



ICCCFO Conference

Setting a Carbon Budget

October 11, 2023



Presented by:

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FGMAARCHITECTS

Audience Poll

WHAT is the issue?

We are in unprecedented times and climate change has become an urgent crisis.

Higher education campuses can benefit from putting a strategy in place to work towards carbon neutral operations.

The Challenges

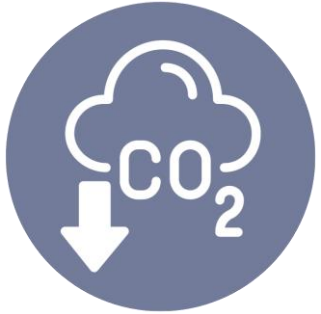
Students Have Choices



The Challenges



Energy Costs



Carbon Footprint



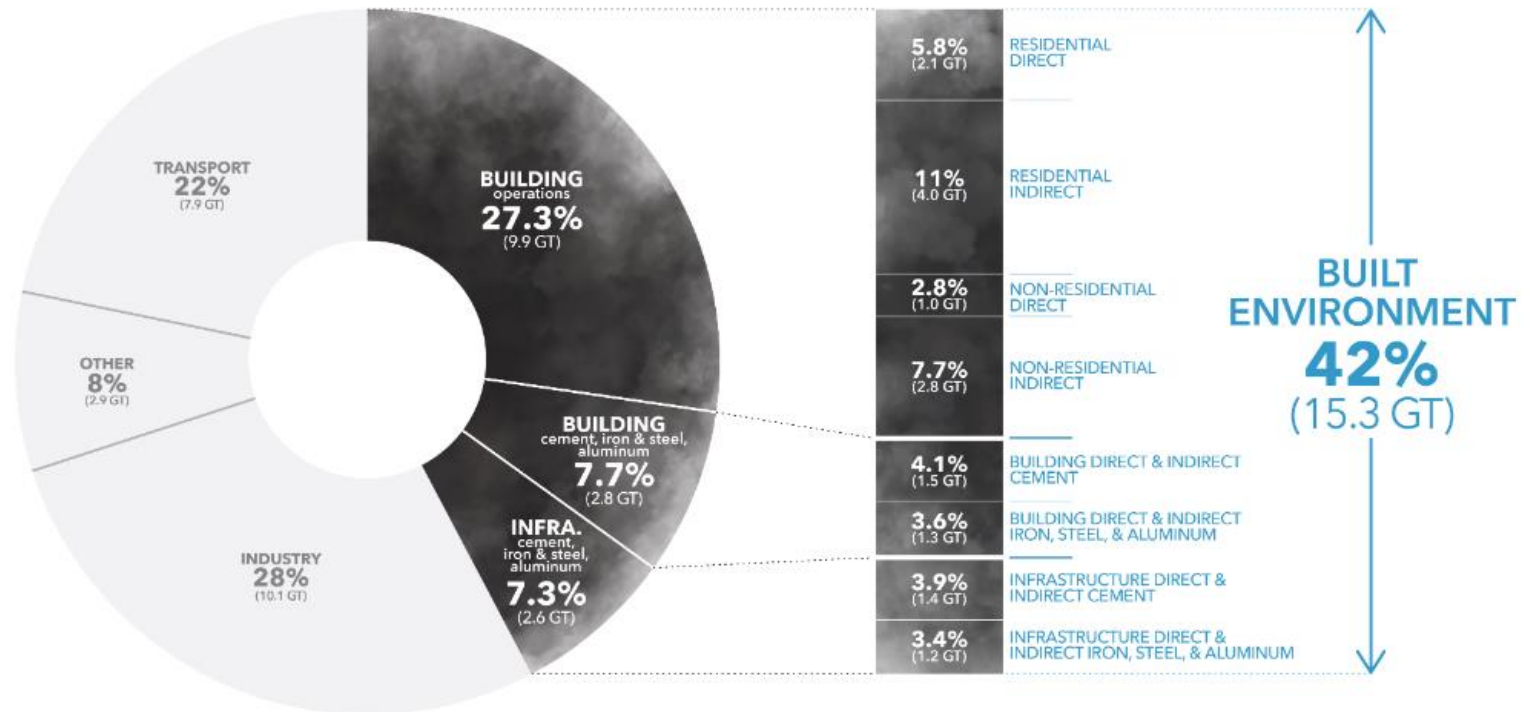
Dependance on Fossil Fuels

Climate Change & Buildings

The **built environment** is responsible for about **42%** of annual global CO₂ emissions.

Of those total emissions, **building operations** are responsible for approx. **27%** annually.

TOTAL ANNUAL GLOBAL CO₂ EMISSIONS
Direct & Indirect Energy & Process Emissions (36.3 GT)



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Analysis & Aggregation by Architecture 2030 using data sources from IEA & Statista.

Students Have Choices



INSIDE
HIGHER ED

X



COLLEGE PULSE

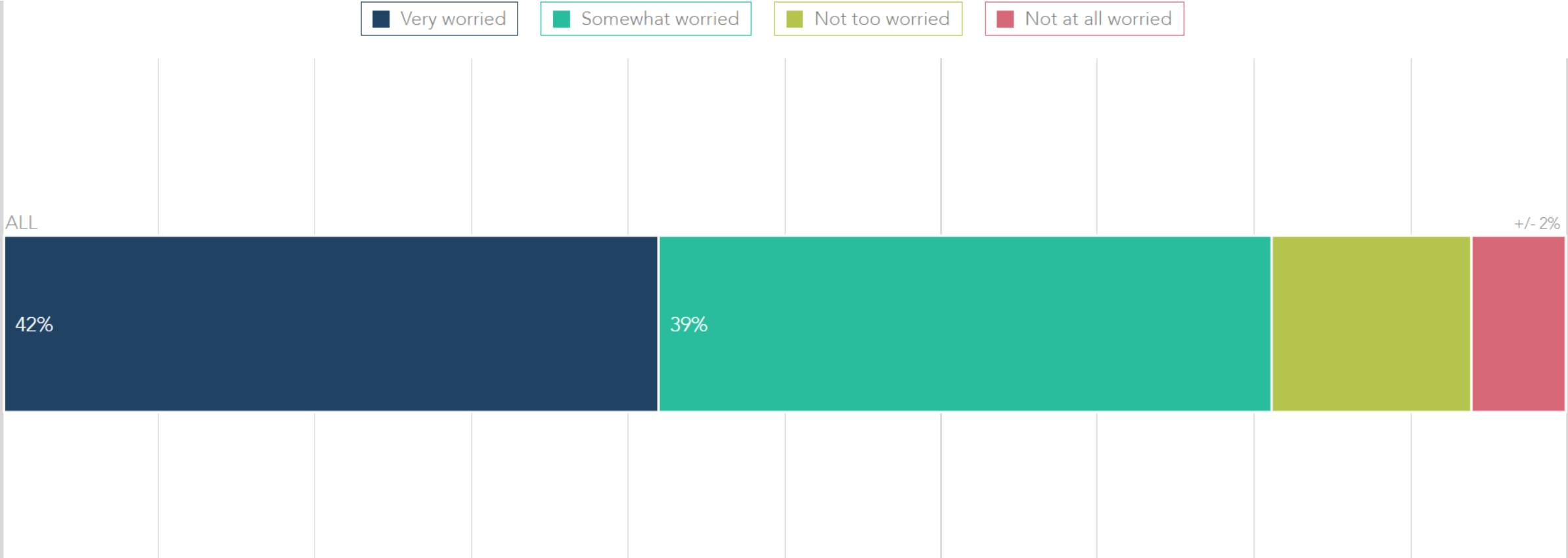
EXPLORE THE DATA

Sustainability Beliefs and Behaviors

Presented by:

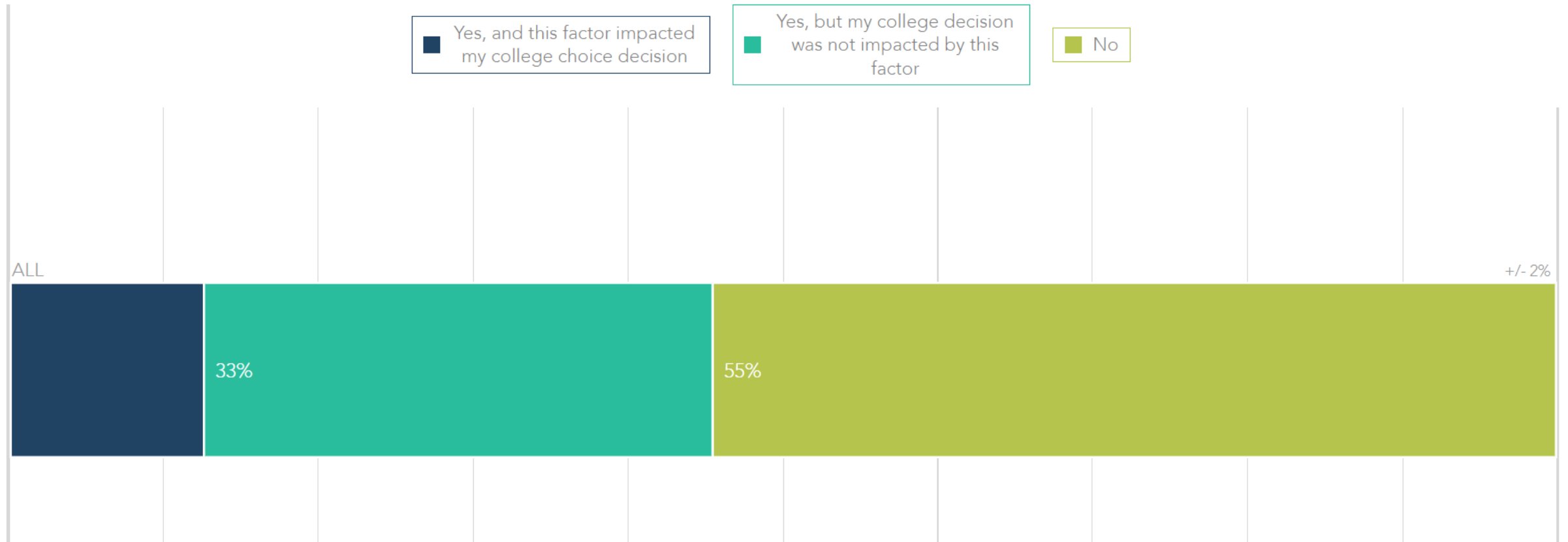
KAPLAN

81% are worried about climate change

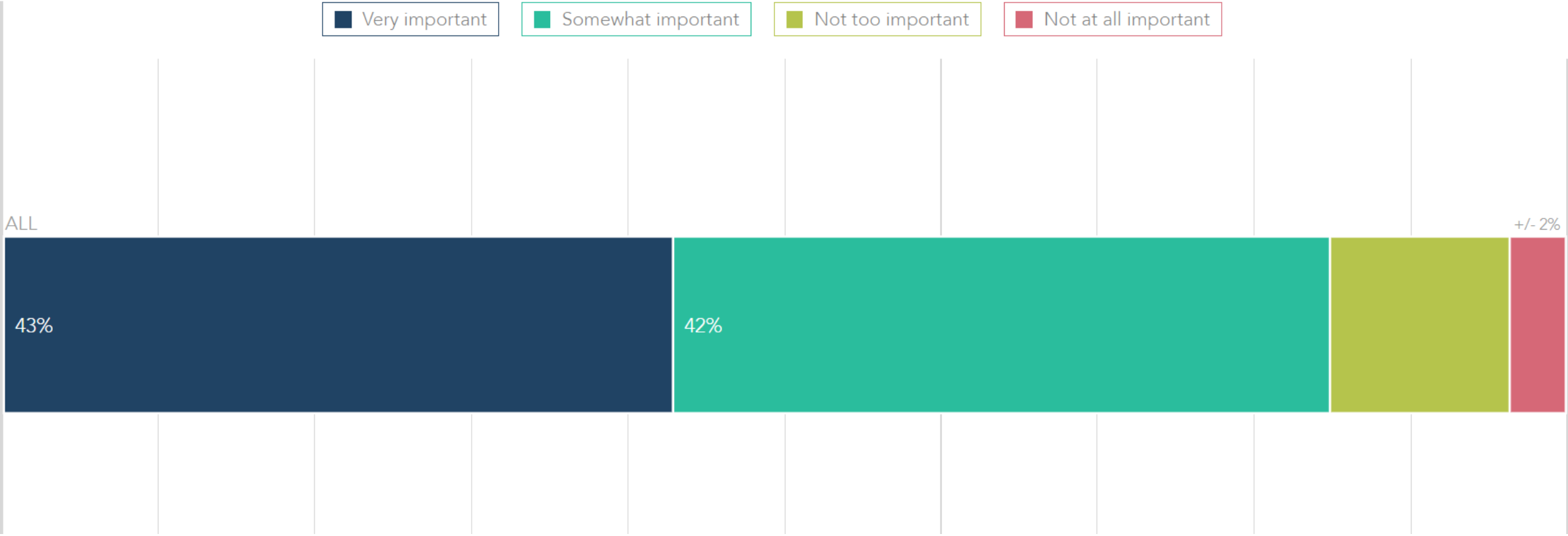


45% considered environmental sustainability in their college enrollment decision

12% said it influenced their choice

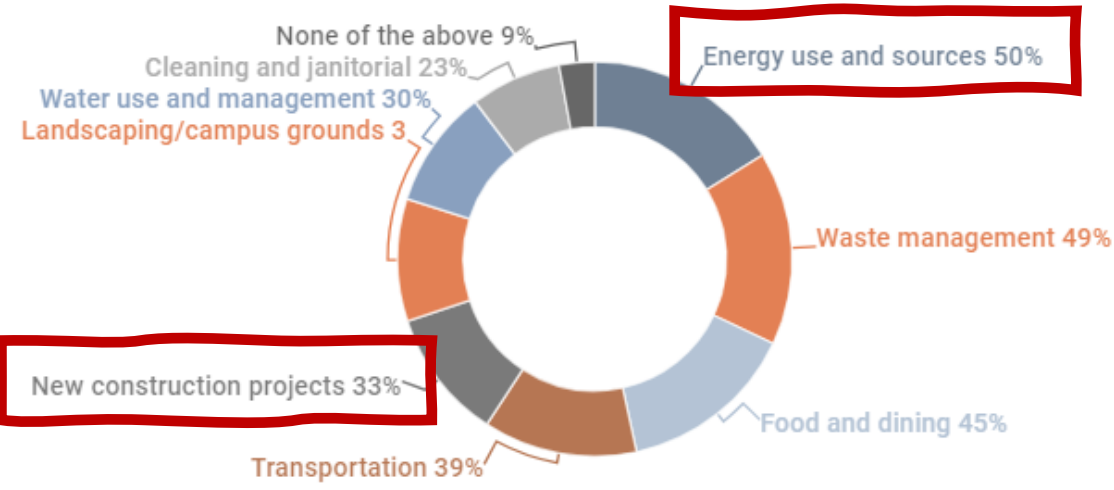


85% indicated it is important to them that their college prioritize sustainability

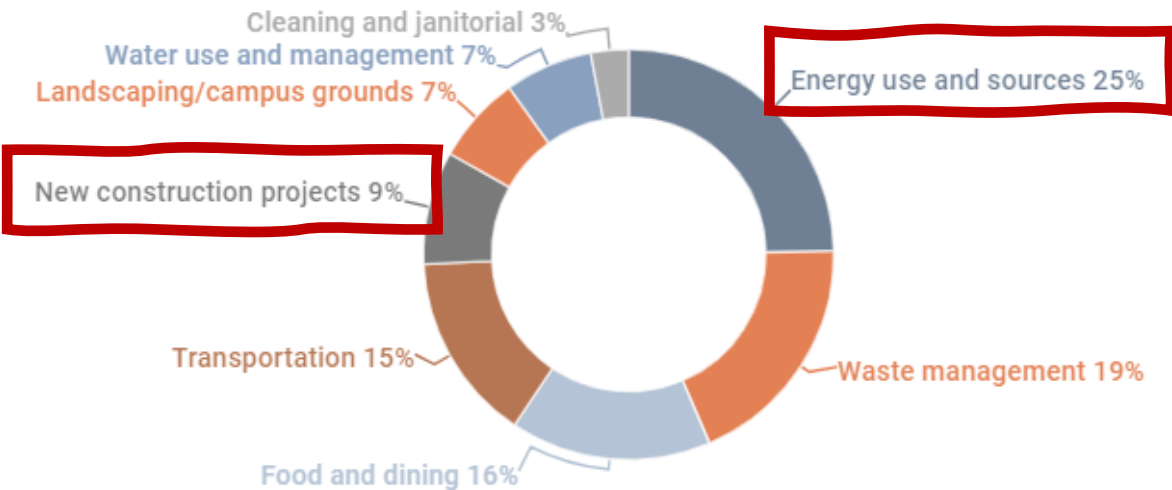


50% want their institution to prioritize sustainable energy use & sources
25% said the primary focus should be energy use and sources

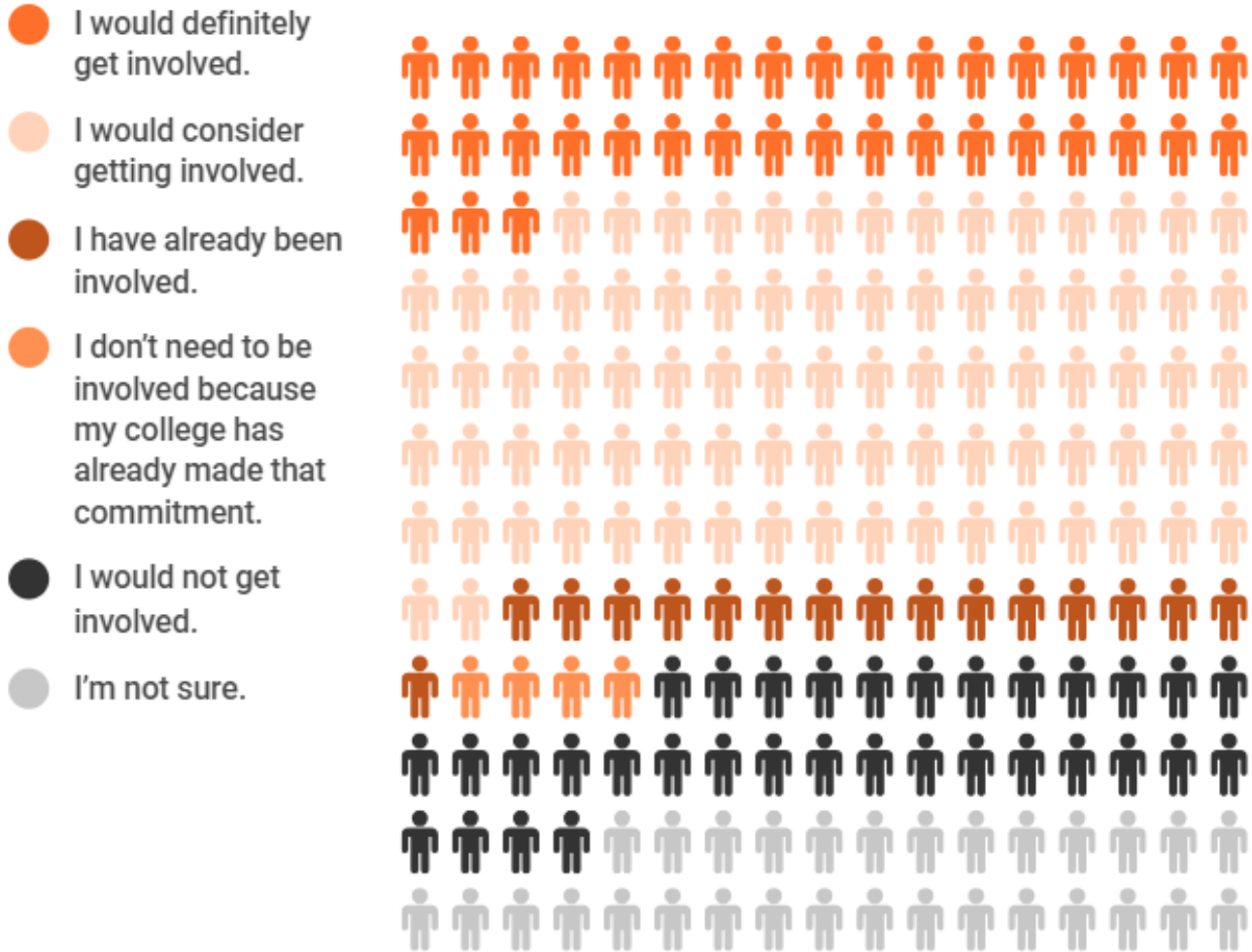
Areas in which students call for greater sustainability at their institutions (multiple responses allowed)



Single most important area students say their institution must focus on making more sustainable



Nearly 7 in 10 have already been or would consider working to persuade their colleges to divest from fossil fuels



Survey Summary



Students have choices
*and they want their school to be
part of the solution.*

It is *vital* to align principles with the
next generation of students.

Setting a Carbon Budget

- Putting a plan in place to transition to fossil fuel free campuses
- Steps to take:
 1. Establish a benchmark
 2. Set goals, targets and timeline
 3. Take action to implement a plan of such magnitude



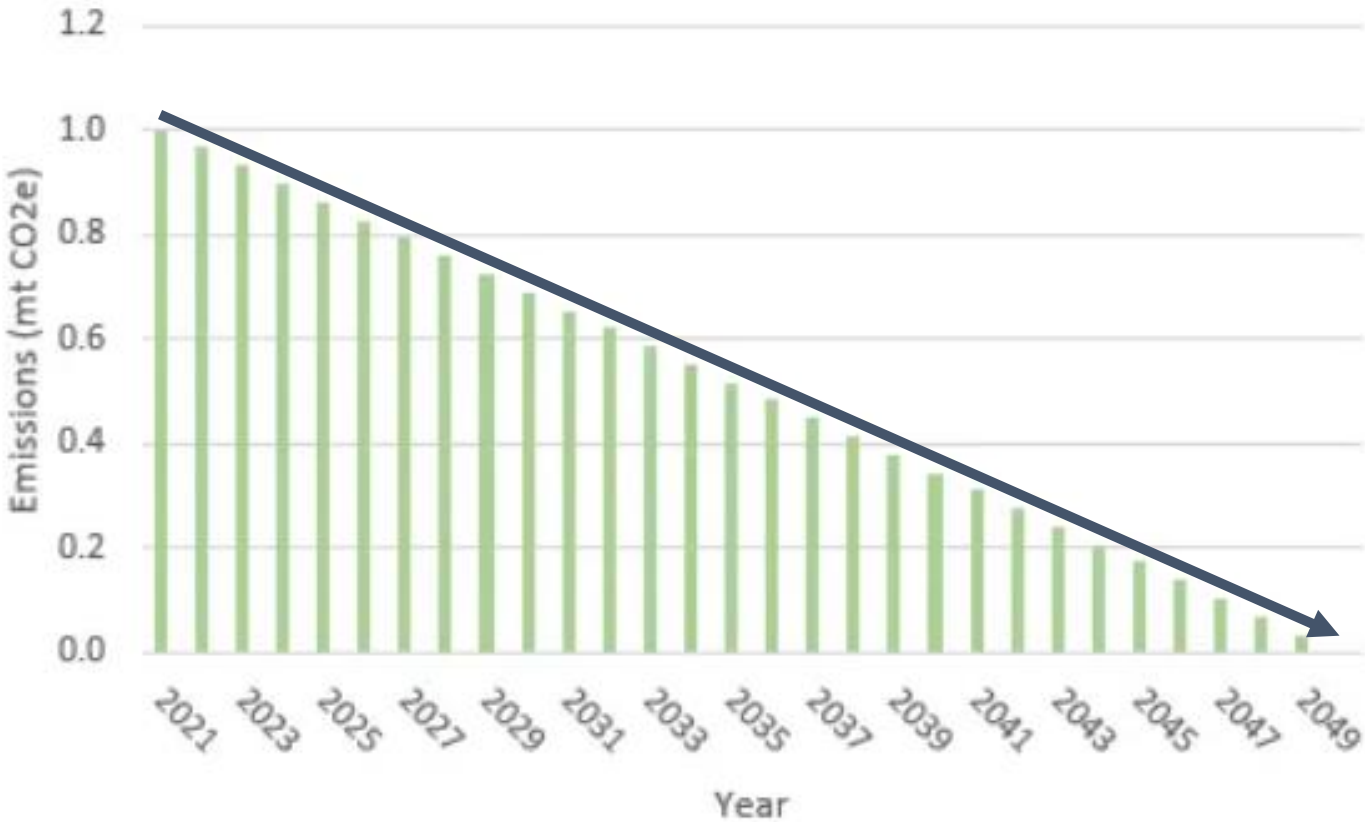
Setting a Carbon Budget

- Overview of which experts to engage throughout process
- Budgeting to engage experts for routine maintenance and capital improvements
- **UPFRONT COSTS YIELD FUTURE SAVINGS**, decreases fossil fuel dependence



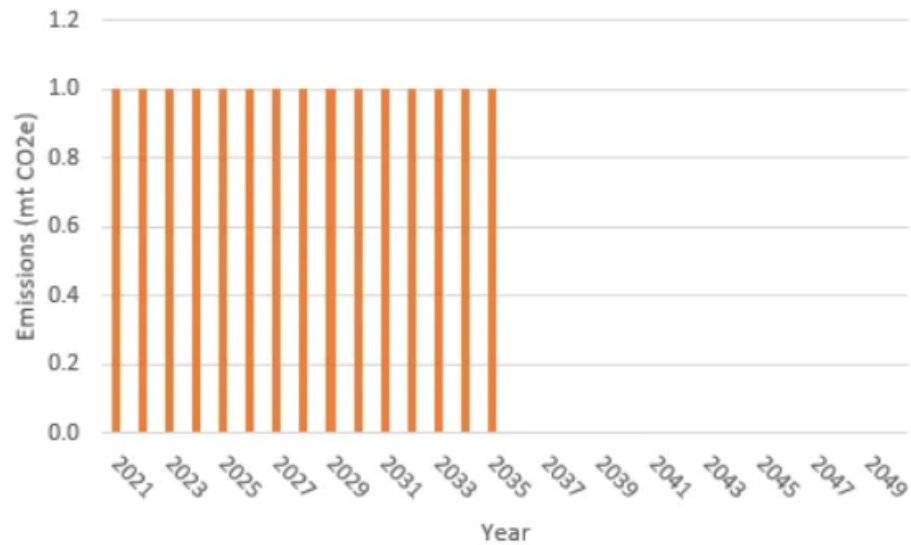
What is a Carbon Budget?

A carbon budget sets a clear path to carbon neutral in a step-down approach over a fixed period of time, based on current carbon footprint.

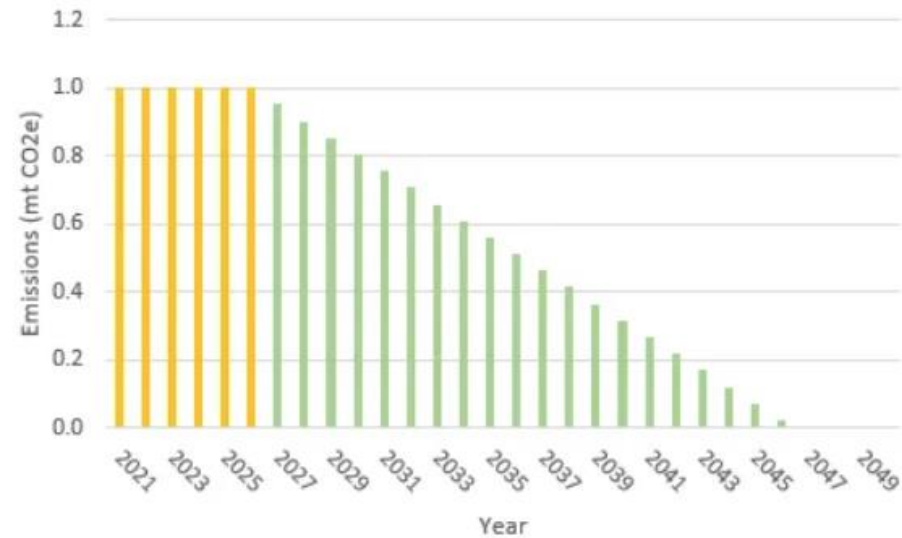


What is a Carbon Budget?

Carbon budgets measure how much CO₂ is produced by organizations to calculate how emissions must be cut in the future. The aim is to reduce reliance on fossil fuels, thus **working towards net zero**.



Business as Usual; Spending the Carbon Budget in 15 Years



5 Year Delay Requiring More Aggressive Action

What is the A/E Industry Doing About This?

Many A/E practices have committed to working towards carbon neutral designs by signing onto the **American Institute of Architect's 2030 Commitment** and other similar pledges.

MEP 2040
Committing to Zero



WHY?

“Higher education institutions have the power to redesign the future.

Not only are universities, colleges and schools committing to ambitious decarbonization plans; these institutions also have the capacity - and indeed the responsibility - to support and educate our leaders of tomorrow.”

- Nigel Topping, United Kingdom High-Level Climate Action Champion

Why Set a Carbon Budget?

1

It's good for the planet.

Community Colleges oversee significant resources in financial capital, and how they deploy those can have a real impact on achieving net-zero emissions and a sustainable future.



Why Set a Carbon Budget?

2

It's good business.

Prospective and current students want to attend community colleges that are driving the environmental agenda forward.



Why Set a Carbon Budget?

3

It's fiscally responsible.

Not addressing climate change is more costly than reaching net zero.



Why Does This Matter?

It takes thoughtful, intentional, multi-year planning with future capital improvement, operational and maintenance projects and costs in sight to step-down in a **manageable and pragmatic direction** to carbon neutrality.



Why Include in Financial Planning?

1

Working towards a carbon neutral environment can often have **upfront costs that yield future savings** and decreases fossil fuel dependence.

Why Include in Financial Planning?

2

A goal of this magnitude needs to be aligned with budget and planned projects over a **multi-decade timeline**.

Why Include in Financial Planning?

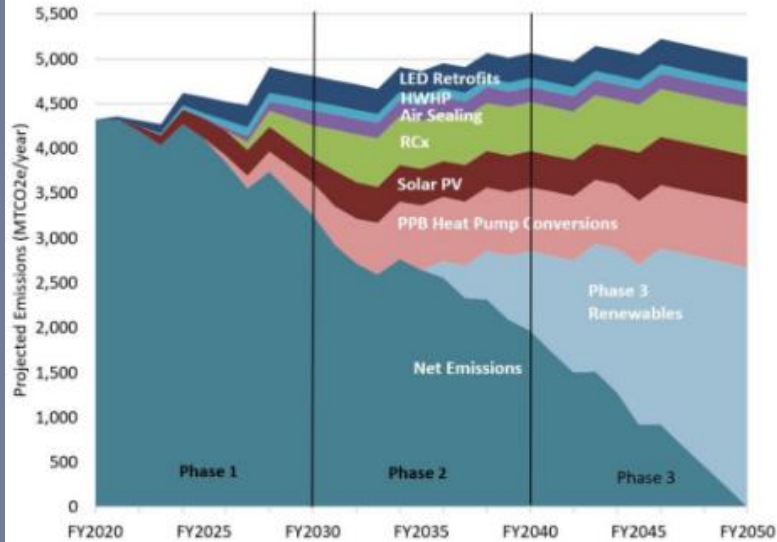
3

There is no one-size-fits-all.

There will be capital costs, but approaching capital, maintenance and other improvement costs holistically - and abandoning the ad-hoc approach of stand-alone projects- can realize carbon neutrality in a strategic way.

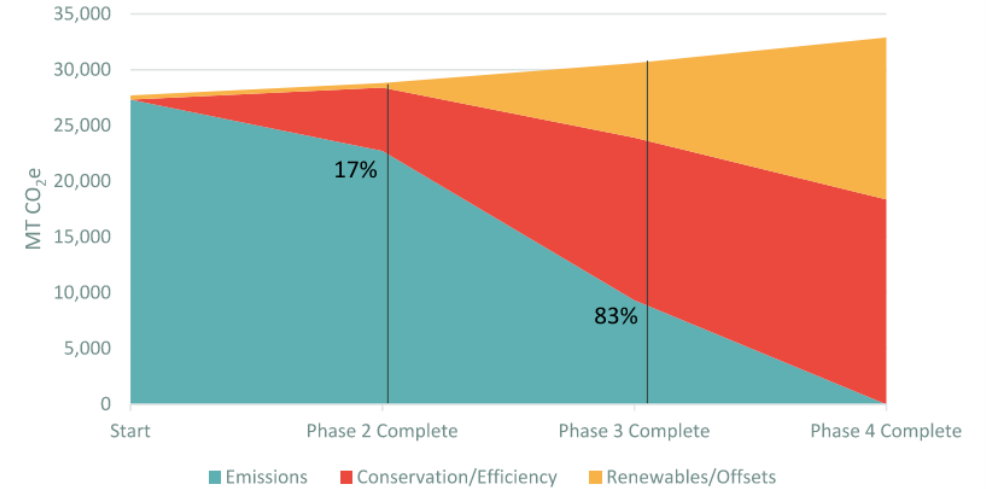
HOW?

Pathway to Net Zero



Phase 2: 2022-2032 [CO ₂ Reductions]	Phase 3: 2033-2042
Retrocommission buildings [900MT]	
Implement DCV [360MT]	
Reduce exhaust [360MT]	
Turn off central heating system during summer [360 MT]	
Online/hybrid courses [180MT]	
Car/vanpool [90MT]	
Low carbon travel [90MT]	
Minimize travel [90MT]	
Right Size fleet [4MT]	
Reduce land requiring maintenance [4MT]	
Electronic document transmission [unknown]	
Install electric vehicle charging infrastructure and stations [270MT/yr increasing annually to 8,070MT by 2053]	
	Purchase renewable electricity [4,140MT]
	Rooftop solar [2,160MT]
	Upgrade lighting & HVAC [1,800MT]
	Utilize performance contracts [1,260MT]
	Improve central system efficiency [900MT]
	Improve envelope air tightness [360MT]
	Install heat recovery exhaust [180MT]
	Water efficient fixtures [unknown]
	Bottle fillers [unknown]
	Trayless dining [unknown]
	High efficiency / electric fleet vehicles and equipment [200MT]
	Transition to cold weather heat pump [4,680MT]
	Purchase offsets [all remaining emissions]

Mitigation Over Time



Phase 1: 2021-2030	Phase 2: 2031-2040	Phase 3: 2041-2050
1. LED retrofits		
2. HPWHs		
3. Envelope improvements		
4. Retrocommissioning		
5. Solar development		
6. Convert PPB to geothermal		
7. Vehicle charging stations		
8. Electrify fleet vehicles		
9. Planting trees		
10. Waste & procurement reductions		
11. Commuting improvements		
12. Renewable energy procurement & offsets		

So, How Can You Do This?

- 1) Measure where you are. Establish a benchmark.
- 2) Set goals, targets and a timeline.
- 3) Take action implementing the plan.

Step 1: Baseline



- Determine where you are right now with a campus energy and carbon audits and assessments.
- Who can help you with benchmarking?
 - **Engage professional engineers that specialize in sustainability analytics & provide energy and carbon modeling**
 - **→ Reach out to SEDAC: for their IGEN Community College Net Zero Collaborative**



IGEN NET ZERO COLLABORATIVE

Find out about SEDAC's new climate action planning program for community colleges in Illinois, in collaboration with the Illinois Green Economy Network (IGEN).

[Learn more](#)

Step 2: Setting Goals, Targets & Timeline

- What do you do with that information?
 1. Set goals
 2. Prioritize
 3. Monitor progress

Step 2: Setting Goals, Targets & Timeline

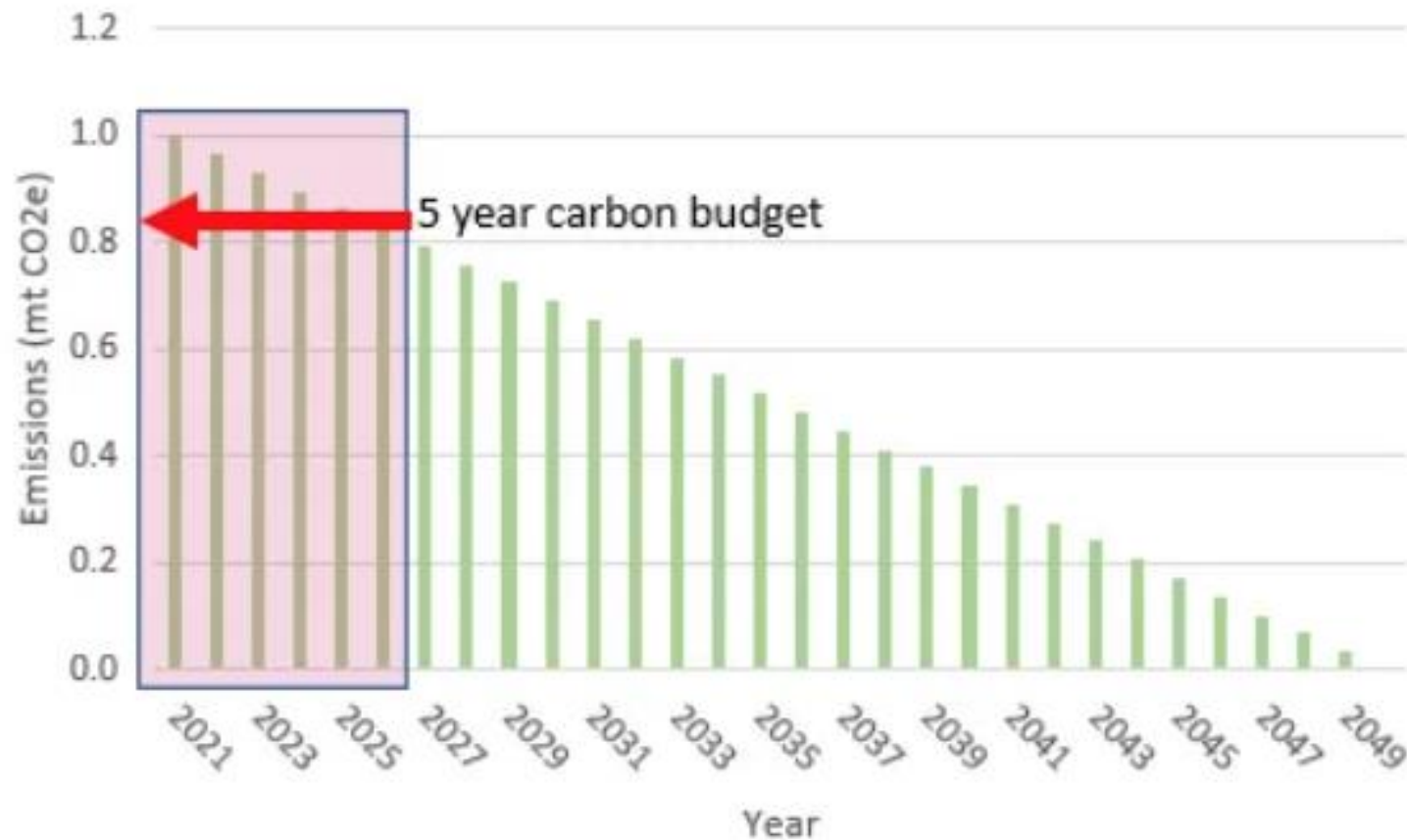
- How do you determine what goals require priority?
 - **Align with the facilities master and strategic plans.**
 - ***This is not a Five-Year Project.* Common approaches step-down to 2040 or 2050.**

Step 2: Setting Goals, Targets & Timeline

- Build a roadmap: plan and strategize improvements and projects in a way that supports the vision.
- Plan improvements into your annual budget process.
- Develop and revisit a sustainable action plan.

Interim Targets

Split the budget into more manageable timelines to align with strategic initiatives and fiscal planning



Step 3: Take Action

- Budget to engage experts for routine maintenance projects as well as capital improvement expenditures.
- Hire the right team members *for the right scope of work*.
- Retro-commission existing facilities.

Step 3: Take Action

- Make sure the goals are well-documented, understood, and achievable.
- **AND** communicated to all organizations in the campus community.
- Amend your requests for A&E services to require your design teams to provide net-zero-ready designs.



How can A/E professionals support you?

- Helping set goals.
- Prioritizing projects once the benchmark and vision are established.



We understand this is a long-term commitment.

Summary

How to start on a path to reduce energy costs and transition to fossil fuel free, strengthening the campus community:

1. **AUDIT:** Complete a carbon/energy assessment.
2. **PRIORITIZE:** Decide which projects need attention first.
3. **SCHEDULE:** Build an on-ramp to fossil fuel free with a set timeline.
4. **TEAMWORK:** Ensure that design teams understand the impact of your road map on a particular project. Use computer simulation to project the overall operational cost for the life cycle of the building and validate it against the roadmap to go fossil-fuel-free by 2050.
5. **CELEBRATE:** Celebrate the successes publicly!

Audience Poll

THANK YOU!



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