buckets related to your potential recommendations for which you will need financial analysis support?



External Collaboration Team Final Report

This is a difficult question for our team. External engagement can take many forms (e.g., surveys, workshops, webinars, demonstrations, recognition programs, advisory panels, and communication efforts). It is unclear how broadly this activity will be handled by individual academic units of the University or if it will be housed in a special committee. The best we can foresee in accomplishing this task is creating some broad based estimates of person-hours and travel required for external collaboration and calculate an overall cost based on an hourly rate and other fixed costs (e.g., hosting, travel). We would appreciate a unified set of assumptions about how to estimate labor and indirect/overhead charges now and in the future (e.g., what discount rate to compare costs across a ten year or more period).



APPENDIX C: List of Peer Institutions

The University of Michigan uses several groups of similar institutions of higher education for purposes of comparison. Here are descriptions and member lists of three peer groups referenced in the Michigan Almanac. Private institutions are shown in italics. These lists were provided by Andy Berki, Director, Office of Campus Sustainability at University of Michigan.

1) Official Peers (list developed by U-M officials)

- Columbia University in the City of New York
- Cornell University
- Harvard University
- Johns Hopkins University
- Massachusetts Institute of Technology
- New York University
- Northwestern University
- Ohio State University
- Stanford University
- University of California, Berkeley
- University of California, Los Angeles
- University of Chicago
- University of Illinois at Urbana-Champaign
- University of Maryland-College Park
- University of North Carolina at Chapel Hill
- University of Pennsylvania
- University of Southern California
- University of Texas at Austin
- University of Virginia-Main Campus
- University of Washington-Seattle Campus
- University of Wisconsin-Madison
- Yale University

2) Association of American Universities (AAU) is a non-profit association of the leading public and private research universities in the United States and Canada, listed with the year the school became a member in parenthesis. The Association of American Universities Data Exchange (AAUDE), a constituent group of the AAU, is comprised of the institutional research officers from each university.

- Boston University (2012)
- Brandeis University (1985)
- Brown University (1933)
- California Institute of Technology (2934)
- Carnegie Mellon University (1982)
- Case Western Reserve University (1969)
- Columbia University in the City of New York (1900)
- Cornell University (1900)
- University of California, Santa Cruz (2019)
- University of Chicago (1900)
- University of Colorado, Boulder (1966)
- University of Florida (1985)
- University of Illinois at Urbana-Champaign (1908)
- University of Iowa (1909)
- University of Kansas (1909)
- University of Maryland at College Park



- Dartmouth College (2019)
 - Duke University (1983)
 - Emory University (1995)
 - Georgia Institute of Technology (2010)
 - Harvard University (1900)
 - Indiana University (1909)
 - Iowa State University (1958)
 - Johns Hopkins University (1900)
 - Massachusetts Institute of Technology (1934)
 - Michigan State University (1964)
 - New York University (1950)
 - Northwestern University (1917)
 - Ohio State University (1916)
 - Pennsylvania State University
 - Princeton University (1900)
 - Purdue University (1958)
 - Rice University (1985)
 - Rutgers University-New Brunswick (1989)
 - Stanford University (1900)
 - Stony Brook University – SUNY (2001)
 - Texas A & M University (2001)
 - Tulane University of Louisiana (1958)
 - University at Buffalo – SUNY (1989)
 - University of Arizona (1985)
 - University of California, Berkeley (1900)
 - University of California, Davis (1996)
 - University of California, Irvine (1996)
 - University of California, Los Angeles (1974)
 - University of California, San Diego (1982)
 - University of California, Santa Barbara (1985)
 - University of Michigan (1900)
 - University of Minnesota, Twin Cities (1908)
 - University of Missouri, Columbia (1908)
 - University of North Carolina at Chapel Hill (1922)
 - University of Oregon (1969)
 - University of Pennsylvania (1900)
 - University of Pittsburgh (1974)
 - University of Rochester (1941)
 - University of Southern California (1969)
 - University of Texas at Austin (1929)
 - University of Utah (2019)
 - University of Virginia (1904)
 - University of Washington (1950)
 - University of Wisconsin-Madison (1900)
 - Vanderbilt University (1950)
 - Washington University in St Louis (1923)
 - Yale University (1900)
- Canadian university AAU members (not included in comparison groups in this publication)
- McGill University (1926)
 - University of Toronto (1926)
- Non-AAU affiliates of AAUDE
- Syracuse University
 - University of Nebraska-Lincoln

3) The Big Ten, an athletic conference formed in 1896 by seven public and private universities. The Big Ten membership is currently 14, listed with the year the school joined the conference in



parenthesis. (Northwestern University is the only private institution now in the Big Ten. The University of Chicago, also private, was a charter member but left the conference in 1946.)

- Indiana University (1899)
- Michigan State University (1949)
- Northwestern University (1896)
- Ohio State University (1912)
- Pennsylvania State University (1990)
- Purdue University (1896)
- Rutgers University (2014)
- University of Illinois (1896)
- University of Iowa (1899)
- University of Maryland (2014)
- University of Michigan (1896)
- University of Minnesota (1896)
- University of Nebraska (2011)
- University of Wisconsin (1896)



APPENDIX D: Peer Institution Analysis Process

Schools Reviewed:

Big 10 Schools:

[Indiana University*](#)

[Penn State University*](#)

University of Maryland

[Ohio State University*](#)

[Northwestern University*](#)

[University of Wisconsin*](#)

Michigan State University

[University of Iowa*](#)

[University of Illinois*](#)

Rutgers University

Others:

[University of Virginia*](#)

[Colorado State University*](#)

Arizona State University

[University of North Carolina*](#)

Ivy Plus:

Brown

Dartmouth

[Columbia*](#)

Cornell

[Duke*](#)

[Georgetown*](#)

Harvard

[Johns Hopkins*](#)

MIT

[Princeton*](#)

[Stanford*](#)

[University of Chicago*](#)

[U of Penn*](#)

[Yale*](#)

UC3:

Boston University

California Institute of
Technology

[Ohio State University*](#)

The State University of New
York

[University of Arizona*](#)

[The University of California*](#)

[University of Colorado,
Boulder*](#)

[University of Connecticut*](#)

[University of Maryland*](#)

[University of Michigan*](#)

[University of New Mexico*](#)

[University of Utah*](#)

[University of Washington*](#)

[Washington University in St.
Louis*](#)

* Denotes Universities with
hospital systems

Selection Process: Our team's research was conducted by first evaluating the University of Michigan official list of Peer Schools (Appendix C), then we segmented the list by mapping various conferences and sustainability networks, such as Big Ten and Friends, Ivy Plus Consortium, and EPA Green Power Challenge. We then consulted accredited tracking databases such as Second Nature's UC3 (University Climate Change Coalition; previously the ACUPCC) and AASHE STARS to get a sense of the entire landscape of work that other schools were doing on the topic of carbon neutrality. Our criteria for evaluation was then based on benchmarking various characteristics of the University of Michigan to more appropriately compare peer institutions and implementation feasibility to U-M campuses. These characteristics included size of student body, economic impact on local municipalities, square footage of campus and number of buildings, institution type, endowment, presence of a hospital or health system, cultural makeup of student body as well as the external community, and various environmental metrics like MTCO₂ emitted, and BTUs of energy consumption.



Review Process: To evaluate schools, we conducted a plan review of universities' individual sustainability reports found on the universities' websites to get a general sense of their mission, sustainability goals and timeframe for carbon neutrality (if applicable). We paid special attention to their "engagement" or "community partnerships" sections. Then we consulted their AASHE STARS report to view their ranking and view specific strategies that they reported for Public Engagement points. Members of our team conducted 3 phone interviews (before the pandemic made such contact more difficult) with Yale University, University of Maryland and Arizona State University.



APPENDIX E: Stakeholder Survey Questions

PCCN External Collaboration Stakeholder Survey

We are the External Collaboration Internal Analysis Team for the University of Michigan's President's Commission on Carbon Neutrality (PCCN). We invite you to participate in the following survey on the topic of the University of Michigan's carbon neutrality plan. We are reaching out to you because you have been identified as a relevant constituent. We would greatly appreciate your contribution.

The survey takes ~5 minutes to complete. We will be giving out \$25 Visa gift cards to ten randomly selected responses, in by Tuesday, March 24th.

The data we collect is purely for informational purposes; we may contact you at a later date. Our Survey has been reviewed by the University of Michigan Institutional Review Board (HUM00177552).

Q1. Please provide your contact information:

*Required

*Organization Name:

*Contact Name:

Contact Title:

Contact Phone Number:

*Contact E-Mail:

Organization Website:

Q2. Which category(ies) do you feel that your organization most closely aligns with? Please select all that apply.

Federal Government & Policy Groups

State Government & Policy Groups

City Government & Policy Groups

County Government & Policy Groups

Private Industry Members & Groups

Non-Profit Groups

Community Groups

Expert/Standards Groups



Other Universities and Colleges

Unions

Philanthropic Foundations/Funding Organizations

Religious Communities

University Service Providers

Alumni

Other

Q3. The PCCN is organized into 8 internal analysis teams, some special projects, and a few functional groups. For which PCCN working groups do you feel that your organization's input would be most valuable? Please select all that apply.

Biosequestration: This team evaluates and recommends optimal approaches for potential biological sequestration, that is, carbon storage projects, on and off-campus.

Campus Building Standards: This team evaluates current and emerging best practices regarding the adoption, implementation, and long-term efficacy of building code policies to improve sustainable building performance outcomes with a particular focus on achieving carbon emission reduction targets.

Campus Culture and Communication: This team evaluates existing communicative structures and will recommend new strategies to raise awareness, enhance personal investment, and drive behavioral change on U-M campuses.

Campus Commuting: This team develops an approach to measuring the carbon impact of commuting across the three University of Michigan campuses and will develop recommendations for reducing the commute's carbon footprint.

Internal Energy Consumption Policies: This team evaluates potential budgetary and financial mechanisms to decrease energy usage across the University.

External Collaboration: This team develops opportunities for collaborations focused on scaling and replicating high-impact solutions.

Campus Food Systems: This team evaluates approaches to decreasing the GHG footprint associated with food consumption at U-M.

University Travel: This team evaluates current University travel information and will make recommendations on travel optimization to minimize the carbon footprint, campus education around travel impacts, and potential offset systems.

Carbon Accounting: This team verifies appropriate emissions accounting methods based on current scientific knowledge of global warming potentials, 20- vs. 100-year impact analysis.

Fleet Electrification: This group investigates the benefits and challenges in shifting U-M's buses and other vehicles to electric battery technology.

Social and Environmental Justice: This group researches potential social and environmental justice implications of carbon neutrality planning.



Housing: Housing concerns include both on- and off-campus housing needs for students/staff in the University areas.

Carbon Offsets: Work relating to the evaluation and recommendation of criteria for any potential carbon offset purchases, or potential carbon offset projects for U-M.

Q4. How important is a University of Michigan carbon neutrality plan to your organization?

Extremely important

Very important

Moderately important

Slightly important

Not at all important

Q5. If the university goes forward with a carbon neutrality plan, to what level would you like to be involved?

I am excited and interested in engaging side by side with a U-M carbon neutrality team

I am willing to engage toward a goal with a U-M carbon neutrality team

I am willing to be in contact or provide information to a U-M carbon neutrality team

I would like to participate in PCCN workshops or activities

I would like to be informed about the process

I don't want to be involved

Q6. Which University of Michigan campus(es) would you engage with? Please select all that apply.

Ann Arbor

Dearborn

Flint

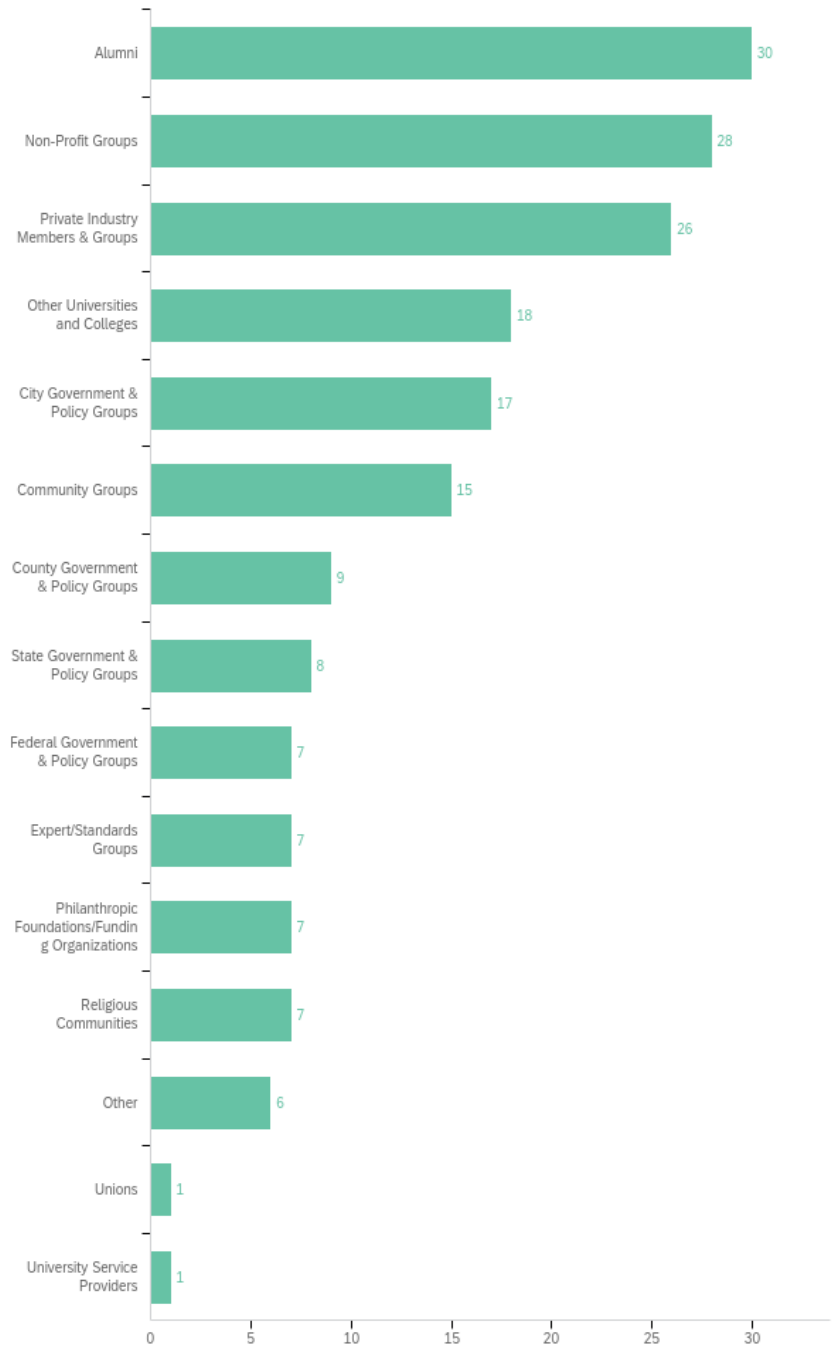
Q7. What carbon neutrality related-issues should be addressed and prioritized according to your organization? What do you think should be concerns or could be barriers in a plan for the University of Michigan to achieve carbon neutrality?

Q8. What other communities/stakeholder groups/organizations/individuals do you think will be especially important to engage in our efforts? We would be grateful for any information you may be able to provide.



APPENDIX F: Stakeholder Survey Responses

Figure 1. Stakeholders by Category (Q2)

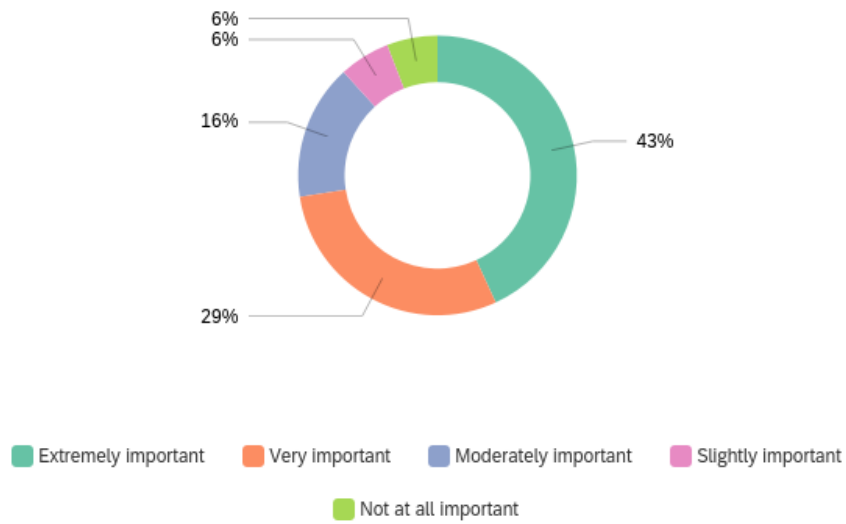




External Collaboration Team Final Report

$n = 187$, not all respondents answered every question

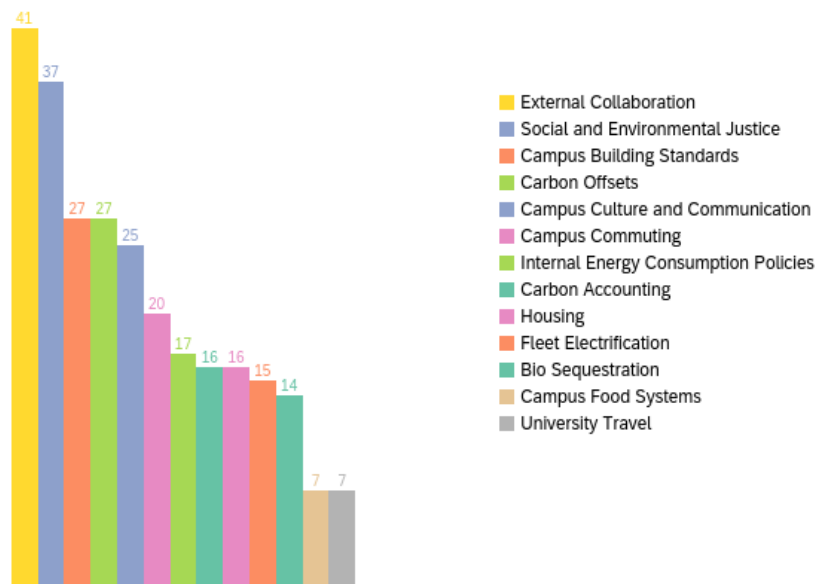
Figure 2. Importance of Carbon Neutrality to Stakeholders (Q4)



$n = 102$, not all respondents answered every question



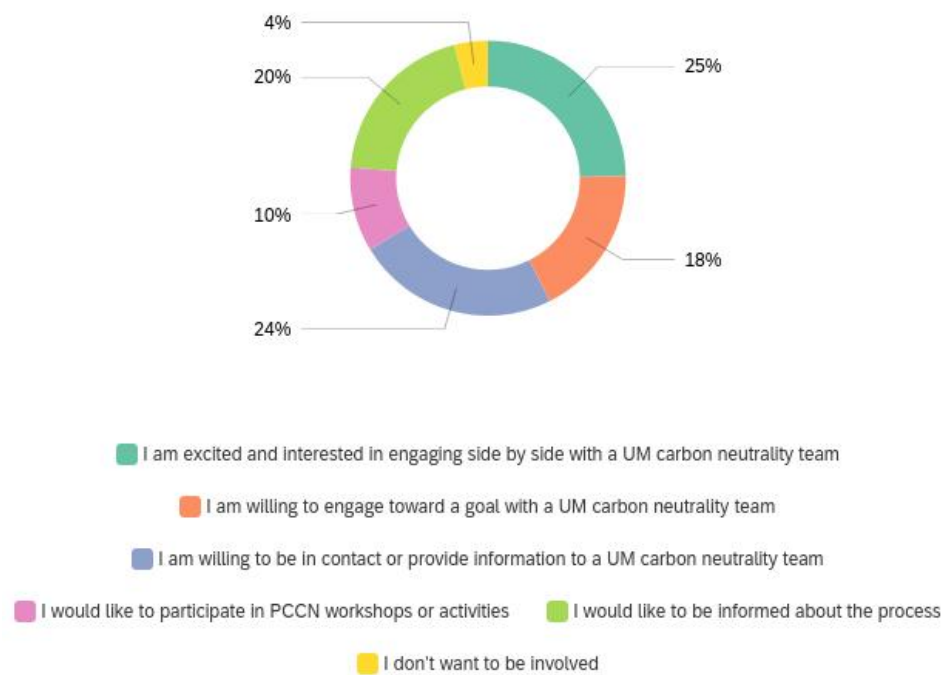
Figure 3. Topics of Interest Among Respondents (Q3)



$n = 269$, respondents could offer multiple responses

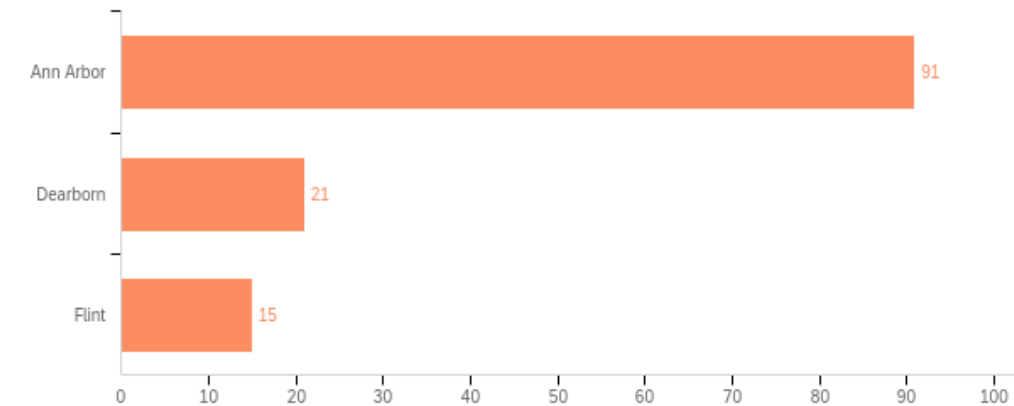


Figure 4. Level of Interest in Engagement (Q5)



$n = 101$, not all respondents answered every question

Figure 5. Campus of Interest (Q6)



$n = 127$, not all respondents answered every question



A word cloud of terms related to climate change and sustainability. The most prominent words are 'carbon' and 'university' in large, bold, dark blue font. Other significant words include 'energy', 'community', 'campus', 'neutrality', 'fossil', 'fuel', 'barrier', 'issue', 'change', 'organization', 'renewable', 'solution', 'climate', 'efficiency', 'housing', 'leadership', 'interest', 'institution', 'work', 'building', 'level', 'neutral', 'change', 'issue', 'focus', 'barrier', 'sustain', 'achieve', 'goal', 'staff', 'ann', 'city', 'emission', 'student', 'divest', 'reduce', 'commute', 'impact', 'transportation', 'address', 'support', 'implement', 'executive', 'environmental', 'justice', 'work', 'building', 'level', 'neutral', 'change', 'issue', 'focus', 'barrier', 'sustain', 'achieve', 'goal', 'staff', 'ann', 'city', 'emission', 'student', 'divest', 'reduce', 'commute', 'impact', 'transportation', 'address', 'support', 'implement', 'executive', 'environmental', 'justice'. The words are arranged in a dense, overlapping cluster, with some words appearing in a lighter blue color.

Representative Comments

The carbon impact of commuting to campus is enormous, and closely tied to issues of environmental justice. It is crucial that U-M collaborate with other stakeholders and local governments to improve low-carbon transportation options.



APPENDIX G: Process Recommendations for External Engagement

There are many academic frameworks²³ for effective stakeholder engagement in a university context, though very few specifically discuss external engagement in the context of climate change and sustainability. The University of Michigan external communities are unique and thus standard best practices for external engagement for the three university campuses should be taken with caution. Therefore, this report outlines best practices developed by University of Michigan centers, departments, and units that are specifically focused on external engagement in Ann Arbor, Dearborn, and Flint communities. The purpose of this section is to provide guidelines on engaging communities and U-M partners on issues related to carbon neutrality issues in particular.

Best Practices for Entering Communities

All external engagement efforts seek to gain new information, contacts or emissions reductions. However, effective and sustained engagement depends on the extent to which both parties feel they are benefitting from the interaction. The first step of engagement is therefore reflection and research on the stakeholder, their interests, and their motivations regarding carbon neutrality. Inconsistent or inconsiderate contact with communities and stakeholders can do more damage than good, and it is therefore better to refrain from interaction if the proper research has not been done on the stakeholder and their history.

Research and prepare for engagement: This phase involves identifying the asset and priorities of the stakeholder/organization in question and taking time to familiarize oneself with the history and context of that stakeholder. Questions to consider include:

What is the organization's relationship with sustainability or carbon neutrality? Do they have prior knowledge of the subject?

Are they likely to respond better to specific framing (economic, resilience, health, etc.)?

What is their motivation to engage? Will they be open to the relationship?

Who is the best individual to engage, and will they be authorized to speak on behalf of their organization?

How is the stakeholder likely to perceive the University of Michigan?

What are their risks for participating?

Outline engagement goals: This phase involves framing any questions or information requests and considering what the University can offer the stakeholder to incentivize their honest and sustained participation in the engagement. Questions to consider include:

Has the organization been consulted about this issue before?

How will the information request in question complement the stakeholder/organization's existing contributions to the University?

What is the ultimate goal of the conversation, as specific as possible?



Best Practices for Engaging Communities

Engagement is one step on the road toward empowering all invested parties. Thus, it is recommended that the University reach out to as many diverse community-based groups as possible, to represent a multitude of perspectives. Contact should be framed in terms of meaningful involvement of the stakeholder. Key questions to consider are:

- What is the previous/current relationship between this stakeholder and U-M?
- What might they gain/lose by becoming involved with U-M's carbon neutrality plan?
- Which groups are potentially missing from the conversation? How might they be engaged?

Recommended practices to heed include:

Leverage existing relationships: Efforts should be taken to consider whether the stakeholder/organization has or would be likely to engage with a particular unit within the University. The benefit of this approach is that leveraging existing relationships can build critical trust and even ensure that contact efforts receive quick attention.

Embody cultural humility: Different cultures and communities perceive carbon neutrality in vastly diverging ways. Efforts to engage communities should be taken with the understanding that the engager is in "learning mode" and is prepared to take the time and effort to understand the stakeholder's position and perspective before launching into questions.

Acknowledge/reflect on personal biases and approach with an open mind: The University of Michigan may command a negative image and perception-- intellectualism, resources, and privilege-- with select external stakeholders. In addition, efforts should be taken to ensure that the stakeholder is provided with any information that may aid their understanding of the subject matter in question, and assumptions should not be made that the stakeholder will be familiar with the context or consideration of the problem.

Best Practices for Closing Engagement with Communities

Though external outreach is often an ongoing process without a defined endpoint, it is important to be clear in communicating the outcomes or next steps of an engagement opportunity. Those stakeholders that we interviewed in this process confirmed that they are likely to base their initial engagement with the University on whether or not their previous encounter was successful or not. Most important in closing external engagement is to avoid over-promising on an outcome.

Key questions to consider are:

- How will I be using the stakeholder's feedback? How will their name and information be used?
- Is my unit resourced with staff and financial capacity to ensure continued engagement with this individual?
- Is the stakeholder accustomed to a specific type of follow-up or communication based on their own organizations' norms and practices?



Recommended practices to heed include:

Closing (be respectful of partners' time): Meetings and events aimed at engaging external stakeholders should be held in a location and time that is easily accessible to the stakeholder(s). Meetings should ideally follow an agenda with specific end times and adhere to those times, even if several questions remain unanswered or the primary objective has not been reached.

Follow-up (maintain transparency): Effort should be taken ahead of the meeting or engagement to determine which level and form of follow-up is appropriate.



Appendix H: Detailed Analyses for Each Recommendation

The recommendations outlined below describe steps that the University of Michigan can take to effectively engage its wide network of external stakeholders in carbon neutrality efforts. While these recommendations are intertwined, we recommend a series of prioritized steps.

Recommendation #1: Develop Organizational Capacity for External Collaboration

Our analysis of peer institutions found no “one-size-fits-all” approach to external engagement. Many peer universities included “external/public engagement” in their mission statements and sustainability planning frameworks toward achieving carbon neutrality, but approaches varied. Our organizational capacity recommendations are that U-M 1) develop both centralized and decentralized capacity, 2) utilize existing capacity where possible, 3) combine campus culture and external engagement under one heading of communication and education, and 4) seek to turn all such activity into an educational opportunity where possible.

Some peer universities (sourced from the list in Appendix C) have Offices of Sustainability or Sustainability Committees that handle external engagement on sustainability alongside existing duties to oversee program planning, metric tracking, and campus coordination. Those with particularly strong frameworks for planning and engagement highlight a “transdisciplinary approach”²⁴ and view this approach as demonstrating a “holistic co-creation of knowledge between disciplines to solve real-world problems.”²⁵ As such, U-M should create a dedicated senior level position for public engagement at each of the three U-M campuses. Our plan should also allow specific functional units (i.e., building efficiency, commuting or energy purchasing) to develop their own engagement plans for connecting with vendors and others impacted by their efforts.

The University has faculty and staff experts who routinely engage and have long-standing relationships with many stakeholders. These administrative units should be integral to the partnership and communication strategy for carbon neutrality: U-M Government Relations, U-M Business Engagement and Unit-Specific Staff, U-M Alumni Association and Unit-Specific Staff, U-M Foundation Relations, U-M Office of Sustainability, and U-M Parking and Transportation Services. Each of these entities has extensive customer management databases of contacts.

There is an overlap between this team’s purpose and that of the Campus Culture and Communication Internal Analysis Team. In some ways, the distinction between internal and external communication is blurry at best, and efforts could be redundant. We therefore recommend that future communication be highly coordinated if not merged between these functions and teams under the heading of communication and education.

The Campus Culture and Communication Internal Analysis Team recommends that engagement with the campus community be done in a fashion that turns the campus into a “living learning laboratory.”²⁶ We recommend that the alignment of carbon neutrality efforts with the University’s teaching, research, and public service mission be expanded to include engagement with the broader community of stakeholders, many of whom are critical to our emission reduction success on U-M campuses.



Community-engaged learning is already a part of the mission and philosophy in some University of Michigan units. However, academic researchers on community engagement efforts in universities “rarely articulate a coherent conceptual framework for how these initiatives will be used to support social change efforts. Nor do they consistently integrate these efforts into the reward structures of university culture to increase the sustainability of the efforts.”²⁷ Therefore, integrating carbon neutrality priorities into new and existing community-engaged learning activities may offer opportunities in enhancing student learning and gaining organizational buy-in. Our interviews confirmed that carbon neutrality priorities are cross-cutting, intersecting other important issues like resilience, equity, and emergency preparedness-- therefore, they should not contradict existing University priorities.

Special attention should be paid to engaging underrepresented communities most at-risk to climate change impacts or impacted by U-M mitigation decisions. All campuses of the University of Michigan (Ann Arbor, Dearborn, Flint, online learning communities, and future Detroit campuses) must each be engaged in carbon neutrality efforts in order for efforts to be successful (detailed engagement strategies included in Recommendation #3 and Appendix G). Our efforts could be bolstered by broader cooperation with other universities.

Specific Strategies:

- Create a senior staff position on Communication and Education that spans both internal and external constituencies. Such a position, and associated working groups, should be developed at each campus (Ann Arbor, Flint, and Dearborn) with an exchange of information and expertise among them.

- Articulate a clear framework for how community engagement efforts contribute to University goals around teaching, research, etc.

- Develop a set of public engagement criteria and associated metrics as an integrated strategy to fulfill engagement goals with centralized data tracking while paying attention to environmental justice issues surrounding mitigation strategies.

- Recognize that the COVID-19 pandemic will make in-person engagement more difficult and virtual methods will become more important.

Recommendation #2: Initiate Targeted Network Mapping and External Engagement

The general attitude toward U-M carbon neutrality among survey respondents was positive, with 72% of respondents attaching high importance to this work and 96% expressing interest in being engaged in the future. However, the stakeholders contacted for the study were not comprehensive. There was likely a self-selection bias (i.e., those with the strongest opinions were likely to respond) and the results likely favor constituents that have had a prior relationship with the University or are already engaged with sustainability issues. Furthermore, our objective was to develop a snapshot of the external constituent landscape without beginning full engagement.

Based on these limitations, for high-priority emissions reduction sectors, U-M should make a more concerted effort to identify and characterize the interests of the U-M external stakeholder community, while also identifying missing groups such as underrepresented communities and



constituents linked to the Dearborn and Flint campuses. We recommend starting with our database of key stakeholders developed through our network mapping exercise and survey. Faculty at the UM-Dearborn and UM-Flint campuses should be likewise consulted. Using a “snowball mapping” process, the University can then utilize these relationships to further broaden its network of external partners. Furthermore, internal functions, such as those mentioned under Recommendation #1, can assist in identifying and contacting key constituencies. Once developed, the landscape analysis should include the creation of a power map of constituents based on priority and type. For example, it has become clear to us through our interviews that partnerships with the local municipalities in which each campus is situated is of paramount importance.

Potential metrics to assess progress in network mapping could include the number of stakeholders contacted and level of participation in each stakeholder category (e.g., labor union, state government, NGOs). Standardized metrics will vary across stakeholder groups and activities, especially in a post-COVID-19 environment in which several important groups will not have capacity for engagement. Certain factors may lead to differences in response type and consider the main objectives to be achieved. A further discussion of AASHE STARS rating systems and public engagement metric tracking can be found in Appendix L.

Lessons from U-M Peer Universities: Strategies outlined by a multitude of schools follow similar guidelines set forth by resources from consortiums and networks. Many strategies for community engagement and forming external partnerships are elaborated upon and leveraged through research networks and knowledge sharing. Essential components in strategic approaches to community engagement often involve the city and local government organizations for support and guidance.

These approaches also rely on the institution’s ability to drive research and utilize carbon neutrality as an initiative to incorporate public engagement and learning. ‘Research labs’ that aim to address sustainability and responsible resource consumption are common practice in including community members through teaching and learning in equitable ways. These “living learning laboratories” provide places for students, faculty and the public to convene and explore and collaborate on solutions to sustainability topics and issues.²⁸

Other strategies to jumpstart external engagement and involve community members include hosting public forums and conferences, which may now be in other formats. Attendance may be composed of constituents from peer universities, local utility providers, consultants, field experts and local government officials (UC3 report).²⁹ These forums or symposiums prove to be a valuable tool for networking and knowledge sharing between institutions (UC3 report).³⁰ Panels at these events are especially useful for presenting novel ideas and approaches to modeling and constructing programs that may be scalable and transferable throughout different campuses in attendance.

Specific Strategies:

- Construct a comprehensive survey to begin the process of engagement, identify areas of interest and concern and develop an exhaustive map of the landscape of relevant constituents.



Re-establish on-going contact with constituents identified through the external collaboration team's efforts to date (e.g., stakeholder interviews and survey) and other PCCN activities, and expand the database to capture as clear a view of the landscape as possible.

Identify areas of interest and concern among stakeholder types and develop a power map of the landscape of relevant constituents (thereby identifying the level of interest and influence that stakeholders have regarding carbon neutrality). Consider on-going risk management analyses.

Consult all relevant constituents with targeted outreach; focus on engaging stakeholders who will be most impactful to meeting the carbon neutrality goals. In particular, while some constituents who provide technical services to the university may be fairly easy to identify, those from underrepresented communities in and around the university may require a more concerted and proactive effort. Inclusivity considerations should be as important as technical and commercial considerations.

Establish priorities within the stakeholder network for targeted and sequenced engagement.

Make special effort to reach out to underrepresented communities in and around the U-M campuses as Social and Environmental Justice ranked the highest topic of interest (behind External Collaboration) among survey respondents.

Recommendation #3: Tailor Carbon Neutrality Communication and Education

National opinion polls confirm that a majority of Americans (including in Michigan) support action to mitigate climate change. However, our interviews with external U-M stakeholders confirmed that the term "carbon neutrality" is not well understood or prioritized for many. Differing levels of environmental awareness and views are prevalent among communities to be engaged by the University's carbon neutrality efforts. Therefore, we recommend that any communication and outreach efforts be tailored to meet the distinct needs of various communities and should be multi-directional in nature. The process and practice of effective engagement is complex and requires careful consideration and planning. (See Appendix G for process recommendations for external engagement.)

Some stakeholders may be hesitant to engage with the University, either because they lack the time or resources, or they have been over-burdened by past engagement (e.g., communities suffering environmental injustices such as Flint, non-profits that frequently support student projects). Similarly, some stakeholders possess a deep knowledge of climate change and the methods for addressing it, while others may have limited or no knowledge. Outreach and communication efforts should recognize these obstacles and develop incentives, protocols and processes that meet each community's particular needs.

Carbon neutrality can be made relevant by making connections between the priorities of the stakeholder in question, and by framing carbon neutrality plans in the context of alleviating existing problems or challenges for the stakeholder. In addition, there is a perception that universities in general may engage the community peripherally to "rubber stamp" university plans, perpetuating community members' mistrust of future outreach efforts by universities.



Therefore, the importance of developing a clear objective for outreach and conceptualizing the unique value-add for both the stakeholder and the University must be considered.

These considerations also apply to the three U-M campuses. Our interviews confirmed the presence of stark resource capacity differentials between each U-M campus, including staffing, financial resources and structural incentives for faculty or student involvement in these topics. Relevant differences in local communities should be understood by faculty, staff and students from those campuses. When engaging and working alongside the Dearborn and Flint campuses, it is imperative that PCCN members keep in mind the issue of tri-campus inequity. Dearborn and Flint campuses disproportionately represent lower-income students, Michigan-resident students of color, and first-generation students, and there is an ongoing effort called the One University platform pushing for more equitable distribution of funding and resources. This coalition includes faculty, students, and staff across the three campuses; speaking with representatives of One University may be helpful in navigating their respective campuses.

Sustainability and climate issues may not be the issue of top concern for Dearborn and especially Flint, as they are dealing with other, more pressing day-to-day issues. When faculty and students are pressed for time and are not available for as much on-campus engagement related to carbon neutrality as on the Ann Arbor campus, sustainability topics tend to be presented as an economic luxury and approached with the question of whether any sustainable initiative costs money.

As the City of Ann Arbor propels itself forward with A2Zero, the City of Dearborn finds itself with other pressing issues. In our interview, David Norwood, the sustainability coordinator for the City of Dearborn, brought up his method of pitching carbon neutrality to the city: public health and resilience. Many arguments for the reduction of GHGs from Dearborn's major emitters (e.g., Ford's F-150 plant, AK Steel's blast furnace, or Consumers Energy's plant) are viewed on the merit that the effects would have on general health and welfare. In addition, he noted that flooding continues to be a concern for the campus and raised the question of whether carbon neutrality efforts would help to resolve that issue. Consultations with Dearborn faculty during an on-site visit suggested that this framing has been used and is successful in Dearborn in both city and university initiatives and would be appropriate for Flint as well.

Sustainability in Flint revolves around completely different issues, such as water quality and health, food security, economic development, city beautification, and tangible projects that community members can engage with on a more substantial level. PCCN can engage with community-identified activities (best to work through existing programs), show support for community projects, and learn together about carbon neutrality through existing university connections within the community. Due to the COVID-19 restrictions, our plans to consult with Flint stakeholders were diminished, although we recommend that sustained efforts be taken in the future to consult with Flint regarding their priorities.

Utilizing community networks is especially important in Flint. Community networks will be especially useful in Flint (as opposed to networks in city or county government), given the sensitivities regarding the water crisis. All efforts to engage Flint on carbon neutrality should consider the environmental justice history and the adage of stakeholders being "underserved but over studied." Any efforts should aim to ensure that both the University and the community



partner both gain something tangible from the interaction and involve community in the decision-making process.

In addition to budgetary differences among the three campuses, it is important to understand the context and history of the relationship between the university and its stakeholders. Peer universities with similar campus structures and sizes can give good indications of how each campus should move forward, but members of the Flint and Dearborn communities should be included in the process.

Strategies exemplified by peer institutions feature close collaboration, coordination, and resource sharing with the cities and communities in which they exist. Examples include public town hall forums or conferences; community service projects that provide learning or research opportunities; partnerships with third-party constituents that promote sustainability initiatives; newsletters and social media campaigns that share knowledge; and “living-learning labs” that provide places for students, faculty, and the public to convene, explore, and collaborate on solutions to sustainability topics and issues. Metrics would follow for such activities, tracking the number of outreach efforts undertaken, the number of constituents engaged, the types of communities those constituencies represent, and the effectiveness or quality of the engagement activity.

Specific Strategies:

Acknowledge differences in baseline sustainability/carbon neutrality literacy and meet stakeholders where they are.

Foster an environment of cultural humility through engaging with communities through equitable multi-directional partnerships and shared decision-making.

Create platforms and engagement tools that allow for social inclusivity and environmental equity.

- Develop tailored communication and education programs for reaching the various stakeholder groups that are relevant to the U-M carbon neutrality goals.
- Utilize the “One University” platform or other existing mechanisms to open communication channels with each campus regarding carbon neutrality initiatives.
- Create flexible engagement strategies with the input of underrepresented communities in and around the U-M campuses managed by the senior representative in recommendation #1; attend to social and environmental justice implications of mitigation strategies, as survey respondents ranked this factor highly.

Recommendation #4: Expand Opportunities for External Stakeholder Input

Multi-directional feedback from external stakeholders allows for metric-tracking, negotiation, and input from diverse community organizations, recognizing the differentials in power, influence, knowledge and access to decision-making. Feedback channels play a crucial role in providing a platform for public and community voices; the PCCN has provided public forums, updates and reports, media information, and established public forums have provided public comment to university decision-makers. In addition, the public engagement web page on the U-M Planet Blue website functions as a central platform for community ideas for the on-campus community.



However, the platform may not be widely recognized or accessed by the full community as the hub for all carbon neutrality-related matters, and technical or other barriers may exist for impacted communities to participate in this fashion.

We recommend the University create and adapt feedback channels that invite input from the external community in an inclusive manner. While we have highlighted environmental justice considerations in each of the prior three recommendations, this fourth recommendation brings such concerns to the forefront. While the University has a set structure for interactions and solicitations from vendors and service providers, other stakeholders currently provide feedback on U-M activities through surveys, town halls, public comment at Regents meetings, and other discussions with the University. We recommend that special consideration be devoted to engage communities that may lack the resources, knowledge, or familiarity to communicate with the U-M campuses. Open feedback channels and clear/reliable communication with external stakeholders will ensure that individuals who are unable to participate in these forms can still weigh in. Ensuring that feedback channels can be easily accessed by all stakeholders is not just best practice from an equity perspective; it can also save the University time and money spent managing conflicts that may occur from concerns over lack of representation.

This recommendation creates some resource challenges of its own, but gate-keeping should be moderated. U-M personnel have identified that they have been at times overwhelmed with external inquiries regarding sustainability matters. We recommend that specific processes be put in place to archive, prioritize, and monitor these requests and comments to ensure that the University is capitalizing on all potentially beneficial partnerships.

Lessons from peer institutions and other entities (e.g., UK health system) have shown the value in being open to considerations and evidence-based ideas from “solution holders” as well as underrepresented groups. By allowing for engagement initiated by others, some peer universities have uncovered new pathways for resource discovery, and have also been able to identify knowledge gaps in addressing stakeholder concerns. Such passive engagement has been most helpful and welcomed when universities are looking into new options for engagement activities. Key metrics for such engagement could include stakeholder relationship strength, duration of involvement in programs, number of participants in programs, satisfaction rates, production measures, amount of resources applied etc. Detailed interview notes from Arizona State University on passive engagement and partnership formation can be found in Appendix M (Peer University Interview Notes).

Specific Strategies:

- Build technical and organizational capacity for passive engagement to accept and respond to solution-holding constituencies not previously identified by the University
- Examine existing U-M feedback channels and adapt them as needed to encourage all stakeholders to appropriately weigh-in.

- Widely advertise and communicate online feedback channels for external input, while carefully managing expectations to avoid over-promising or diluting focus.



APPENDIX I: Project Cost Projections

In our review of peer schools (see Appendix L), we found limited information. Among those universities that possessed some data, we found that the costs of external engagement are as wide ranging as the external engagement activities, with differences in the extent to which each values community participation in sustainability planning. Some of the costs are included in other budget categories and not broken out specifically. Many peer institutions support sustainability initiatives to reach carbon neutrality through grant funding programs. Therefore, we have found that estimated costs for external collaboration were difficult to quantify. Even more elusive is any effort to quantify the financial benefits of such activity, though we found one school that tried, Cornell. Table I-1 (also shown as Table L-1) shows an outline of Cornell University's Impact of Engagement Investments that are broken-down by the rough annual implementation cost and the benefits such programs would provide.³¹

Table I-1. Cornell University's Impact of Engagement Investments³²

Table 4: Impact of Engagement Investments

Solution	Annual Implementation Cost	Benefits
Think Big, Live Green	Current resources + \$50,000 additional budget	\$500,000 (Saving), 1% energy reduction per year
Campus Climate Literacy	\$100,000 + 1 new FTE staff	Engaged campus, maintain baseline

A key issue for external collaboration is whether to develop in-house facilitation expertise or to contract out for the services. Several in-house academic units provide this type of expertise (i.e., School of Public Health, Ross School of Business). Once the leadership team for carbon neutrality is established, the leadership would need to make decisions about this important topic.

Tables I-2 and I-3 below outline likely direct cost per unit of expert facilitation and creative; this unit price range for specific services needs to be applied to the size and scope of the activities. The unit cost range is an estimate, based on publicly available information and may not be accurate for some providers. One of the key decisions regarding staffing is whether to contract out or develop in-house U-M expertise. Once the initial decision to develop capacity internally or externally is made, there are ways to adjust cost by potentially economizing or reprioritizing areas. U-M indirect costs should be applied. U-M Finance can assist with costing and advising about the staffing structure. Finally, the importance of replicating and establishing the staffing capacity in Flint and Dearborn cannot be over-emphasized. As discussed in the body of this report, resources must be allocated equally to the Flint and Dearborn campuses to ensure that all three U-M campuses move toward carbon neutrality jointly.



Table I-2. Staffing Unit Costs for Specific Engagement Activities

Role	Estimated direct (unloaded) cost (\$/hour)	Notes
Expert Facilitators	\$100–\$350	Time spent on facilitation should cover work done prior to, during, and after the event
Privately-owned consulting groups	\$75–\$200	
Media point-person	\$24–\$30	Estimate based on 2019 U-M salary for a media consultant ³³
Communications specialist	\$25–\$33	Based on U-M 2019 rates
Project coordinator	\$21–\$25	Based on U-M 2019 rates
Student research assistants	\$15–\$17	Based on U-M 2020 rates

Table I-3. Costs for Related Engagement Activities

Type of resource/service	Internal (UM) Provider	Estimated cost (\$)	Notes
Room/location	UM Special Events Venues	\$150–\$300 (for about 100 people)	
Catering	UM Conference Event Services	\$8–\$30 per person	Catering is usually charged by person, price depends on the type of meal; university guidelines provide limits
Commuting	TheRide	\$0–\$10/person	University of Michigan Blue Buses can be chartered for transportation

Some financial information that is specific to the University of Michigan relates to the costs of public events that the PCCN has hosted, but does not include staff time, faculty time, facility utilization or other indirect costs. Row 1 in Table I-4 presents catering costs for larger events of 100–150 people in the Michigan League, Michigan Union and Rackham Graduate School at a cost of \$1,000. These U-M facilities have published rental fees and contracts well in advance are required. We estimate for smaller events at central venues (e.g., Michigan Union room reservations and Michigan catering services). The third row applies to many of the IAT town halls that took place in U-M facilities (i.e., rooms with no reservation fee such as the Dana Building) and catered refreshments from outside caterers.



Table I-4. Costs for PCCN Events at the University of Michigan

Number of People	Location, Catering	Average Cost
100–150 people	Michigan Unions, Michigan Catering	\$1,000.00
30–40 people	Michigan Unions, Michigan Catering	\$500.00
30–40 people	Free room, outside catering	\$200.00



APPENDIX J: Recommendation Summary Matrix

Brief Description	Progress Metrics	Financial Impacts	Organizational Hurdles	Equity Considerations	Key Unknowns / Gaps	Key Catalyzing Actions
Create Senior Staff Positions	The number of staff FTEs, carbon neutrality engagement in reward structures of existing campus functions.	FTE salary and benefits and administrative support	Senior management buy-in for added personnel, gaining buy-in from existing U-M functions that may be at capacity already.	A dedicated and visible representative can facilitate greater engagement, particularly with underrepresented communities.	Financial resources available, particularly in the wake of the COVID-19 crisis.	Use other campus efforts as models for carbon neutrality efforts, such as the U-M Office of Diversity, Equity and Inclusion, or the Office of Academic Innovation.
Conduct a Network Map	The number of stakeholders engaged in each stakeholder category, the level of participation.	Survey development and interview time	Staff resource availability	Special attention should be devoted to targeting underrepresented communities.	Survey methods may not be suitable to certain constituencies. Other methods (such as direct outreach) may be necessary.	Utilize snowballing techniques with both survey respondents and units that possess prior relationships with the U-M constituency network.
Develop Tailored Outreach Programs	The number of outreach efforts undertaken, the number of constituents engaged, the types of communities those constituencies	Communication campaigns and branded media	Staff resource availability	Specific communication and outreach programs can address the needs of particular	The needs of some communities may remain unknown until engagement	Utilize existing U-M departments with external outreach capacity or prior networks and



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	represent, the effectiveness or quality of the engagement activity.			underrepresented communities.	it has begun.	relationships.
Build Capacity for Passive Engagement	Stakeholder relationship strength, duration of involvement in programs, number of participants in programs, satisfaction rates, production measures, amount of resources applied	Web page development, targeted outreach	Staff resource availability, willingness of external constituents to participate	The allowance for "passive engagement" strategies could be of most importance for outreach to underrepresented communities.	"Passive engagement" may not work, some may use this channel but the constituencies desired may avoid it.	Combine "passive engagement" with active engagement activities to create greater awareness and comfort with such channels among targeted communities.



APPENDIX K: Team Biographies

Faculty Co-Leads

Andrew Hoffman is the Holcim (US) Professor of Sustainable Enterprise at the University of Michigan, a position that holds joint appointments in the Stephen M. Ross School of Business and the School for Environment and Sustainability.

Trish Koman is a research investigator at the University of Michigan School of Public Health Environmental Health Sciences department and the faculty research program manager at the College of Engineering Multidisciplinary Design. She leads community-engaged research to create healthier communities.

Team Members

Gopichand Alla is a master's student in Industrial and Systems Engineering from INDIA at the University of Michigan–Dearborn. Before attending graduate school, Gopichand has led a team of engineers at Techmahindra in successful research and development of surveillance systems for a defense client. His research interests include researching advanced technologies, how to overcome environmental issues, and overall management.

Amelia Brinkerhoff is a dual-degree MBA & MS (Master's in Environmental Management) at the University of Michigan. Before attending graduate school, Amelia led Corporate Social Responsibility projects at Cirque du Soleil Entertainment Group and developed McGill University's 2020 Sustainability Strategy & 2040 Carbon Neutrality Plan. She has a BSc in Environmental Science from McGill University.

Zoie Chang is an undergraduate senior double-majoring in International Studies and Sociology, with a minor in Environment Studies, at the University of Michigan. She is interested in researching sustainability pathways and examining international security issues from an environmental standpoint.

Wenjie Liu is a master's student in the Gerald R. Ford School of Public Policy and sustainability certificate program in SEAS at the University of Michigan. Before graduate school, she worked as a communications officer for Greenpeace East Asia and as a journalist for China Water Resources News. She earned her BA and MA in Journalism from Communications University of China.

Erin O'Shaughnessy is an undergraduate senior pursuing a BA in the Program in the Environment with a Minor in Business from the Ross School of Business. She is interested in learning about sustainability as it relates to business and exploring how market solutions may address growing environmental issues.

Mara Page is a doctoral student and researcher studying stable isotope geochemistry and the history of Earth's climate in the Department of Earth and Environmental Sciences at the University of Michigan.



Joseph Samulski is an undergraduate student at the University of Michigan–Dearborn studying computer engineering. He is interested in working toward new and better ways of collecting, storing, and using renewable energies.

Anya Shapiro is a MBA & MS graduate student at the University of Michigan studying sustainability management. Before graduate school, she led collaborative environmental dialogues and managed multi-stakeholder coalitions as an Associate at Meridian Institute while helping groups come to consensus on complex sustainability issues. She earned her BA with honors in Political Science and Environmental Studies from Macalester College in 2016.



APPENDIX L: Lessons from Peer University Programs

Our research on Peer University Programs showed no clear “one-size-fits-all” approach to external engagement. Each University comes with its own unique set of parameters and contextual variables, which makes the task of compiling a standardized set of strategies, approaches and expectations throughout University systems difficult. Many universities have made pledges toward climate action and carbon neutrality but these commitments vary in terms of descriptions and priorities, mission and values, goals, and timeline. By evaluating Peer Universities and consortiums of sustainability networks (such as Second Nature, the Association for the Advancement of Sustainability in Higher Education (AASHE), and others) our research has identified leaders in the public engagement space, and has allowed us to analyze trends on the organizational structure, purpose, strategies and goals of various external engagement plans with regard to campus sustainability and carbon neutrality initiatives.

I. Peer Institution Landscape and Networks

We first evaluated the University of Michigan official list of Peer Schools (*Appendix A*). This list was then broken down by mapping various conference and sustainability networks (i.e., Big Ten and Friends, Ivy Plus Consortium, EPA Green Power Challenge, etc.), and then by consulting accredited tracking databases such as Second Nature’s UC3 (University Climate Change Coalition; previously the ACUPCC) and AASHE STARS to study the landscape of higher education carbon neutrality commitments. Our criteria for evaluation were based on key characteristics shared with the University of Michigan, in order to more appropriately compare peer institutions and implementation feasibility. These characteristics included size of student body, economic impact on local municipalities, square footage of campus and number of buildings, institution type, presence of a health system, endowment, cultural makeup of student body as well as the external community, and various environmental metrics like MTCO₂ emitted, and BTUs of energy consumption.

These peer institution thematic networks and consortiums are primarily helpful for metric tracking, assessment, rating and resources for sustainability program development. Many of these organizations additionally provide platforms for networking and information sharing. Given the size and diversity of University of Michigan facilities and campuses, we have found that these platforms may offer little direct or tailored guidance for our purposes. These databases may be more useful in terms of comparing GHG and MCO₂E reductions rather than stakeholder engagement strategies and community impact programs. Professional organizations such as American Society of Adaptation Professionals, the American Public Health Association Climate and Equity Center and city Sustainability Directors networks may have relevant engagement expertise. Additionally, these organizations organize frameworks and assessments across categories helpful in driving research and evaluation of institutional opportunities for local, regional and global impact. (See Figure L-1 for AASHE strategic goals and metrics for public engagement.)



Figure L-1. AASHE Strategic Goals³⁴

Empower members to be transformational leaders for sustainability by providing indispensable resources and outstanding professional development <ul style="list-style-type: none"> • Develop new and improve existing resources • Strengthen the annual conference & expo to be the marquee forum for all stakeholders within the higher education sustainability community • Offer high-value professional development programs • Expand opportunities for networking and building community 	Catalyze sustainability action and innovation through STARS <ul style="list-style-type: none"> • Simplify reporting requirements and reduce barriers to participation in STARS • Strengthen the value of a STARS rating • Improve the quality of STARS data • Increase net income for STARS
Accelerate higher education's contributions to global sustainability through increased outreach, communications and advocacy <ul style="list-style-type: none"> • Advocate for policies that advance sustainability in higher education • Champion the value of sustainability in higher education and increase support for sustainability in academics, engagement, operations, and administration • Identify new, high impact strategies to best advance our mission 	Enhance organizational capacity & resilience <ul style="list-style-type: none"> • Grow the AASHE member community • Optimize internal efficiency and improve customer experience • Strengthen organizational leadership and governance • Create a culture that supports employee well-being and motivation • Ensure AASHE's financial health and stability

Based on these external collaboration methods, we considered a selection of schools across factors that align with the University of Michigan's external stakeholder landscape. These comparison schools were chosen based on factors most relevant and applicable for the University of Michigan's exploration of carbon neutrality across all three campuses. By taking a holistic approach and first including a wide array of comparative schools, we were able to determine the best alignment fits for the University's capabilities and responsibilities, as a leading national academic research institution.

II. Best Practices and Trends

Similar to the wide array and diversity of University carbon neutrality approaches, external engagement approaches vary widely across campuses. After the analysis of numerous peer institution climate action commitments, plans and sustainability reports, we have found a diverse set of organizational structures, methods, strategies and partnership approaches that are dependent upon the unique school's background and community makeup in which they exist. There are, however, a few commonalities that emerge in our analysis of similar schools' approaches to engaging and collaborating with stakeholders on carbon neutrality initiatives. These trends are displayed through efforts concerning continued leadership in education and research, networking and knowledge sharing, hosting public forums, and utilizing partnerships and resources to engage affected local and regional community members. When assessing



these components, there appears to be a parallel with the rating criteria of national consortiums, like the UC3 system and AASHE STARS. As outlined in the above section, each system awards points to institutions for achieving certain objectives, thresholds or strategies to promote sustainability initiatives. These points then amass to a certain certification that an institution is given (e.g., Platinum or Gold). UC3 outlines three ways in which Universities can engage in their communities as exemplified through 1) knowledge generation, 2) acting as a community anchor, and 3) acting as a collaborative convener.³⁵ Accordingly, UC3 provides resources to support Universities efforts in serving these purposes through institutional leadership, cross sector convenings, leveraging collaborative networks, conducting demand driven research, and finding solutions-oriented partnerships. Similarly, AASHE provides guiding principles for public engagement for Universities to follow in a mission statement. The metrics that AASHE outlines for public engagement are as follows: *community partnerships, inter-campus collaboration, continuing education, community service, participation in public policy and trademark licensing*.³⁶

Regarding specific metrics for external engagement strategies, there is no standard set of key performance indicators. Across the various reports studied and interviews conducted, no institution seems to succeed outright with their measurement tactics; rather, engagement is part of a fuller package of steps. A gap exists in the literature: how might universities measure external engagement to gauge whether or not methods are successful? Corey Hawkey, the Assistant Director of Sustainability Practices at Arizona State University, a leading sustainability innovator, spoke to the gap in research and methodology, “We [ASU] haven’t fully mastered whether our engagement is successful yet, and to be honest I don’t really know who’s done this well.”³⁷ He also touched on potential indicators of stakeholder engagement program success. These indicators depend on the outreach process and objectives, and could include stakeholder relationship strength, duration of involvement in programs, number of participants in programs, satisfaction rates, production measures, and amount of resources applied.³⁸

Clear parallels exist between an institution’s carbon neutrality plans and network metrics and key performance indicators. Through phone interviews conducted with several University sustainability coordinators at peer institutions, all claimed to consider these systems when drafting their community engagement goals and strategies. Some Universities, like Penn State, have also considered the United Nations Sustainable Development Goals (SDGs) to focus their efforts.³⁹ But schools differ greatly in how they construct their engagement programs, due to both internal structure or organization as well as external factors that may affect implementation.



III. Organizational Structure

Large schools with institutional similarities to the University of Michigan can be models for our external collaboration. Many schools have Offices of Sustainability or Sustainability Committees that oversee program planning, metric tracking and campus coordination. The UC TomKat Report outlines key internal planning findings and recommendations from their work in analyzing the UC system.⁴⁰ The report outlines a “Collaboratory Concept” wherein the opportunities for engagement are a cross-cutting relationship between campus energy solutions, campus sustainability initiatives and applied research, implementation and education. (See Figure L-2 for UC Collaboratory System and L-3 for Key Findings.) The report outlines the benefits of the collaboratory approach to be: 1) Interdisciplinary collaboration, 2) Cross-sectional collaboration, 3) Transferable skills for graduates, 4) Support for diversity, and 5) Opportunities for additional funding.⁴¹

Figure L-2. “Collaboratory Concept” for Energy Solutions and Broader Sustainability on Campus and Across the University⁴²

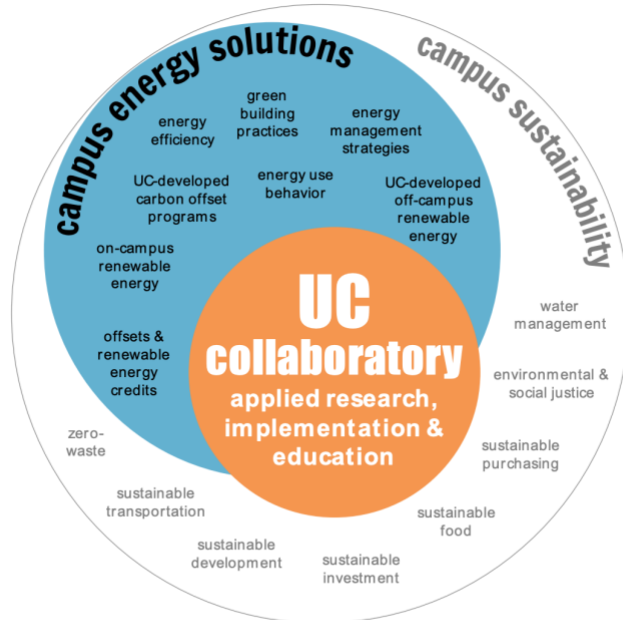


Figure 26. Relationship of the proposed collaboratory to energy solutions and broader sustainability themes on campuses and across the university.



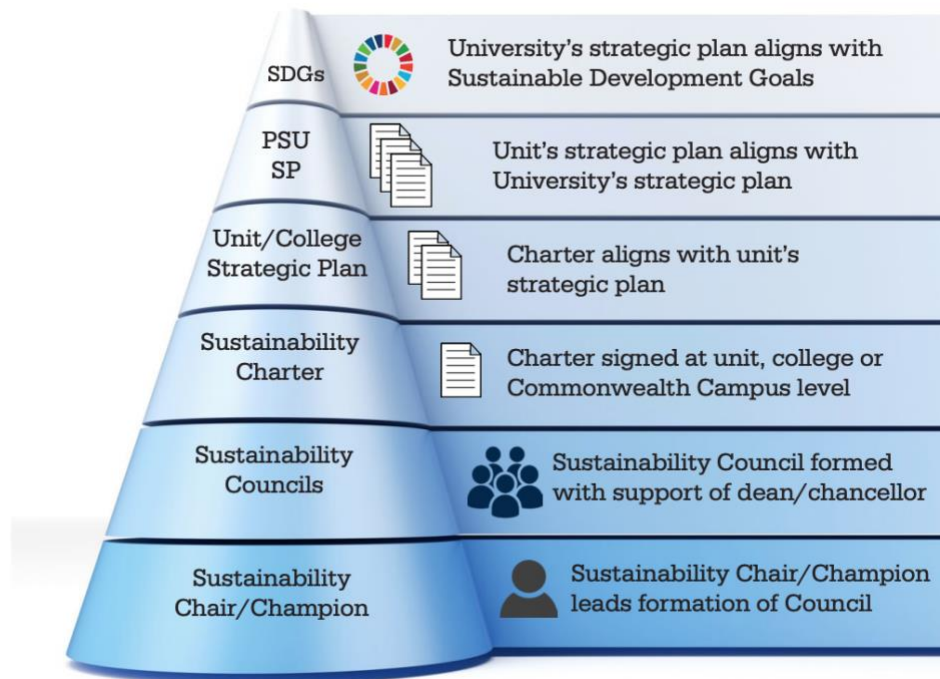
Figure L-3. Key Findings, Opportunities, and Key Recommendations from the Executive Summary of the Strategic Communication to Achieve Carbon Neutrality within the University of California

Key Findings	Opportunities	Key Recommendations
<ol style="list-style-type: none">1. Potential champions of the CNI need concrete and actionable information about measures to achieve carbon neutrality, including the pros and cons of each.2. Administrative leaders are expected to take the first steps, and to facilitate but not mandate. The campus communities want to have a voice.3. Significant tradeoffs such as inefficiencies, inconveniences, and diversion of resources, that may compromise teaching, research, or patient care are viewed as undesirable.4. Local solutions are highly valued, including on-campus energy efficiency and renewables. Market-based mechanisms such as offsets are viewed with skepticism, especially if they divert resources from on-campus measures.5. Decision making needs to weigh organizational, psychological, and sociocultural considerations together with economic and technical factors to develop carbon solutions that foster engagement.	<ol style="list-style-type: none">1. Students, faculty and staff who participated in our research were generally supportive of sustainability initiatives, and thought UC should exert leadership. Even though they did not feel they knew enough about the initiative or what next steps to take, they want to help make changes.2. Many staff are already invested in achieving the CNI goal and only need stronger engagement on the part of campus leaders and the community, additional administrative support, or resources to help them advance toward the goal.3. Linking carbon neutrality to themes such as social justice, health, responsibility, or leadership can be effective in tapping into what matters most to audiences on some campuses.4. Most everyone we surveyed wanted more data about energy use and placed a high value on transparency of information and progress toward goals. Providing such information could be a relatively straightforward communication adjustment.	<ol style="list-style-type: none">1. Create a campus-based, system-wide collaboratory to provide applied-research and education opportunities that align the CNI with the university mission. Actively engage faculty, staff and students so as to motivate broader involvement in carbon reduction solutions.2. Develop information-rich communication resources that give CNI champions a big picture view of potential solutions and empower them to share ideas and engage others in creating solutions.

Pennsylvania State University, Stanford University, and Cornell University are of particular interest due to their similarity to the University of Michigan, as well as their high AASHE rankings on Campus Coordination and Planning. Penn State University stresses the importance of a “transdisciplinary approach” and defines it as a “holistic co-creation of knowledge between disciplines to solve real-world problems.”⁴³ Sustainability goals are anchored around the Sustainable Development Goals and progress is carried out through the creation of Sustainability Councils and the “3C’s” (Charter, Council, Chair). Councils are formed at the college, campus or department level and are responsive and flexible to the unique challenges and opportunities of each particular council. The Councils are supported by the dean or chancellor of each school and are led by an individual chair that is responsible for creating a charter that outlines the goals, strategies and timeline for achieving sustainability goals. (See Figure L-4 for a Flowchart of Penn State University’s 3C’s Organizational Approach.)



Figure L-4. Flow Chart of the Penn State University Sustainability Councils and 3C's Organizational Approach⁴⁴



In terms of external collaboration at Penn State, the two councils that oversee general operations and coordination are the Sustainable Communities Collaborative (SCC) and the Sustainable Operations Committee (SOC). The SCC is housed under the Sustainability Institute and promotes partnerships between Penn State and local communities to address sustainability issues and challenges through innovative, integrated projects.⁴⁵ The Finance and Business SOC promotes and supports strategic engagement of sustainability as a core business principle among University operations and development. The council brings together diverse perspectives and expertise from an executive board composed of faculty from 13 departments at Penn State, which helps to facilitate partnerships and engagement opportunities for students and faculty throughout campus.⁴⁶

Stanford University follows a similar approach with regard to anchoring their carbon neutrality goals around the Sustainable Development Goals, and creating a mission for the campus to be used as a working laboratory to address society's most pressing issues.⁴⁷ The organizational structure and capabilities for implementation of engagement projects are housed under the Sustainability and SEM Business Services Group (SSBS). Stanford University currently ranks first as a research institution in AASHE out of 940+ participants with Platinum status.⁴⁸ Through this heightened focus on planning and governance within the University, Stanford has set goals to be 80% carbon free by 2025 and has also improved its business systems group through a strategic evaluation of utility data management points.⁴⁹



Cornell University⁵⁰ also ranks highly in AASHE's Coordination and Planning section.⁵¹ (See Figure L-5 for an overview of Cornell's Governance Structure.)

Figure L-5. Cornell University Governance Structure for Sustainability Planning⁵²

SUSTAINABLE CORNELL COUNCIL GOVERNANCE STRUCTURE



LEADERSHIP TEAM

Direct and coordinate Cornell's role as an international leader in addressing climate change and sustainability, using our campus as a living laboratory

STEERING COMMITTEES

Identify topical priorities and develop work plans to advance progress

Working Groups

Temporary, charged as needed to carry out tasks, research, and projects

CARBON NEUTRAL CAMPUS

Advance campus carbon neutrality through implementation of the Climate Action Plan

WORKING GROUP

CAMPUS OPERATIONS

Advance initiatives for a model sustainable campus that support climate resilience and human and planetary health

WORKING GROUP

EDUCATION & ENGAGEMENT

Cultivate literacy and a culture of sustainability responsibility that catalyzes participation across the campus community

WORKING GROUP

IV. Strategies

Many successful peer university strategies for community engagement and external partnerships leverage research networks and knowledge sharing, involving the city and local government organizations for support and guidance.

These approaches rely on the university's ability to drive research and utilize carbon neutrality as a "living-learning lab" to incorporate public engagement and learning. Research labs that address sustainability and responsible resource consumption commonly also engage community members and provide junctures for students, faculty and the public to convene and explore and collaborate on solutions to sustainability topics and issues.⁵³

Other strategies widely used before the pandemic include hosting public forums and conferences. Attendance may be composed of constituents from peer universities, local utility providers, consultants, field experts and local government officials.⁵⁴ These forums or symposiums prove to be a valuable tool for networking and knowledge sharing between institutions.⁵⁵ Panels at these events are especially useful for presenting novel ideas and approaches to modeling and constructing programs that may be scalable and transferable throughout different campuses in attendance (see Appendix M).

A key decision for the University of Michigan will be to develop in-house expertise or to contract out (or invest in one unit) for the expertise. We found evidence of success with either pathway.



For example, many institutions leverage their own internal resources to reduce carbon emissions and communicate carbon neutrality initiatives and goals. Peer institutions create networks of constituents and concerned stakeholder groups and rely on existing internal groups and organizations (e.g., student clubs and academic programs) already addressing sustainability issues. Examples include Yale University's Urban Research Institute, Arizona State University's Phoenix Urban Research Lab and Sustainable Cities Network, Cornell University's Think Big Live Green campaign among others (see Appendix M).

On the other hand, the University of Maryland contracts engagement and projects to their Environmental Finance Center.⁵⁶ The EFC works in close collaboration with the University to draft and execute program initiatives within the community but is not associated under direct University guidance. The EFC is focused on direct community engagement, policy analysis and decision support tools, communications and outreach, and experiential learning and leadership development.⁵⁷ Northwestern University also contracts out part of their metric tracking with help from Sightlines consulting group that assisted in the development of "SIMAP," a tracking system developed through The University of New Hampshire.⁵⁸

With regard to partnerships with local government, Colorado State University's ClimateWise program is a particularly noteworthy. Colorado State is one of 5 schools that have received Platinum status from AASHE STARS ratings and is ranked #1 in Public Engagement among institutions participating in STARS program. The ClimateWise program brings together the University, the City of Ft. Collins and businesses in the area to align goals toward carbon reduction targets. The partnership provided a link between the University and the City in terms of representation in the Climate Action Plan process and drafting the Road to 2020 Framework. The University supports the missions of individual businesses by providing resources, materials and financial support. Stacey Baugman, ClimateWise liaison for the University, elaborated on this relationship and the value it brings to CSU specifically, "I have always felt it is an important community partnership for CSU. This is a great program for us to stand together with other businesses in Fort Collins, and work together to reduce GHG emissions and environmental impacts, helping create great places to work."⁵⁹ More detail about the ClimateWise program at CSU can be found in the individual school AASHE report and official ClimateWise website.⁶⁰

V. Budgetary Aspects

Due to the wide range of external engagement activities, the costs may also widely vary and are highly dependent on the extent to which the University values community participation in sustainability planning. Many schools support sustainability initiatives that help to reach carbon neutrality through grant funding programs. For example, The UC System encourages students to explore projects that support carbon neutrality through the Bonnie Reiss Carbon Neutrality Student Fellowship Program. Students may receive grant funding for project proposals that are aimed at decreasing the system's carbon footprint.⁶¹ Similarly, Penn State University provides sources of grant funding through the Reinvention Institute, a segment of the Dr. John Roe Fund for a Just and Sustainable Future which was founded in 2019 and jointly managed by Penn State Outreach and the PSU Sustainability Institute.⁶²

Other schools acquire funding for sustainability related engagement projects from a variety of sources. Often, these sources of funding are based on leveraging existing or new partnerships.



Some of these sources may include funding from philanthropic organizations or donations to the school, partnerships with the municipalities utilizing dollars from city budget, insurance claims, or academic services that provide resources and learning opportunities.⁶³ Carbon neutrality engagement activities are often prioritized both by their ability to generate revenue and be mutually beneficial to all parties involved. Therefore, in order to efficiently allocate budget dollars, these questions should be considered before investing in new projects or partnerships. An initial investment in providing the internal resources for external purposes is necessary in many cases as well. Table L-1 (also shown as Table I-1) shows an outline of Cornell University’s Impact of Engagement Investments that are broken-down by the rough annual implementation cost and the benefits such programs would provide.⁶⁴

Table L-6. Cornell University’s Impact of Engagement Investments⁶⁵

Table 4: Impact of Engagement Investments		
Solution	Annual Implementation Cost	Benefits
Think Big, Live Green	Current resources + \$50,000 additional budget	\$500,000 (Saving), 1% energy reduction per year
Campus Climate Literacy	\$100,000 + 1 new FTE staff	Engaged campus, maintain baseline



APPENDIX M: Peer University Interview Notes

Interview Notes:

Yale University

Director of the Office of Sustainability: Ginger Chapman

Call 3/11/2020

Q: Can you elaborate a bit on the proposed timeline and progress of the Sustainability Plan for 20205?

A: Timeline:

2016 consensus of sustainability plan be proposed at Yale

2050 State of Connecticut going carbon neutral- similar timeline for Yale

Last fall (2019) assembled a “task force” within the university (similar to structure and process of PCCN)

Aggressive carbon neutrality efforts due to the urgency of the situation at hand (especially after the IPCC report)

Q: What types of sustainability initiatives is the campus participating in? Especially with regard to external stakeholder groups?

A: On-campus

Building detailed model → need to account for campus growth

Lots of work needed to lead to on-campus reduction of emissions

Goal: 80% emissions reduction by 2050



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First focus on scopes 1 and 2 emissions:

Emphasis on existing buildings: How do we make updates and increase efficiencies?

Need to also consider resilience measures (Need to avoid blackouts, power outages, temperature dropping etc.) How do we deal with these?

Focus on new buildings

Change in campus community behavior: that is, scheduling, growing etc.

Need to educate community on sustainability initiatives and environmentally conscious behaviors

Scope 3 emissions:

These are harder to understand → try to set goals; this is a bigger piece of the puzzle

How do we tackle these before 2050? What steps should we take toward progress on that goal in the meantime?

2050 is still a long time away; change takes time, we need everyone to start work now and do it quickly

Need to consider other ways of reaching carbon neutrality: Offsets (but additionality issues etc.) lots of factors

Urgency to address these issues is pressing

Academic Research

Big part of this work is related to responding to the climate crisis

Q: What types of connections does the university leverage to reach these aggressive goals and targets off campus?

A: City of New Haven connections

Interesting/difficult relationship with the city

Feeling as Yale is very privileged and the rest of the community has other issues



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Yale University is on non-taxable land; so, missing some revenue there for city

Work together with the city on sustainability initiatives

-New Haven is a poorer city, but grateful for the generous alumni base that Yale provides for resources, donations, city positions etc.

Q: What types of strategies has Yale utilized to engage with the community?

A:

Still in beginning stages of the resiliency plan with state as well: GC3 (Governor's Council on Climate Change) strategies with state of Connecticut

Ex: Met with city on transportation (Bike Share) program

Required collaboration with city/state officials and campus groups

Urban Research Institute (URI) often connects with the city; has great contacts

Ex: URI Installment project; incarcerated people helping to plant trees in New Haven community

Ex: Yale Community Carbon Fund

Interest/collaboration from green sustainability groups in New Haven

Ex: Biodiversity plan → storm water collection with city

Grant with city to build ~200 bioswales due to the new reform in the state for cities to reduce their impervious surfaces

Utilize URI resources and employ intercity students, incarcerated individuals

Interview Notes with Mark Stewart (Sustainability Manager)

and Sally DeLeon (Senior Project Manager)

University of Maryland



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Call 3/11/2020

Q: Can you touch a bit more on how the Climate Action Plan 2.0 built upon the original Climate Action Plan of 2007?

A: Sally and Mark created 2.0 to make the version easier for readers to understand and digest; stuck to the most basic points and goals to achieve

History of planning:

2007 charter for University of Maryland to join APCUCC

Primary objectives: cutting CO2 emissions 50% by 2025; carbon neutral by 2050

Students pushed for more aggressive plan as a result of the 2018 IPCU report on climate change (wanted carbon neutrality by 2025 rather than by 2050)

Need to think about strategies and costs of doing so

Q: What are the major differences between the University of Maryland at College Park and the other satellite campuses? How do each approach sustainability goals and initiatives?

A: UMD has agricultural extensive research

Each campus in the UMD has their own Climate Action Plan and each does their own planning

It is an ongoing collaboration with other systems and lots of sharing between schools and networks

Utilizing consortiums and reporting tools to track metrics and progress

Q: What types of partnerships does UMD utilize and how are these relationships built and maintained?

A: Examples of key partners and schools UMD collaborates with:

Duke, UCLA, ASU (informal connections) with external schools



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Big 10 and friends meetings

Northeast campus sustainability consortium

Coordination on campus with webinars

Share information on strategies and carbon pricing etc.

Co-host panels at national conferences (Ex: AASHE)

Ex: with ASU; offsetting and air travel

Lots of engagement at AASHE conferences with other schools and partners

Capital projects: Employees hired and coordinated with city

Informing the community:

Fully collaborative; especially with regards to implementation

Development process; internal first, then turns to broad goals

Q: How does the UMD form these types of partnerships? Is it more so an active or passive search for partners and collaboration on projects?

A: Depends on specific strategies and projects

Ex: Energy conservation: many different approaches (dependent on strategies) and lots of stakeholders involved

-other projects may sit dormant until time is right

Other player: Mid Atlantic Environmental Science Center (headquartered in College Park)

However, not lots of overlap, but a helpful resource

Q: How does the Environmental Finance Center play a role in public engagement and project funding?



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A: EFC is a third party contracted by the University of Maryland to create and implement strategies that work directly with UMD; lots of collaboration

Climate Action Plan 2.0

Needed to clarify responsibilities of each school and leaders on strategies

Shortcomings on bigger goals; needed to take a step back and plan out who the actual leaders were and who would be accountable to carrying out plans

Some goals specifically assigned to Office of Sustainability; others assigned to specific departments (i.e., Dept. of Transportation, Commuting)

Deliberate process to develop these strategies

Apparent in both plans

Really laying out process

How and why we are reporting are very important

Interview with Corey Hawkey

Assistant Director Sustainability Practices

Arizona State University

Call 3/17/2020

Q: Are there any metrics that ASU uses to measure success of external collaboration strategies?

A: Metrics are decentralized at ASU; but are outlined by the 8 Sustainable Development Goals in Sustainability report/plan (commitments under each goal)

There are different pieces of the university that report to different departments (3 main offices)

Office of Sustainability under the CFO and business and finance office



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Focuses on overall coordination and leadership of strategies

Other offices: Facilities and Operations (focused on maintenance, buildings, energy, water etc.)

Academic

Sustainability programs include: Global Futures initiative (School of Sustainability)

These programs track and develop their own metrics to gauge success independently (i.e., number enrolled in programs, usage of resources, number of programs available)

Q: How does ASU build partnerships with the community and encourage public engagement?

A: Again, decentralized process and each department does this in their own ways based on their needs

Ex: Sustainable Cities Program: students at ASU act as consultants to businesses in the area and provide input to municipalities etc.

View success as a factor of satisfaction (from both students and clients), survey with cities asking for feedback on programs (assess how it's going overall)

Assess on case by case basis

[metrics] depend on what you are trying to accomplish with engagement strategy/program (# of responses? Perpetual relationships? Satisfaction? Production? Resources shared?)

"Haven't fully mastered whether engagement is successful yet"

"To be honest I don't really know who's done this well."

Tools that may be helpful for customer relationship management: Salesforce? (As a tracking and recording system)

It is important that engagement is not based on a rewards system

Only people who care will participate, and may also only be driven by reward so may stop if reward is taken away (might produce bias)



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Q: What is the organizational structure of sustainability initiatives like at ASU?

A: Type of hierarchy; dual departments with multi-functionality

One-Side

CFO

Business/Finance

Office of Sustainability

VP Nicole: in charge of purchasing, auxiliary services, parking, transportation, security etc.)

Facilities and Operational Development

VP: in charge of energy, recycling, water etc.)

Academics

VP: Peter Schlosser (Global Futures)

Emphasis on integrating sustainability into university practices; can do directly from office, but also rely on these partner offices to push orders out to various leadership teams

-Co-lead operations; each office pushes each other; somewhat competitive between business and facilities in terms of pursuing sustainability in each office (Works well!)

Academics side: on their own for research etc.

ASU is more centralized with central direction (as opposed to OSU where Corey used to work)

Recommendation: Look for solution finders (internally)

Ex: STARS report

Learning outcomes: put out call to provost/deans

Have them ask: What can you do to increase sustainability in your areas/departments?

Q: How does the university go about finding external partners then?



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A: All of the above: look for things you need to be done first and then solicit an RFP to figure it out

Other things you prepare and signal to community that you are open for business

Let people know that you are interested in their help and have the available resources to achieve common goals

Many different approaches, little bit of everything

Ex: Food Reconnection goal

Goal: Achieve 50% food credits in AASHE STARS rating (one aspect here was acquiring locally produced food)

Important in Arizona → how can we help increase local food production? Need partners.

Put out request for information: Who is growing food and what types of food are they growing? What types of capabilities do they have?

A bit disappointed with results from responses

“Important to position ourselves to let industry know that ASU would be a buyer and enter into the community”

-Official request for information to evaluate opportunities to open business with potential partners

Ex: Carbon Neutrality partnerships

Research process extensive → Offsets; meaningful to university to dedicate funding for local purposes

Helped pursue urban forestry at Duke University

Carbon offset protocols (relied on peer validation) from Duke instead of spending more money on a third party firm

This strategy saved costs for ASU and provided opportunity for knowledge sharing between Duke and ASU

Required lots of up-front work to determine what ASU needed and was looking for)



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Ex: Urban offsets

-sell offset bundles with tree planting work with cities; send funds to help this project

ASU benefits from rights to carbon credits

Process:

- clearly identify problem with goals in mind

- Be present in community/networks

- Make yourself available to discover partnerships

There is a spectrum of projects and partnerships

Things you know you're going to need help on (Go out and get help)

Things you know you're going to do, but not sure who can help yet (research)

Things you are not sure you're going to do, but potentially interested in (Need to focus on learning)

Q: How are sustainability initiatives and public engagement programs accounted for in the budget?

A: Cities ASU is working with already have commitments to sustainability; so, support from municipalities is very helpful

Philanthropy

Funding: A little bit of everything

Insurance

Philanthropy (i.e., Urban Forest initiative)

Global Futures academic services that provide research and learning opportunities

Funding comes from different places as well



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First ask: “What can we offer that is revenue generating?”

“What projects/programs may be mutually beneficial?”

There could be benefits brought to the university in other ways



Endnotes

¹ Includes public offices and officials at the local, city, and county level as well as the state and national level. This group of stakeholders may be involved with regulation, policy-setting, and public-University partnerships.

² Includes private enterprises that may already have contracts and involvement with the University or may be interested in future projects. This group of stakeholders may be involved with business contracts across different areas of carbon neutrality implementation, including but not limited to energy production and systems, buildings and infrastructure, vehicles and transportation, dining and food services, athletics, health services, supply chain, and research.

³ Non-profit groups that relate either to the local areas of Ann Arbor, Dearborn, and Flint or to different areas within carbon neutrality. This group of stakeholders may be involved in community engagement, education, and consultation events.

⁴ Includes individuals involved with specific schools and departments at the University in an advisory capacity. This group of stakeholders may be involved due to the influence on schools and departments at the University.

⁵ Includes University alumni around the globe.

⁶ Includes universities and colleges that the University of Michigan has strong links to and nearby institutions. This group of stakeholders may be involved due to various networks of which the University is a member. The University of Michigan has already identified its peer institutions, and others may emerge.

⁷ Union organizations across a variety of trades key to infrastructure development at the University.

⁸ Philanthropic foundations and organizations that may play a role in funding carbon neutrality-related activities or development.

⁹ This could include any category not listed above, such as political parties, parents of students, unaffiliated citizens of Ann Arbor, unaffiliated students of other universities, news media, and others.

¹⁰ American Public Health Association. (2020). *Health & Climate Resource Guide: Step Up for Health at the Global Climate Action Summit*. https://www.apha.org/-/media/files/pdf/topics/climate/health_and_climate_resource_guide.ashx

¹¹ Including Paul Fontaine, Michigan Engaging Communities through the Classroom, and Neeraja Aravamudan of the U-M Ginsberg Center for Community Service and Learning.

¹² The Edward Ginsberg Center for Community Service and Learning. <https://ginsberg.umich.edu>

¹³ Hawkey, Corey, Assistant Director Sustainability Practices at the University of Arizona. Personal phone interview, March 17, 2020. See Appendix M.

¹⁴ Ibid.

¹⁵ National Center for Ecological Analysis and Synthesis (NCEAS). (2018). Strategic Communication to Achieve Carbon Neutrality within the University of California: Findings from the TomKat Strategic Communication Working Group. <https://www.nceas.ucsb.edu/tomkat-strategic-communications>



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- ¹⁶ Cook, James R., & Maury Nation. (2016). Community Engagement: Universities' Roles in Building Communities and Strengthening Democracy. *Community Development*, 47(5), 718–731. <https://doi.org/10.1080/15575330.2016.1226912>
- ¹⁷ Carter-Edwards, Lori, Abby Lowe-Wilson, Mary Mouw, Janet Jeon, Ceola Ross Baber, Maihan Vu, & Monique Bethell. (2015). Community Member and Stakeholder Perspectives on a Healthy Environment Initiative in North Carolina. *Preventing Chronic Disease*, 12. <https://doi.org/10.5888/pcd12.140595>
- ¹⁸ The California Natural Resources Agency offered training on June 2–4, 2020. For details, see <https://resources.ca.gov/Newsroom/Page-Content/News-List/Online-Environmental-Engagement>; contact Sarah Rubin at Sarah.Rubin@conservation.ca.gov.
- ¹⁹ Leiserowitz, Anthony, Edward Maibach, Seth Rosenthal, John Kotcher, Parrish Bergquist, Abel Gustafson, Matthew Ballew, & Matthew Goldberg. (2019). *Climate Activism: Beliefs, Attitudes, and Behaviors, November 2019*. Yale University and George Mason University. New Haven, CT: Yale Program on Climate Change Communication. <https://climatecommunication.yale.edu/publications/climate-activism-beliefs-attitudes-and-behaviors-november-2019/>
- ²⁰ University of Michigan Office of Public Affairs. (2020). Our Three Campuses: UM-Ann Arbor, UM-Dearborn and UM-Flint are three distinct but aligned institutions. <https://publicaffairs.vpcomm.umich.edu/our-three-campuses/>
- ²¹ University of Michigan Planet Blue. (2020). Public Engagement. <http://sustainability.umich.edu/carbonneutrality/engagement>
- ²² Hawkey, personal phone interview. See Appendix M.
- ²³ University of Michigan Edward Ginsberg Center. (2020). Partnership Resources. <https://ginsberg.umich.edu/article/partnership-resources>
- ²⁴ Brandt, Patric, Anna Ernst, Fabienne Gralla, Christopher Luederitz, Daniel J. Lang, Jens Newig, Florian Reinert, David J. Abson, & Henrik von Wehrden. (2013). A Review of Transdisciplinary Research in Sustainability Science. *Ecological Economics*, 92, 1–15. <https://doi.org/10.1016/j.ecolecon.2013.04.008>
- ²⁵ National Center for Ecological Analysis and Synthesis (NCEAS). (2018). *Strategic Communication to Achieve Carbon Neutrality within the University of California: Findings from the TomKat Strategic Communication Working Group*. <https://www.nceas.ucsb.edu/tomkat-strategic-communications>
- ²⁶ Zen, Irina. (2017). Exploring the Living Learning Laboratory: An Approach to Strengthen Campus Sustainability Initiatives by Using Sustainability Science Approach. *International Journal of Sustainability in Higher Education*, 18(6), 939–955. <https://doi.org/10.1108/IJSHE-09-2015-0154>
- ²⁷ Cook, James R., & Maury Nation. (2016). Community Engagement: Universities' Roles in Building Communities and Strengthening Democracy. *Community Development*, 47(5), 718–731. <https://doi.org/10.1080/15575330.2016.1226912>
- ²⁸ Second Nature. (2018, September). *Research for Solutions: Convening Stakeholders to Galvanize Local Climate Action*. https://secondnature.org/wp-content/uploads/SecondNature_UC3_2018ProgressReport-Final.pdf
- ²⁹ Ibid.
- ³⁰ Ibid.



³¹ Cornell University. (2016). *Options for Achieving a Carbon Neutral Campus by 2035: Analysis of Solutions*. <https://sustainablecampus.cornell.edu/sites/default/files/2018-12/Cornell%20University%20-%20Options%20for%20Achieving%20a%20Carbon%20Neutral%20Campus%20-%202016.pdf>

³² Ibid.

³³ University of Michigan Human Resources. (n.d.). HR Data Requests and Standard Reports. <https://hr.umich.edu/working-u-m/management-administration/hr-reports-data-services/hr-data-requests-standard-reports>

³⁴ Association for the Advancement of Sustainability in Higher Education (AASHE). (2020). *Strategic Plan 2018–2020*. <https://www.aashe.org/wp-content/uploads/2017/12/AASHE-Strategic-Plan.pdf>

³⁵ Second Nature. (2018, September). *Research for Solutions: Convening Stakeholders to Galvanize Local Climate Action*. https://secondnature.org/wp-content/uploads/SecondNature_UC3_2018ProgressReport-Final.pdf

³⁶ Association for the Advancement of Sustainability in Higher Education (AASHE). (2020). *Strategic Plan 2018–2020*. <https://www.aashe.org/wp-content/uploads/2017/12/AASHE-Strategic-Plan.pdf>

³⁷ Hawkey, personal phone interview. See Appendix M.

³⁸ Ibid.

³⁹ University of Pennsylvania. (2020). *Sustainability at Penn State: 2018–2019 Highlight Report*. http://sustainability.psu.edu/sites/default/files/images/2019SustainabilityReportSI_2.pdf

⁴⁰ National Center for Ecological Analysis and Synthesis (NCEAS). (2018). *Strategic Communication to Achieve Carbon Neutrality within the University of California: Findings from the TomKat Strategic Communication Working Group*. <https://www.nceas.ucsb.edu/tomkat-strategic-communications>

⁴¹ Ibid.

⁴² Ibid.

⁴³ University of Pennsylvania. (2020). *Sustainability at Penn State: 2018–2019 Highlight Report*. http://sustainability.psu.edu/sites/default/files/images/2019SustainabilityReportSI_2.pdf

⁴⁴ Ibid.

⁴⁵ Institute of Energy and the Environment at Penn State. (2018). *Sustainable Communities: Partnerships and Possibilities, 2017–2018*. Collaborative Annual Report. https://issuu.com/iee-pennstate/docs/scc_annual_report_2018_web

⁴⁶ University of Pennsylvania. (2020). *Sustainability at Penn State: 2018–2019 Highlight Report*. http://sustainability.psu.edu/sites/default/files/images/2019SustainabilityReportSI_2.pdf

⁴⁷ Stanford University Department of Sustainability and Energy Management. (2019). *Sustainability at Stanford: 2018–19 Year In Review*. <https://sustainable.stanford.edu/sites/default/files/2018-19%20Sustainability%20Year%20in%20Review.pdf>

⁴⁸ Ibid.

⁴⁹ Ibid.



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- ⁵⁰ Cornell University. (2016). *Options for Achieving a Carbon Neutral Campus by 2035: Analysis of Solutions*. <https://sustainablecampus.cornell.edu/sites/default/files/2018-12/Cornell%20University%20-%20Options%20for%20Achieving%20a%20Carbon%20Neutral%20Campus%20-%202016.pdf>
- ⁵¹ The Association for the Advancement of Sustainability in Higher Education (AASHE). (2018). *2018 Sustainable Campus Index*. <https://www.aashe.org/wp-content/uploads/2018/08/SCI-2018.pdf>
- ⁵² Cornell University. (2016). *Options for Achieving a Carbon Neutral Campus by 2035: Analysis of Solutions*. <https://sustainablecampus.cornell.edu/sites/default/files/2018-12/Cornell%20University%20-%20Options%20for%20Achieving%20a%20Carbon%20Neutral%20Campus%20-%202016.pdf>
- ⁵³ Second Nature. (2018, September). *Research for Solutions: Convening Stakeholders to Galvanize Local Climate Action*. https://secondnature.org/wp-content/uploads/SecondNature_UC3_2018ProgressReport-Final.pdf
- ⁵⁴ Ibid.
- ⁵⁵ Ibid.
- ⁵⁶ Environmental Finance Network. (2020). About the Network—Environmental Finance Network. <https://efcnetwork.org/about-the-network/>
- ⁵⁷ Ibid.
- ⁵⁸ Northwestern University. (2017). Communications and Engagement Roadmap. <https://www.northwestern.edu/sustainability/docs/sustainability-plan/NUSustainabilityRoadmap-Comm-2017-2021-5.pdf>
- ⁵⁹ Colorado State University. (2016). CSU Notches Another Platinum Sustainability Designation. <https://source.colostate.edu/csu-notches-another-platinum-sustainability-designation/>
- ⁶⁰ Association for the Advancement of Sustainability in Higher Education (AASHE). (2019). Colorado State University Community Partnerships STARS. <https://reports.aashe.org/institutions/colorado-state-university-co/report/2019-12-06/EN/public-engagement/EN-10/>; Climate Wise. (2017). Climate Adaptation Planning in Fort Collins, Colorado. <https://climatewise.org/projects/1055-fort-collins/>
- ⁶¹ National Center for Ecological Analysis and Synthesis (NCEAS). (2018). *Strategic Communication to Achieve Carbon Neutrality within the University of California: Findings from the TomKat Strategic Communication Working Group*. <https://www.nceas.ucsb.edu/tomkat-strategic-communications>
- ⁶² University of Pennsylvania. (2020). *Sustainability at Penn State: 2018–2019 Highlight Report*. http://sustainability.psu.edu/sites/default/files/images/2019SustainabilityReportSI_2.pdf
- ⁶³ Hawkey, personal phone interview. See Appendix M.
- ⁶⁴ Cornell University. (2016). *Options for Achieving a Carbon Neutral Campus by 2035: Analysis of Solutions*. <https://sustainablecampus.cornell.edu/sites/default/files/2018-12/Cornell%20University%20-%20Options%20for%20Achieving%20a%20Carbon%20Neutral%20Campus%20-%202016.pdf>
- ⁶⁵ Ibid.