



LEHIGH CLIMATE ACTION STRATEGY

Faculty Senate | April 1, 2022

PURPOSE

- Review Lehigh's Climate Action Strategy
 - Development process
 - Carbon neutrality goal
 - Integration with academics and research
 - How can faculty get involved?
- Q&A

TRENDS

Higher Ed



VANDERBILT
UNIVERSITY



Cornell University



RICE

Pathways to Carbon
Neutrality Are Underway

State, Cities & Municipalities



Corporate



GM to Phase Out Gas- and Diesel-Powered Vehicles by 2035

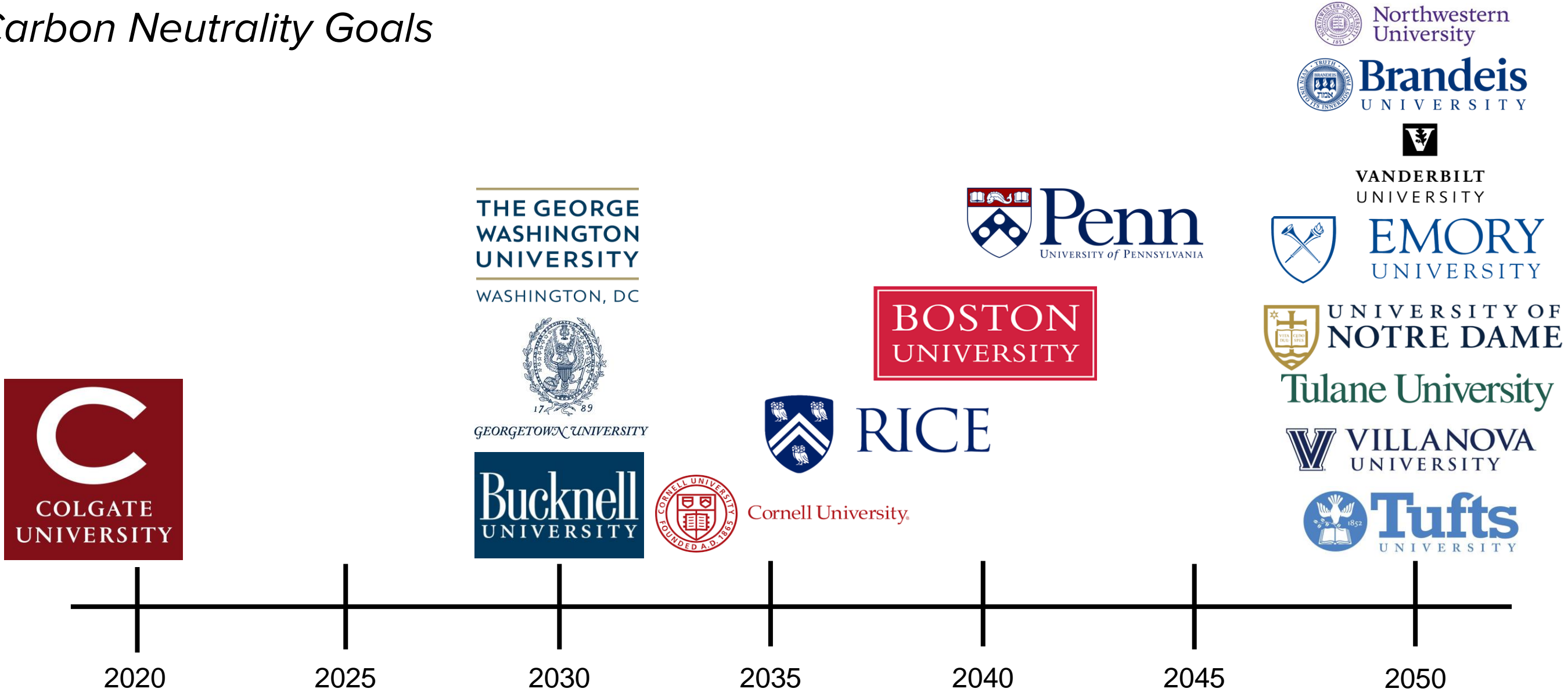
Auto giant's plan to eliminate tailpipe emissions is part of a goal to be carbon neutral by 2040



Microsoft will be carbon negative by 2030

PEER INSTITUTIONS

Carbon Neutrality Goals



LEHIGH CLIMATE ACTION STRATEGY

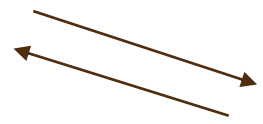
- Roadmap for measuring, planning, and reducing GHG emissions
 - Largest and most cost-effective emissions reductions
- Establishes a 'Pathway to Zero' emissions



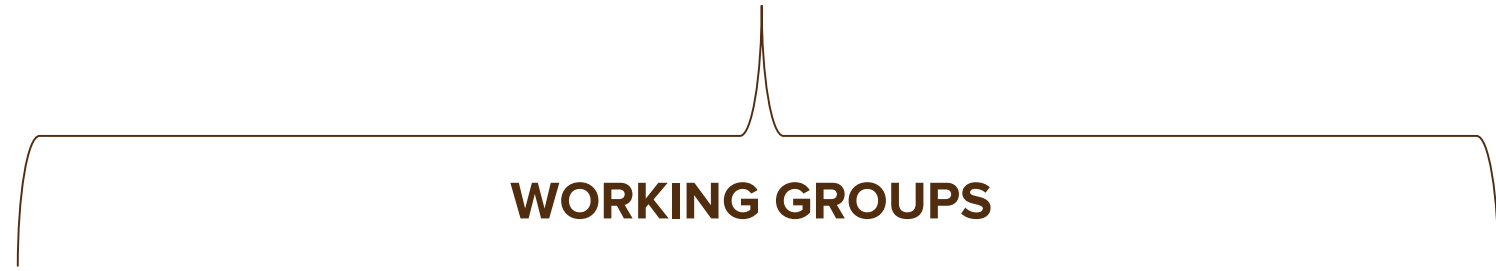
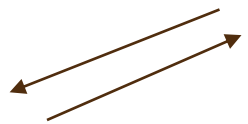
LUFACILITIES



trust



Steering Committee



WORKING GROUPS



Transportation & Commuting



**Procurement:
Air Travel & Paper**



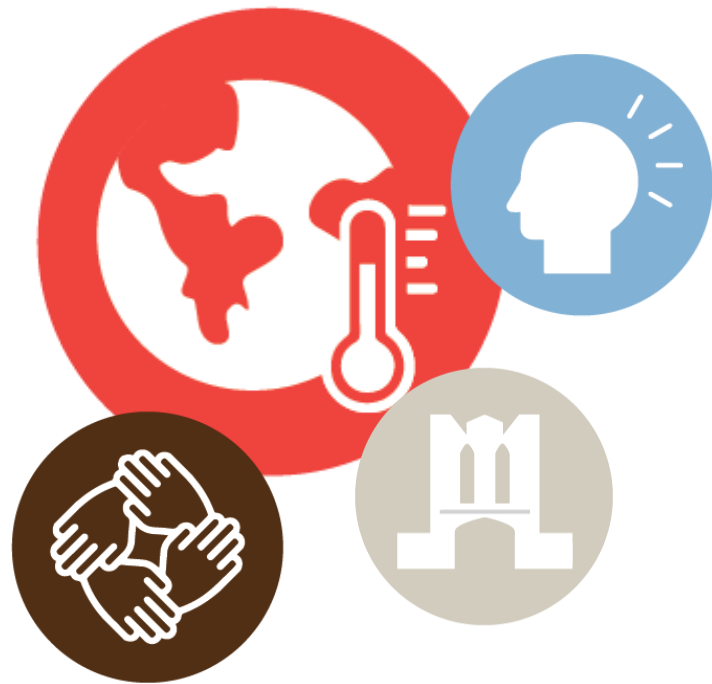
Building Energy



Carbon Offsets

INVOLVEMENT

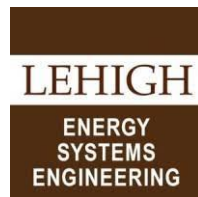
Working & Advisory Groups



**Academic
Integration**



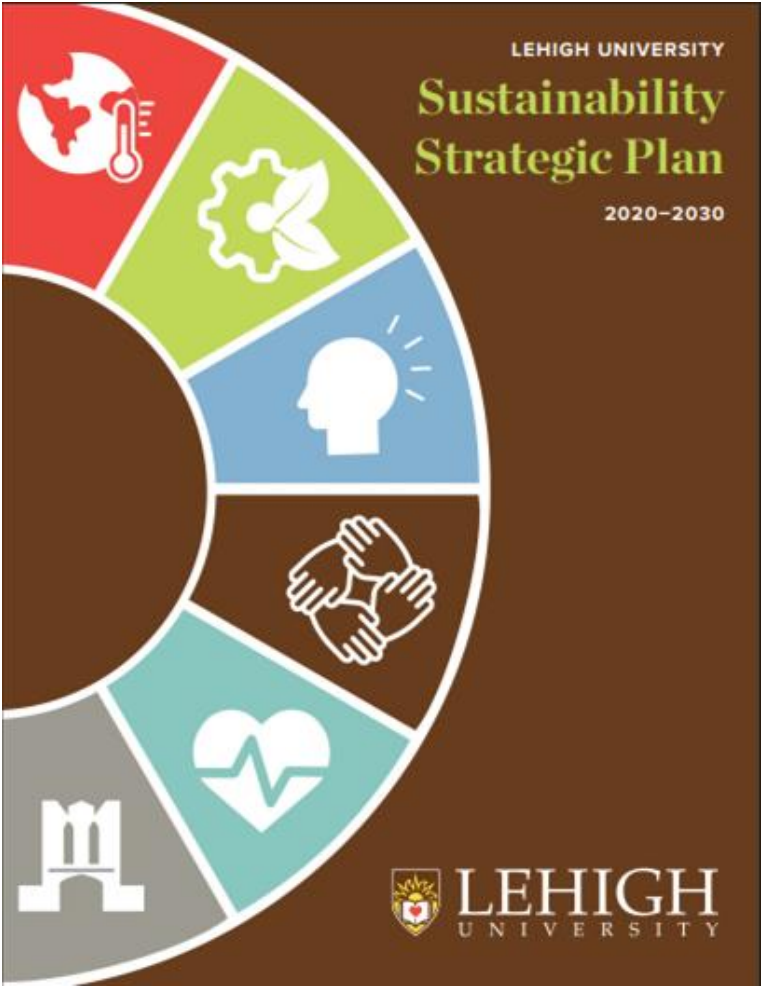
**Campus Ideation
Sessions**



Climate Lab

Course toolkit

2030 PLAN



**Climate
Action**



**Campus
Operations**



**Educational
Experience**



**Culture &
Engagement**



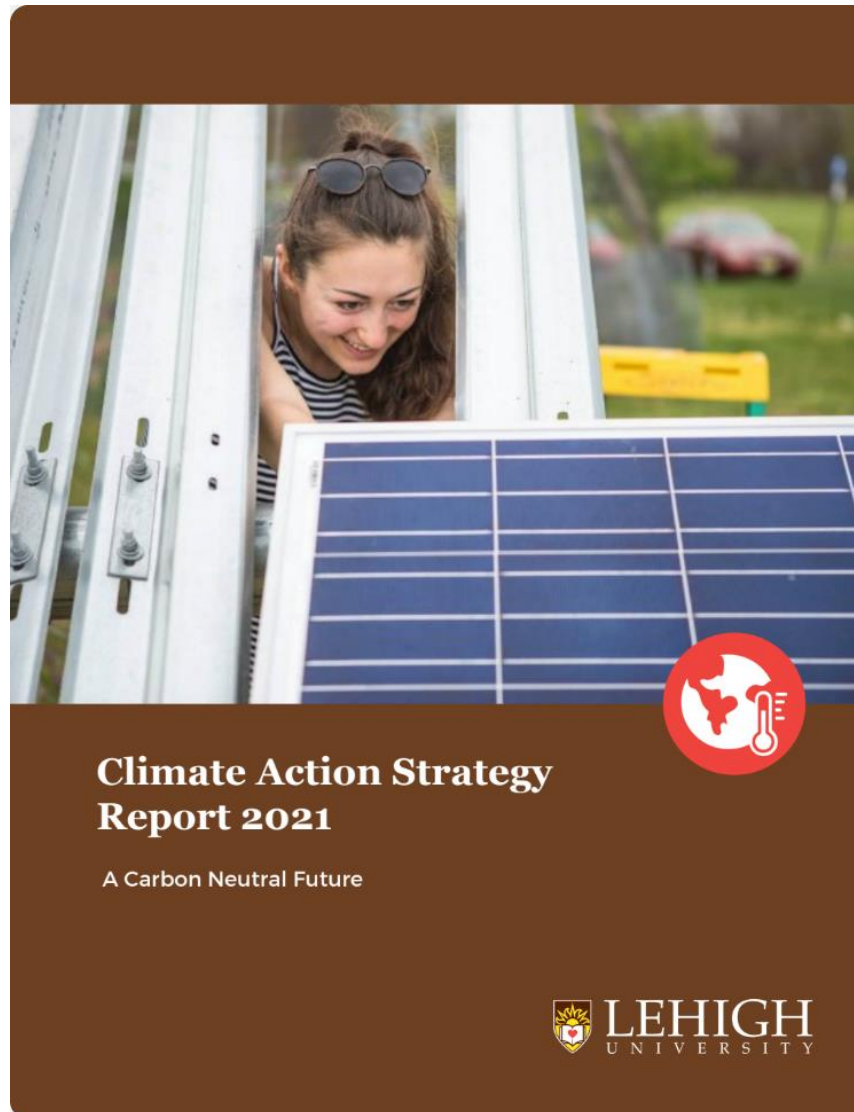
**Health &
Wellness**



**Focused
Leadership**

CARBON NEUTRALITY GOAL

Lehigh's 'Pathway to Zero' emissions includes a set of carbon mitigation actions that result in **Lehigh achieving net carbon neutrality by 2040.**

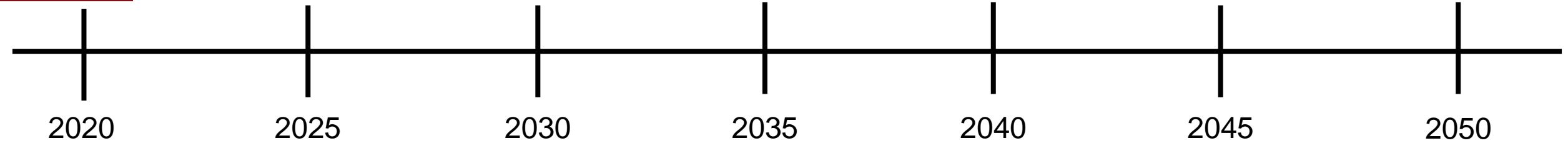


PEER INSTITUTIONS + LU

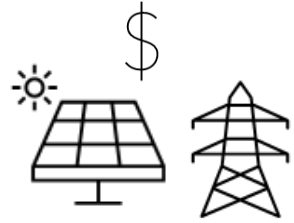
Carbon Neutrality Goals



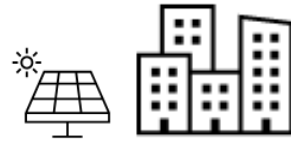
GEORGETOWN UNIVERSITY



NINE EMISSIONS REDUCTION STRATEGIES



Virtual Power Purchase Agreement (VPPA) Solar Project



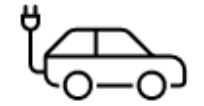
On-Campus Solar Project



High Priority Energy Projects



Sustainable Policies



Shifting Lehigh's Fleet to Run on 100% Renewables



Land Preservation & Local Carbon Offsets



Electrify Some Campus Buildings

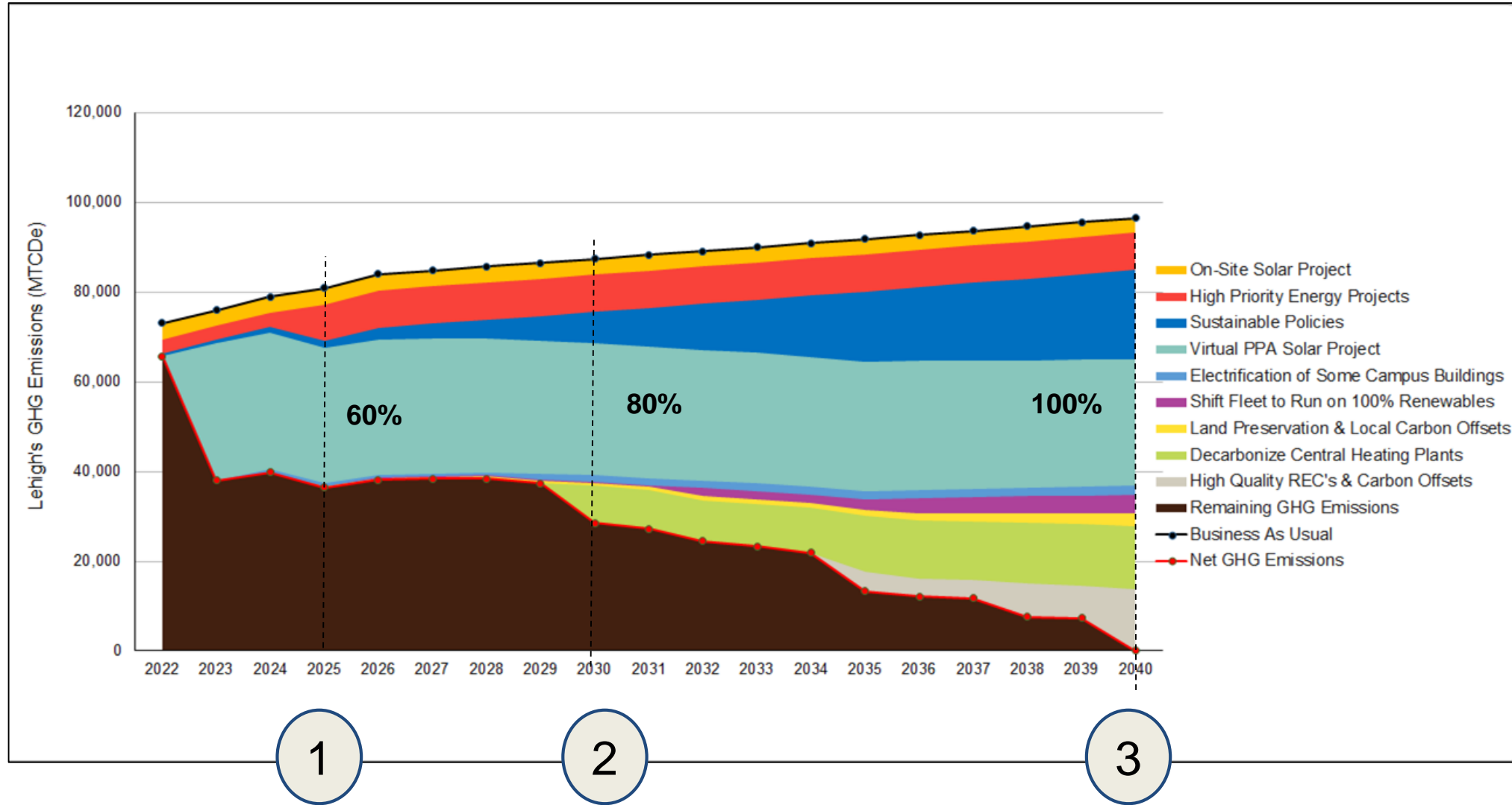


Decarbonize Central Heating Plants



High Quality Renewable Energy Credits (RECs) & Carbon Offsets

'PATHWAY TO ZERO:' STRATEGY IMPACTS OVER TIME

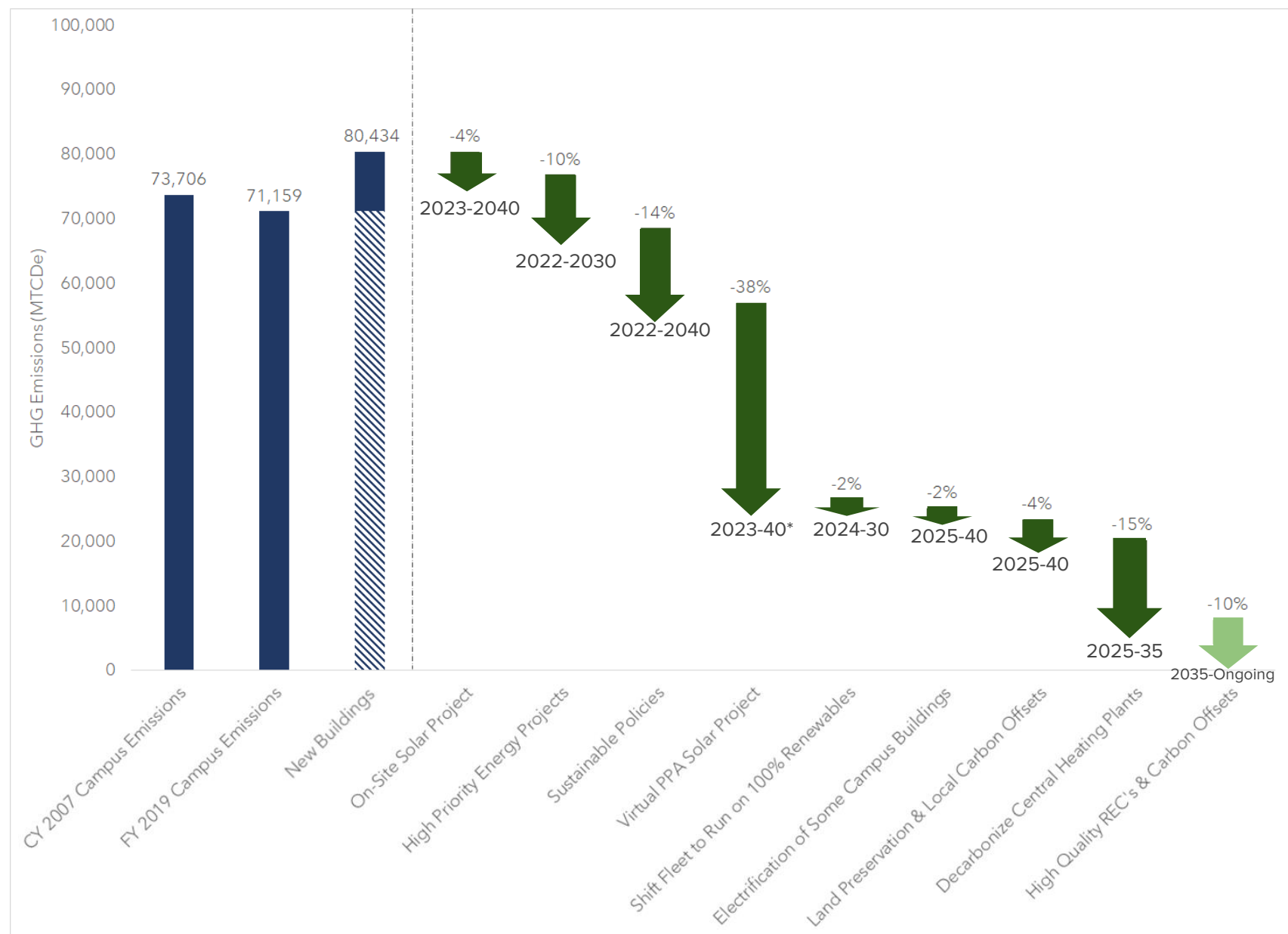


- 60% reduction by 2025
- 80% reduction by 2030
- Carbon neutrality by 2040

Notes:

- * Expected useful life of the solar array is 30 years (orange)
- ** Initial term of the VPPA is 15 years, REC's will continue to be responsibly sourced beyond the contract term (light blue)
- *** Reductions measured against adjusted CY 07 base year emissions

'PATHWAY TO ZERO:' REDUCTIONS BY STRATEGY 2022-2040



Net carbon neutrality achieved by 2040

**The anticipated solar VPPA contract term is 15 years. Renewable Energy Credits of equivalent quality will need to be sourced to continue offsetting electric emissions.*

ESTIMATED PAYBACK FOR INCREMENTAL NEW INVESTMENTS

	Short-Term 2022 - 2025	Medium-Term 2026 - 2030	Long-Term 2031 - 2040	Totals
Incremental New Investments	\$9.2	\$6.5	\$10.1	\$25.8M
Operational Savings	(\$2.4)	(\$8.2)	(\$18.7)	(\$29.3M)
Totals	\$6.9M	(\$1.7M)	(\$8.6M)	(\$3.5M)

NOTE: Negative indicates savings, positive indicates investments

Approximately **\$26M of incremental new investments** may be required to achieve neutrality, but we estimate CAS initiatives will provide a **total of over \$29M in operational savings** on campus through the 2022-2040 assessment period.

Cumulative life cycle savings are estimated at \$3.5M.

FUNDING MECHANISMS

- Annual operating budget
 - Debt
 - Philanthropy
 - Grants
 - Potentially third-party leasing agreements
- Office of Sustainability has already engaged Development & Alumni Relations and identified gift opportunities that align with this strategy

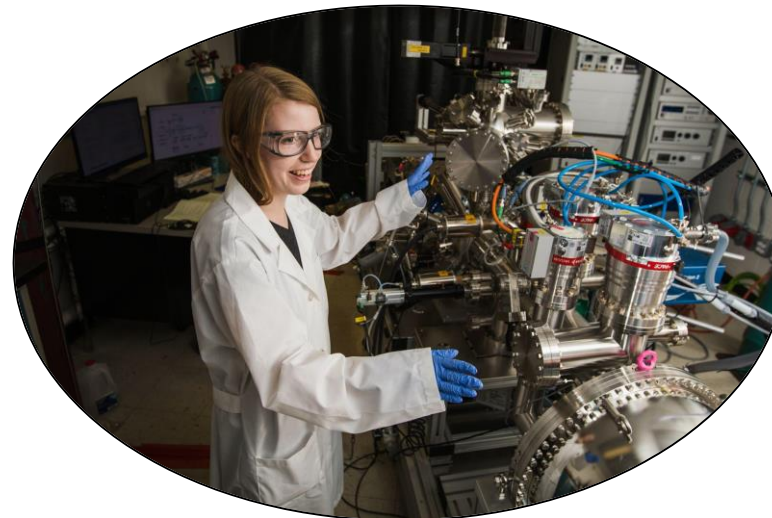
CONNECTION TO ACADEMIC & RESEARCH MISSION



Experiential Learning



Recruitment



Research



Workforce Development

Take Part

Lehigh's Climate Action Strategy maps out the University's transition to a carbon-free campus. Throughout the implementation of the Strategy, there will be opportunities to center Lehigh's mission to advance learning through the integration of teaching, research, and service to others. We will utilize the outlined physical and operational changes to our campus to provide students with first-hand experiences to utilize Lehigh's campus as a living laboratory for experiential learning and to showcase potential synergies with faculty research interests. In partnership with the Office of Sustainability and Lehigh Facilities, we will work with faculty to identify opportunities to bring Lehigh's Climate Action Strategy into coursework, projects, and research. This will be an important part of Lehigh's legacy. We hope you will join us in taking part in this transition!

Background

In October 2020, Lehigh adopted its [Sustainability Strategic Plan 2030](#). It establishes a long-term vision for sustainability at Lehigh with six focus areas and 113 detailed near-term, intermediate, and longer-term goals. Additionally, Lehigh is in the process of finalizing a crucial component of that 2030 Plan - a [Climate Action Strategy](#). This strategy provides a detailed framework and serves as a comprehensive roadmap for measuring, planning, and reducing Lehigh's greenhouse gas emissions. It also establishes a net carbon neutrality date.

Ways To Engage

There are **FOUR** main ways that you can engage with this work:

- Experiential Learning:** Faculty are encouraged to collaborate with the Office of Sustainability, Lehigh Facilities, and other internal and external climate action partners to give students first-hand experiences in the process of implementing Lehigh's climate action initiatives. You can utilize this [experiential learning spreadsheet](#) as a tool to identify collaborative opportunities across programs and departments that support Lehigh's ongoing sustainability initiatives and the emissions reduction strategies in the Climate Action Strategy. You are invited to add ideas, as this spreadsheet will serve as a living document.
- Research:** There are opportunities within Lehigh's Climate Action Strategy that will require additional research to determine the feasibility and overall impact towards Lehigh's goal of net carbon neutrality. We look to faculty with content expertise to take the position of project or research lead - utilizing dedicated student interns to support their work. You can utilize [this research spreadsheet](#) as a tool to identify potential research opportunities that support Lehigh's ongoing sustainability initiatives and the emissions reduction strategies in the Climate Action Strategy. You are invited to add ideas, as this spreadsheet will serve as a living document.
- Internships:** Collaborative learning projects/internships provide students with a front-row seat at meetings with consultants and internal project management review sessions. This gives students a chance to understand how decision-making takes place at Lehigh. Students will walk away with personal experience on how decisions are made and how plans get implemented.
- Course Integration:** Faculty can use active Climate Action Strategy projects at Lehigh as examples in their current course work. This [Course Toolkit](#) was developed to provide examples of ways climate action themes can be incorporated into your class(es) that require varying levels of effort.

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	College:	Research	College of Arts and Sciences				College of Health			College of Business			
2	Department/ Program	Faculty Research	Arts	Humanities	Math and Natural Sciences	Social Sciences	Interdisciplinary Programs	Public Health	Population Health	Business and Economics	Computer Science and Business	Integrated Business and Engineering	Communications / Marketing
3	Ideas												
4	Onsite solar array - something experiential - battery storage?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5	Provide students with capstone projects that investigate and design infrastructure projects for campus. Examples: Geothermal heating/cooling, building-size green energy, etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6	Climate justice, racial justice and environmental justice - women/gender studies working with office of equity?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7	Greening of campus - natural meadows, additional trees, green roofs, addressing heat islands (on campus and near campus)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8	STARS connections - specific courses - campus as living lab	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9	Link to STEPS/EI research grants	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10	Creative Inquiry - what courses do they work with? Student projects specified to take on sustainability/climate action	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11	Impact of climate on disease, focus on adaptation and prevention campaigns in the Lehigh Valley	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12	Writing skits to teach about sustainability issues (could perform to campus groups or K-12 groups perhaps?)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13	An interactive arts exhibit where people could walk through and explore the vision of Lehigh (like what Lehigh would look like) if the 2030 plan is a success and beyond/next steps	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	+ ☰ Experiential Learning & Research Opportunities ▾												

COURSE TOOLKIT

8 Ways to include Lehigh's Climate Action Strategy in your course:

1. Embedded Curriculum
2. New Content in Existing Modules
3. New Assignment
4. New Unit or Module
5. Guest Speakers; Team Teaching
6. Engaged Learning; Community Experience
7. Paradigm Shift
8. Whole New Course

Adapted from Peggy Bartlett and Geoff Chase from AASHE's Curriculum Workshop

Background

In October 2020, Lehigh launched its Sustainability Strategic Plan 2030. It establishes a long-term vision for sustainability at Lehigh with 6 focus areas and detailed near-term, intermediate, and longer-term goals. Additionally, Lehigh is in the process of developing a crucial component of that 2030 Plan - a Climate Action Strategy. This strategy will provide a detailed framework and serve as a comprehensive roadmap for measuring, planning, and reducing greenhouse gas emission at Lehigh. Watch this [video](#) to learn more about Lehigh's Climate Action Strategy development process.

Purpose

The purpose of this class toolkit is to assist faculty across Lehigh's five colleges with integrating Lehigh's commitment to sustainability and climate action (including key concepts like climate change, climate action, social justice, and resiliency) into your class(es). There are eight different paths this integration can take ranging from minimal to moderate effort. As sustainability becomes more central to the strategy of business and government, employers are increasingly emphasizing sustainability competencies, even for jobs that aren't explicitly focused on sustainability. This means that students equipped with these competencies are in demand by employers. We encourage you to choose the integration path that works best for you and your course!

Potential Learning Outcomes

We recognize every course is going to adjust learning outcomes that best fit the given syllabus. The purpose of this toolkit is to be able to give students the tools to have deeper understanding of the impact of the climate crisis globally and regionally from the viewpoint of various disciplines. Students will also be able to have an opportunity to connect what they learn to our community and what Lehigh is doing. Here are some learning outcomes we hope you consider:

1. Students will deepen their understanding of past Lehigh climate action and sustainability achievements and the ongoing Climate Action Strategy process, purpose, and content.
2. Students will feel empowered to provide input on the development of Lehigh's Climate Action Strategy and feel an increased connection to sustainability initiatives at Lehigh.
3. Students will understand the drivers and impacts of climate change, with a focus on local/regional impacts, and intersection of equity and climate change.
4. Students will learn about strategies to mitigate climate change impacts and understand that taking action on climate change is possible and productive.



Climate Action Strategy Report 2021

A Carbon Neutral Future



A photograph of a stone building entrance with a fountain in the foreground and the word 'QUESTIONS?' overlaid in large white text. The building is made of dark stone and features a large arched doorway. Above the doorway are two statues of men in period clothing. The fountain is a circular stone basin with a single water spout. Two people are walking out of the doorway. The scene is set outdoors with trees and a clear sky.

QUESTIONS?

RESOURCES

- [Lehigh Sustainability Website](#)
- [Lehigh Sustainability Curriculum Integration Webpage](#)
- Lehigh Climate Lab
 - [Overview](#)
 - [Committee](#)
- [Course Toolkit](#)