

**Resilient, Equitable and Carbon-Neutral Physical Infrastructure
Pollination Workshop Report
2.8.22**

Executive Summary

Approximately 40 participants registered for an all-day, in-person [Bold Challenges](#) Pollination workshop on the topic of “Resilient, Equitable and Carbon-Neutral Physical Infrastructure” held at the Michigan Union on February 8, 2022. Participants included a diverse group of 14 faculty, 9 external partners, 11 co-sponsor representatives, and 9 faculty and staff from the Office of the Vice President for Research (OVPR) and the Center for Academic Innovation (CAI). Elyse Aurbach from CAI and Jill Jividen from OVPR facilitated the workshop. Post-workshop surveys from 18 attendees indicated that participants were energized, optimistic, and enthusiastic about the event.

Survey responses were received from 18 participants and highlights include:

- 100% strongly agree or agree that the workshop was a good experience overall.
- 100% strongly agree or agree that the workshop is an experience that they would recommend to a colleague.
- Over 94% strongly agree or agree that the workshop helped them connect with new people interested in the workshop topic.
- Over 88% strongly agree or agree that the workshop stimulated their thinking around interdisciplinary and engaged research projects.
- Over 76% strongly agree or agree that the workshop connected them to new collaborators for research.



Workshop Summary

U-M Sponsoring Partners

Remarks were given throughout the day by the following partners:

- **Christie Baer**, Assistant Director, [Center on Finance, Law & Policy](#)
- **Jennifer Haverkamp**, Director, [Graham Institute for Sustainability](#)
- **Greg Keoleian**, Director, [Center for Sustainable Systems](#)
- **Greg McGuire**, Managing Director, [Mcity](#)
- **Luke Shaefer**, Director, [Poverty Solutions](#)

Other U-M units represented

- Architecture and Urban Planning
- Art and Design
- Matthaei Botanical Gardens and Nichols Arboretum
- Engineering
- Kinesiology
- Medical School
- SEAS

External Partners in attendance

- Komal Doshi, [Ann Arbor SPARK](#)
- Dana Gorodetsky, [William Davidson Institute](#)
- Diana Páez, [William Davidson Institute](#)
- Jim Roush, [Consumers Energy](#)
- Jim Saber, [NextEnergy](#)
- Reuben Sarkar, [American Center for Mobility](#)
- Missy Stults, [City of Ann Arbor Office of Sustainability & Innovations](#)
- Jim VandePutte, [Breakthrough Energy](#)

Activity I: Getting to Know Each Other

Participants created a “Me Sheet” to describe their expertise, assets, and why they attended, and then used this sheet to share a bit about themselves in a small group discussion. The sheets were posted to facilitate additional networking.



Activity II: Impromptu Networking

A series of short, paired conversations were held to continue getting to know one another and to begin surfacing focus areas (areas of shared interest). This included what ideas or interests participants brought with them and what has motivated their work related to the workshop theme in the past.



Activity III: Sparking Exciting Ideas

Participants reviewed the ideas that they jotted down in paired conversations and prepared these ideas to share with the group. They wrote down the ideas on sticky notes and these were clustered together around inspiration/motivation, process, outcomes and policy.



Dot Voting

Themes were identified from the spark sticky notes and then participants reviewed the themes and used star sticky notes each to vote on the 2 areas they wanted to explore more in the afternoon.



The top themes identified from the dot voting exercise were:

- Governance and decision making
- Green infrastructure
- Workforce development
- Models, tools, frameworks for planning and equity
- Living labs
- Green housing
- Green building materials

Activity III: Asking Powerful Questions

Participants worked in small groups to continue discussions and generate powerful questions about one of the themes from the dot voting exercise.



Activity IV: Popcorn & 25/10 Ideas

Participants shared a research question that was important to them, and identified other participants who were interested in exploring the question as well. They then wrote down their 1 question on an index card and swapped it with others while music played. When the music stopped, they reviewed the idea that was on the card in their hand and then scored it, with 1= not a good research question and 5 = an excellent research question that should be explored.

The total scores for each card were tallied and the 10 highest rated questions were posted on a white board. Participants then added their names to the questions that they were interested in so as to identify potential collaborations. The results are presented in the chart below.

Research question/idea	Participants interested in exploring further	
Low-carbon and waste-free manufacturing of structures and building components (embodied energy, process energy...)	<ul style="list-style-type: none"> Mania Aghaei Meibodi 	<ul style="list-style-type: none"> Arash Adel
Improving the circularity/reuse of end of life materials through characterization of environmental, social and economic metrics	<ul style="list-style-type: none"> Arash Adel Geoff Lewis 	<ul style="list-style-type: none"> Hessam Azarijafari
A living lab/research innovation zone that allows for testing, deployment and scaling of new business models, policy, financing models → deal with big impact ideas	<ul style="list-style-type: none"> Komal Doshi Mania Aghaei Meibodi 	<ul style="list-style-type: none"> Natalie Colabianchi Jeremy Moghtader Greg McGuire
Construction demolition waste and re-use of this material for manufacturing new building components (circular construction)	<ul style="list-style-type: none"> Evgueni Filipov Mania Aghaei Meibodi 	<ul style="list-style-type: none"> Hessam Azarijafari Geoff Lewis Arash Adel

<p>How does optimizing agri-photovoltaic investments for decreased emissions increase economic development, equity change decisions, create different sets of benefits and downstream effects?</p> <p>Agro-photovoltaics multi-investigator living lab research, teaching and demonstration site to investigate technical, policy, economic systems needed to optimize food production, energy production, ecosystem services and economic impact</p> <p>Technical, ecological, economic, policy, equity issues with this as a platform and framework</p>	<ul style="list-style-type: none"> ● Jeremy Moghtader ● Mania Aghaei Meibodi ● Evgueni Filipov ● Greg McGuire ● Peter Seiler ● Sarah Hughes
<p>Democratized decision tools for decision making for energy infrastructure</p> <ol style="list-style-type: none"> 1) Design 2) Planning/scenario development <p>that center equity and environmental justice (infusion of wind, solar, nuclear)</p>	<ul style="list-style-type: none"> ● Rob Goodspeed ● Aditi Verma ● Natalie Colabianchi ● Geoffrey Thun ● Sara Hughes ● Lisa DuRussel
<p>Roadmapping an equitable low carbon energy system for the great lakes region (across scales):</p> <ul style="list-style-type: none"> - System design scenarios - Technology assessment - Visualization and public engagement - Public paradigm shift 	<ul style="list-style-type: none"> ● Lisa DuRussel ● Aditi Verma ● Geoffrey Thun
<p>Connected system of transportation options (including active transport) that could also include access-enabled hubs (amazon locker) on campus? That is experimentally manipulated for incentives</p>	<ul style="list-style-type: none"> ● Natalie Colabianchi
<p>Develop a roadmap for hydrogen infrastructure deployment in MI, looking at it from a resiliency, economic development, equity, and downstream industry applications and to compare with other carriers (electricity, gas) at appropriate scale and time horizon</p>	<ul style="list-style-type: none"> ● Jim Saber ● Reuben Sarkar ● Jim Vandeputte
<p>Model and frameworks for designing energy technologies in participatory ways <u>with</u> communities in ways that center principles of equity and environmental justice</p>	
<p>What are the implications of moving toward performance based building codes vs. prescriptive?</p>	
<p>What is the role of construction materials properties in the sustainability of infrastructure systems?</p>	