



December  
2022

# TWIN CITIES CLIMATE ACTION PLANNING UPDATE

[sustainable.umn.edu/cap](https://sustainable.umn.edu/cap)



UNIVERSITY OF MINNESOTA  
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# INTRODUCTION

Communities in Minnesota and across the globe have already experienced climate change and the science is clear that we must act swiftly to ensure a livable future for all. In response, **the University is creating Climate Action Plans for each campus** to identify actions to eliminate our greenhouse gas emissions, make the University more resilient, and address climate change through teaching, research, and outreach. This will be one step of many that the University will take to ‘**Build a Fully Sustainable Future,**’ a strategic priority of **MPact 2025.**

## BACKGROUND ON CLIMATE CHANGE

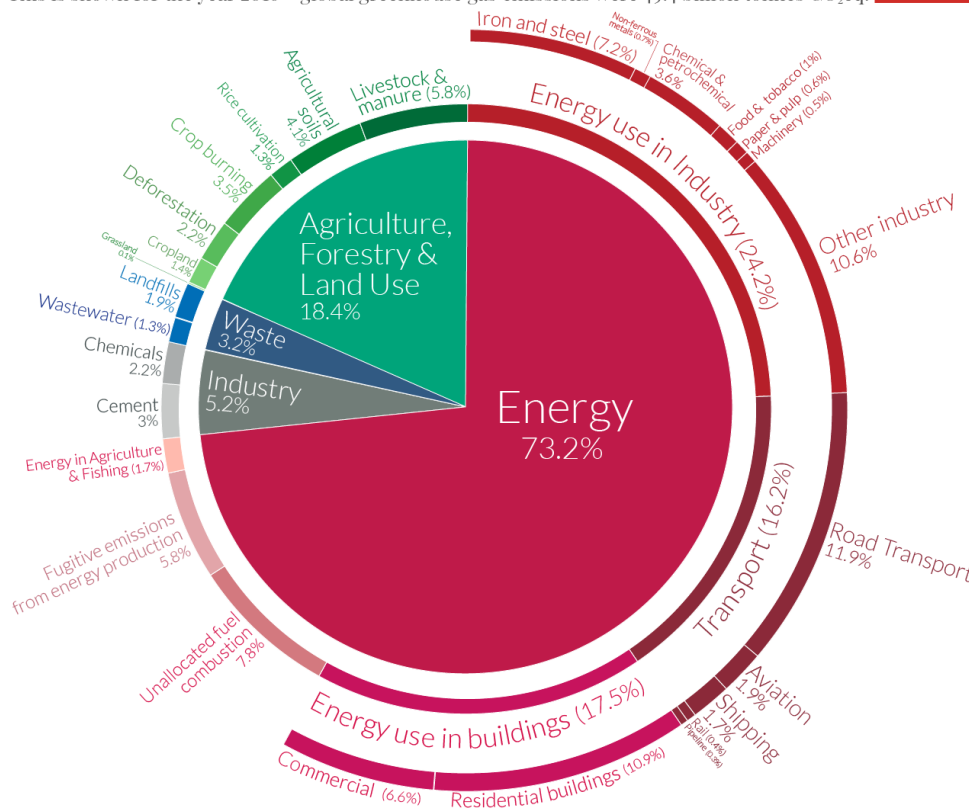
Climate change refers to a long-term shift in temperatures and weather patterns. Since the 1800s, human activities, primarily the burning of fossil fuels like coal, oil and gas, have been the main driver of climate change.<sup>1</sup> For example, when we use gasoline for driving a car or burn natural gas in a boiler or furnace to heat a building.

When burning fossil fuels, greenhouse gases like carbon dioxide and methane are released into the atmosphere. Greenhouse gases cause climate change by trapping the sun’s heat and raising temperatures. Therefore, the more fossil fuels we burn, the more greenhouse gases are released, and the more heat becomes trapped in the atmosphere shaping our global climate.

### Global greenhouse gas emissions by sector

This is shown for the year 2016 – global greenhouse gas emissions were 49.4 billion tonnes CO<sub>2</sub>eq.

Our World in Data



Energy used in industry, transportation, and buildings, as well as agriculture and land use are among the main sources of emissions globally, in the United States, and in Minnesota.

OurWorldinData.org – Research and data to make progress against the world’s largest problems.  
Source: Climate Watch, the World Resources Institute (2020).

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1 <https://www.un.org/en/climatechange/what-is-climate-change>

2 <https://ourworldindata.org/ghg-emissions-by-sector>

# WHY IT MATTERS

Greenhouse gas concentrations are continuing to rise and are now at their highest levels in 2 million years. As a result, the Earth is now about 2°F (1.1°C) warmer than it was in the 19th century.<sup>4</sup> The last decade (2011-2020) was the warmest on record.<sup>5</sup>

While a 2°F increase in global temperature may not seem like a lot, the Earth is a complex system and even small shifts in the climate can have tremendous impacts. As a result of climate change, the world is already experiencing more intense droughts, water scarcity, severe fires, rising sea levels, flooding, melting polar ice, catastrophic storms, and declining biodiversity.<sup>6</sup>

While any degree of warming beyond our current levels will result in negative impacts, scientists and governments working on climate change have determined that limiting warming to 2.7°F (1.5°C) will enable society to avoid the worst impacts of climate change and help humanity preserve a livable climate.<sup>7</sup> Impacts to communities and the environment become substantially worse as global average temperature increases from 2.7°F to 3.6°F (1.5°C to 2.0°C).

*“Climate change affects every corner of Minnesota – from our forests and urban environments to our rich working lands. Observations show we are already experiencing the impacts of climate change across the state and we expect more changes in the coming years. In fact, Minnesota’s average annual temperature has increased nearly 3°F since the late 1800’s. Climate science research suggests that the state will continue to get warmer and wetter, with more extreme events driving changes across the state and greater Midwest region. Observations show that our winters are warming dramatically and that spring is arriving up to two weeks earlier than in the early 1900s. These changes alter the places where we live, work and recreate.”<sup>8</sup>*

Under current national climate commitments, global warming is projected to far exceed the relatively safer operating space of 2.7 F, reaching around 4.5 F (2.5°C) by the end of the century.<sup>9</sup>

4 <https://climate.nasa.gov/evidence/>

5 <https://www.un.org/en/climatechange/what-is-climate-change>

6 <https://www.ipcc.ch/report/ar6/wg2/resources/press/press-release/>






7 <https://www.ipcc.ch/report/sixth-assessment-report-cycle/>

8 <https://climate.umn.edu/our-changing-climate>

9 <https://unfccc.int/news/climate-plans-remain-insufficient-more-ambitious-action-needed-now>

Half a degree of warming can make a big difference and have significant global impacts, as shown in the chart below.

**Global costs and challenges from climate change will worsen with any additional warming.**

		1.5°C	2.0°C	Impacts of 2.0°C
 <b>Extreme Heat</b>	Global population exposed to heatwaves	~4 billion	~6 billion	~2 billion more people
 <b>Agriculture &amp; Fisheries</b>	Reduction in global corn harvests	10%	15%	1.5x worse
	Decline in marine fisheries	4.5 million metric tons	6.0 million metric tons	1.3x worse
 <b>Plants &amp; Animals</b>	Further decline in coral reefs	70-90%	99%	up to 1.4x worse
	Vertebrates, plants & insects losing at least 1/2 of their range	7%	15%	2x worse
 <b>Water Resources</b>	Global population exposed to new or aggravated water scarcity	4%	8%	2x worse
	People exposed to drought each month	114.3 million	190.4 million	76.1 million more people
	Additional global population affected by river floods	108.4 million	146.3 million	37.9 million more people
 <b>Economy</b>	Global costs of warming	\$54 trillion	\$69 trillion	\$15 trillion more
	U.S. Gross Domestic Product (GDP) losses	0.6%	1.2%	2x worse

From UW Climate Impacts Group (adapted from World Resources Institute)

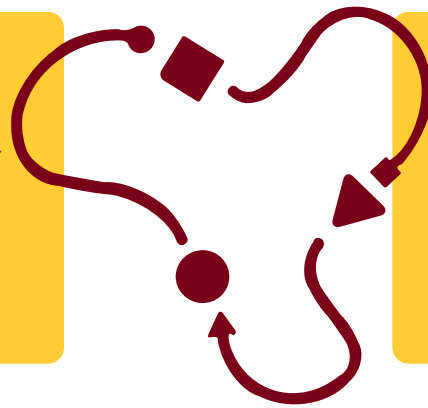
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# WHAT CAN BE DONE IN RESPONSE TO CLIMATE CHANGE?

We have many of the solutions we need today to eliminate the emissions that cause climate change and to make our communities and ecosystems more resilient to climate change impacts. These solutions fall into two categories - **mitigation** and **adaptation**.

## MITIGATION

**Mitigation** includes actions that reduce emissions like creating electricity with solar panels rather than burning coal, making buildings more energy efficient, or reducing deforestation.

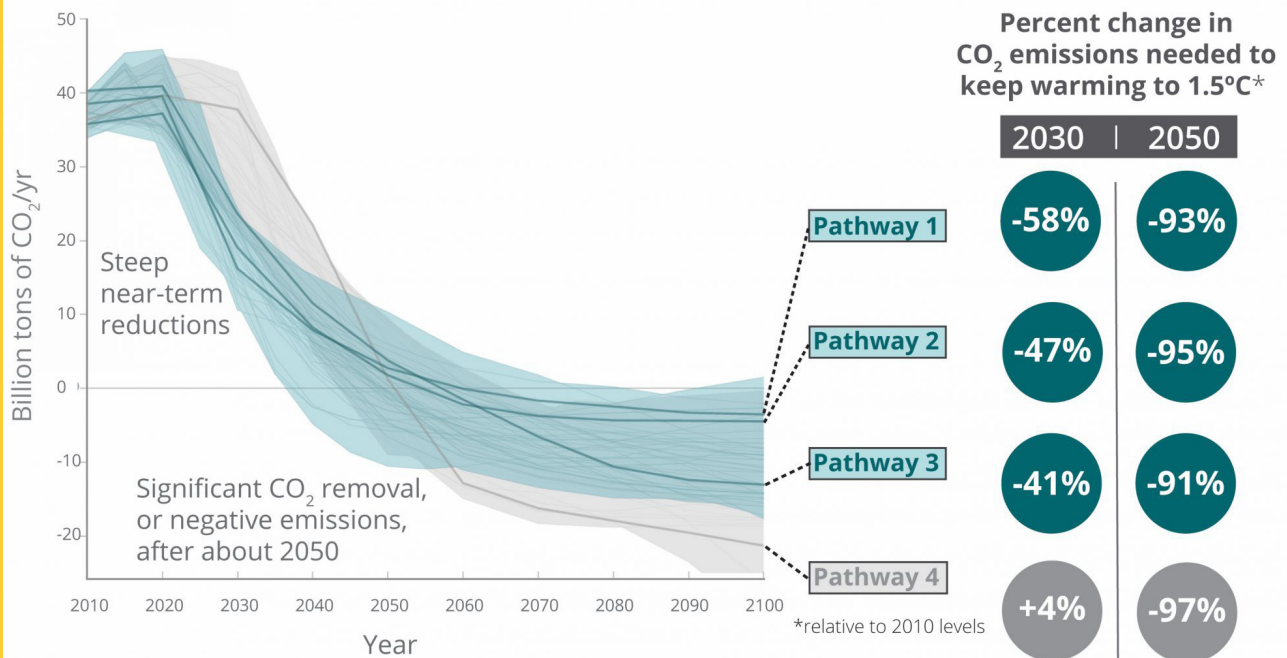


## ADAPTATION

**Adaptation** might include increasing the size of a stormwater system to handle greater rainfall or planting more trees in a city to reduce temperatures.

Greenhouse gases stay in the atmosphere for a long time, from dozens to hundreds of years. They are also difficult to remove once in the atmosphere. Making significant emissions reductions between now and 2030 is imperative.

### Global CO<sub>2</sub> emission reduction pathways to limit warming to 1.5°C (2.7°F)



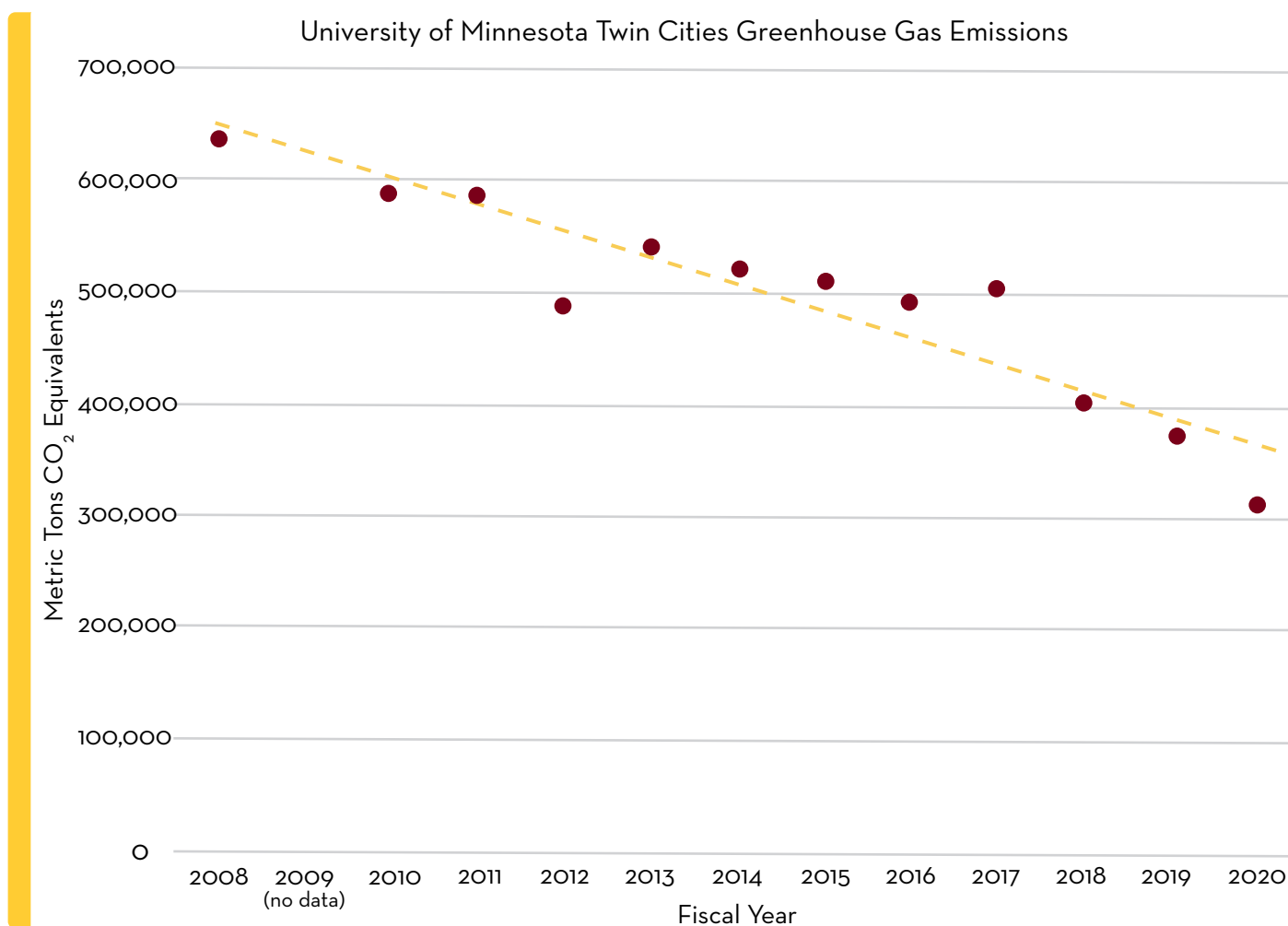
<sup>11</sup> <https://cig.uw.edu/projects/no-time-to-waste/>  
 Snover, A.K., C.L. Raymond, H.A. Roop, H. Morgan, 2019. No Time to Waste. The Intergovernmental Panel on Climate Change's Special Report on Global Warming of 1.5°C and Implications for Washington State. Briefing paper prepared by the Climate Impacts Group, University of Washington, Seattle. Updated 02/2019.

# MPACT 2025 AND HIGHER ED CLIMATE LEADERSHIP COMMITMENTS

The University has been working on climate change for more than two decades. As part of this work, the UMN system joined the American College and University Presidents' Climate Commitment, now known as the Second Nature Carbon Commitment, in 2008. The Commitment is a pledge by higher education institutions to reduce emissions from campus operations to net zero as quickly as possible and to integrate climate change into curriculum, research, and outreach. To reach these goals, each participating institution has to develop a climate action plan identifying how each campus will implement these actions.

The Twin Cities campus developed its first climate action plan in 2011, setting a goal to cut emissions in half by 2021.<sup>12</sup> The University realized its goal in 2020.<sup>13</sup>

In 2021, the University created a **systemwide strategic plan, MPact 2025**<sup>14</sup>, which established a goal to “**Build a fully sustainable future.**” To advance this important work, the highest level of University leadership also called for each campus to establish a next-generation climate action plan.



<sup>12</sup> <https://z.umn.edu/cap>

<sup>13</sup> <https://sustainable.umn.edu/51-percent-ghg-emissions-reduction>

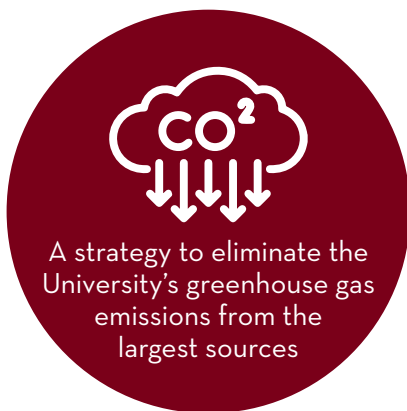
<sup>14</sup> <https://president.umn.edu/mpact-2025>

# WHAT IS A CLIMATE ACTION PLAN?

A **climate action plan** is a document that identifies what steps an organization or community plans to take in response to climate change. These steps can be focused on mitigating emissions that cause climate change, adapting to the impacts of climate change, and other facets that are relevant for the community doing the planning.

Climate plans are used by organizations and communities of all sizes. In Minnesota, we have examples of climate plans at all levels of government<sup>15 16 17</sup>, and in the private sector<sup>18</sup>, as well as at the University and other higher education institutions.

The current planning effort at the Twin Cities campus strives to create:



15 <https://climate.state.mn.us/minnesotas-climate-action-framework>

16 <https://www.hennepin.us/climate-action>

17 <https://www2.minneapolismn.gov/government/programs-initiatives/climate-equity/>

18 <https://corporate.target.com/sustainability-ESG/environment/climate-and-energy>

# WHAT IS THE GOAL OF A CLIMATE ACTION PLAN AT THE UNIVERSITY?

## EMISSIONS REDUCTION

The Climate Action Plan is focused on reducing the University's greenhouse gas emissions from the largest and most visible sources:



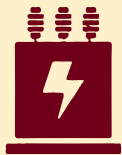
Heating & Cooling



Fleet



Air Travel



Electricity



Commuting

## CLIMATE ADAPTATION

The Climate Action Plan will **assess risk and vulnerability** on campus and the challenges to reliably deliver the University's mission in the face of climate change. Minnesota anticipates:



Increase in temperature



Increase in severe weather



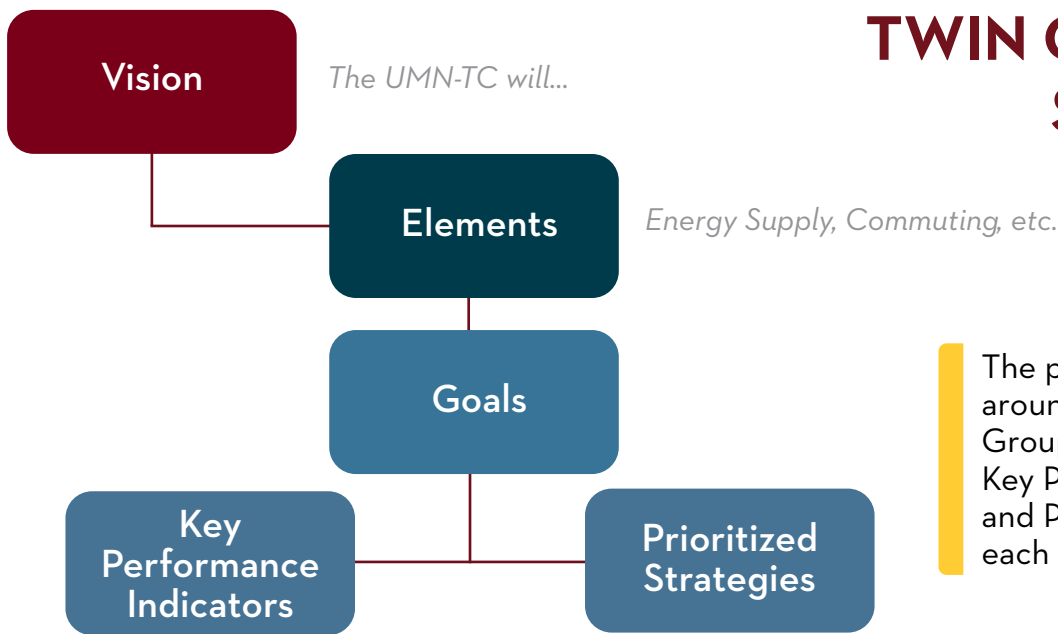
More intense precipitation and flooding

## TWIN CITIES CAMPUS PLANNING PROCESS APPROACH

For the Twin Cities Climate Action Plan, the campus has convened a **Sustainability Committee (TCSC)** to play a leading role. The scope of work will be divided into **six elements**. Five of the elements are the campus' largest or most visible emissions sources. Within each of the emission reduction elements, the CAP will define Goals, Key Performance Indicators, Prioritized Actions, and Implementation Steps. The sixth element will focus on Adaptation and Resilience and will complete a risk and vulnerability assessment.



# TWIN CITIES PLAN STRUCTURE



The plan will be structured around six elements. Working Groups will define the Goals, Key Performance Indicators, and Prioritized Strategies for each element.

Plan Components	Definition
Vision	Aspirational statement about the future of the organization
Elements	Broad topic areas that will be covered in the plan and will have associated Goals, Key Performance Indicators, Prioritized Actions
Goals	Topically focused aspirations linking each Element to the Vision
Key Performance Indicators (KPIs)	How progress towards Goals will be quantitatively measured, ideally with a baseline, interim targets, and a final goal
Prioritized Strategies	Infrastructure improvements, program development, or policy strategies selected specifically to narrow the institution's focus, which are best accompanied by a designation of a champion and a timeline

## TWIN CITIES WORKING GROUPS

Recognizing the complexity and breadth of work to be done, the TCSC is forming **Working Groups** for each **Element** listed previously to advance specific aspects of the planning process related to eliminating major sources of campus emissions and making the campus more resilient to current and future climate change impacts.

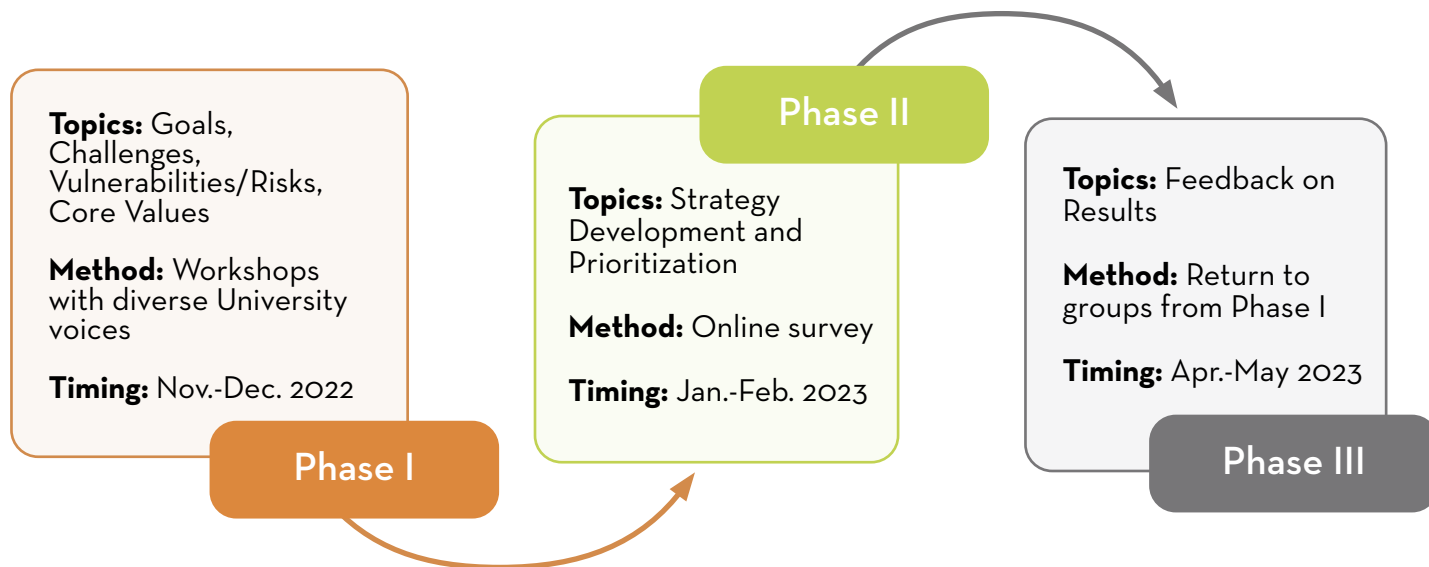
Working Groups will be supported by University sustainability staff, interns, and consultants. The Working Groups will lead in-depth research, measurement, analysis, prioritization, and development of recommendations for their area of focus. All deliverables and work products will be submitted to the TSCS and be made available online for the broader University community to review. Students, faculty, staff, and the University's broader community all have meaningful and important contributions to be made, and the TCSC and the Working Groups will engage stakeholders throughout the course of their work.

### ELEMENTS:

- Energy Supply and Distribution
- Energy Demand
- University Fleet
- Commuting
- University Travel
- Adaptation and Resilience

# TWIN CITIES ENGAGEMENT AND CONSULTATION

The success of the plan depends on broad engagement and consultation of the campus community. The collective wisdom, expertise, and participation of the campus will result in a better plan. Additionally, broad engagement will help contribute to a culture of sustainability and climate action. Engagement will be conducted in three phases.



## SCHEDULE / TIMELINE

The final report to the Board will be made May 2023 and the entire effort will be concluded in summer 2023 after feedback from the Board on the plan is incorporated.

### Twin Cities - Climate Action Planning

- **November/December 2022** - Hold workshops with diverse University voices to discuss goals, challenges, vulnerabilities, risks, and values. Some examples:
  - In-person, Climate Workshop open to whole campus November 15
  - Virtual, Climate Workshop open to whole campus December 7
  - Workshop with Undergraduate Student Government, November 29
  - Institute on the Environment, November 9
- **January/March 2023** - Draft strategy and issue online survey to gather input on priorities
- **November 2022 - April 2023** - Consult with University Senate Governance Committees:
  - Senate Consultative Committee
  - Senate Committee on Finance and Planning
  - Student Senate Consultative Committee
  - Senate Social Concerns Committee
- **April/May 2023** - Host workshops, share survey results and progress; gather feedback
- **May 2023** - Twin Cities Climate Action Plan presented to Board of Regents
- **June 2023** - Make any adjustments based on Board of Regents feedback
- **July 2023** - Twin Cities Climate Action Plan becomes final