INDIANA UNIVERSITY CLIMATE ACTION PLAN

IU CAP Committee Meeting

November 30, 2022

SMITHGROUP

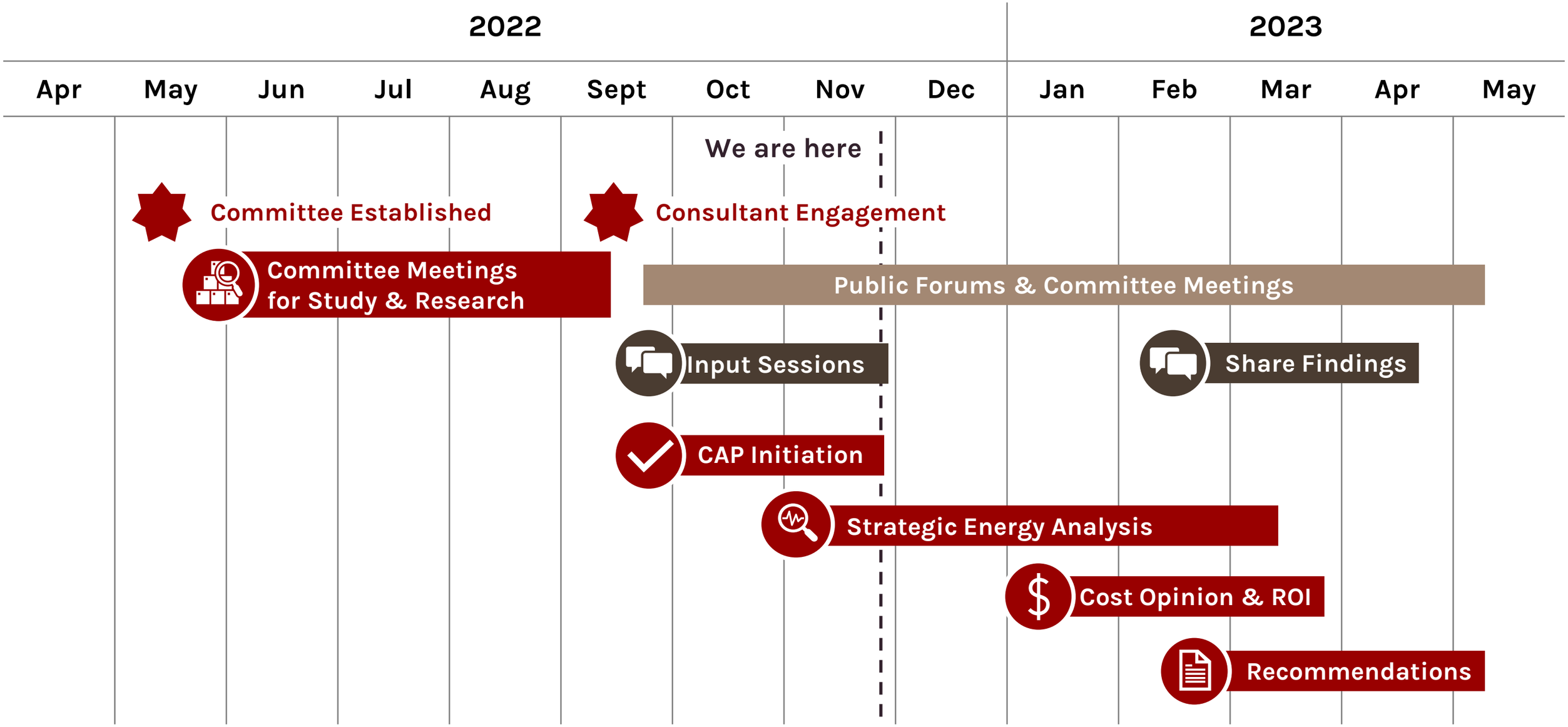
AGENDA

Proposed Communication Schedule and Content

Strategies & Examples

Starting Initiatives

PROJECT SCHEDULE



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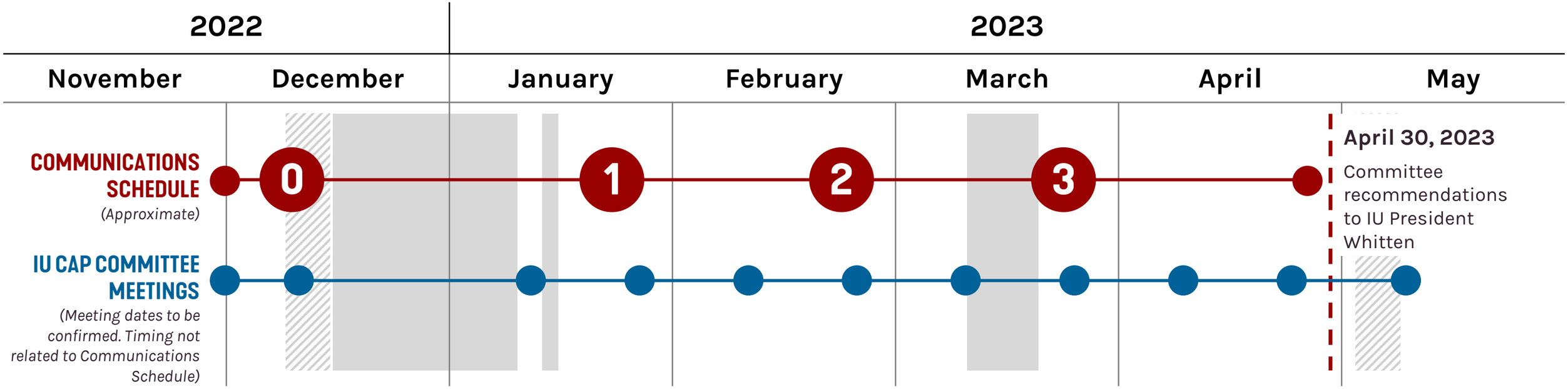
CONTENT CREATION

EDUCATE, UPDATE, ENGAGE

PROPOSED COMMUNICATIONS SCHEDULE



IU CLIMATE ACTION PLAN COMMUNICATION SCHEDULE

Four publication releases at approximately one-month intervals. Suggested topics may include:

0. Board of Trustee Presentation
1. What are we doing – and why is it important?
2. What have we learned so far?
3. Where are we going – and how will we get there?

In addition to the proposed Communication Schedule, public meetings are planned to share outcomes of the Climate Action Plan. Anticipated in March 2023. Format and timing to be determined.

IU FALL 2022 & SPRING 2023 ACADEMIC CALENDAR

Fall Final Exams: December 12 – 16, 2022

Winter Break: December 16, 2022 – January 9, 2023

Martin Luther King Jr. Day: January 16, 2023

Spring Break: March 12 – 16, 2023

Spring Final Exams: May 1 5, 2023

https://calendars.registrar.indiana.edu/official-calendar/index.shtml?term=4232&session=0&event=0

COMMUNICATION SCHEDULE

TITLE	WHAT ARE WE DOING, AND WHY IS IT IMPORTANT?	WHAT HAVE WE LEARNED SO FAR?	WHERE ARE WE GOING – AND HOW WILL WE GET THERE?
Date	January 2023	February 2023	March 2023
Topics	• **GHG & Carbon Neutrality Overview** • **Indiana University Climate Action Plan** • **How to get Involved**	• **What have we learned through analysis, research, and benchmarking?** • **Preliminary Energy Analysis** • **IU Projects to-date**	• **Climate Action Plan themes** • **Tracking and measuring progress** • **Next steps for Indiana University**
Info Sources	• IU climate website FAQ • Consultant presentations • IU CAP Committee Presentations (May 16)	• Consultant preliminary analysis and findings • IU CAP Committee Presentations (June 1, June 15, July 18) • Consultant presentations	• IU CAP Committee Presentations (June 15, July 12, July 18, August 10, August 24) • IU capital project web database • Consultant recommendations
Additional Topics (Optional)	• IU progress to-date: Summarize projects and impact by campus (IU CAP Committee Presentations (June 15, July 12, July 18, Aug 10, Aug 24)	• Indiana's climate future • Tracking and reporting: "What is STARS and LEED – and how do these relate to climate action planning?"	

1 WHAT ARE WE DOING – AND WHY IS IT IMPORTANT?

MEDIA RELEASE #1: IU CLIMATE ACTION PLAN OVERVIEW

CONTENT

Provides an overview of basic concepts around climate action planning and carbon neutrality, such as:

- **GHG & Carbon Neutrality Overview**
  - What are Greenhouse Gas Emissions? (Overview of Scopes 1, 2, 3 & tracking at IU)
  - What is "Carbon Neutrality"?
- **Indiana University Climate Action Plan**
  - Timeline & process
  - Public Input: "What we've heard so far"
- **How to get Involved**

WHAT IS A CLIMATE ACTION PLAN?

The Climate Action Plan is Boston's roadmap for how we will reach our greenhouse gas reduction goals.

With the plan, Boston will continue to develop as a vibrant and sustainable city for current and future generations. We plan to champion the actions needed to meet the global challenges of climate change.

Aside from meeting Boston's climate goals, carrying out the actions laid out in the 2019 Update will lead to a host of other benefits. By going carbon free and getting climate ready, we are also:

1. providing clean air
2. improving mobility and access
3. building a green economy with blue collar jobs, and
4. protecting all Bostonians.

In other words, this work is essential for a healthy, thriving and resilient Boston.

LEARN ABOUT THE 2019 UPDATE

2008	2015	2017	2019	2021
Chicago becomes the first major American city to develop a climate action plan. Chicago Climate Action Plan: Our City. Our Future	With a focus on creating jobs, fostering new industries, and reducing costs for residents and businesses, Chicago updates its climate strategy to meet the existing 2020 goals. Sustainable Chicago 2015 Action Agenda	Chicago commits to observe the Paris Climate Agreement and commits to transition municipal electricity load to 100% clean renewable power	Commitment to transition the electricity load for all buildings within Chicago to 100% clean renewable power and transition to 100% all-electric CTA bus fleet. Resilient Chicago: Action 38	Mayor Lightfoot proposes a $188M investment toward sustainability and the environment as part of the 2022 budget. 2022 City Budget Climate Investments

Source: City of Boston (top); City of Chicago (bottom)

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2 WHAT HAVE WE LEARNED SO FAR?

MEDIA RELEASE #2: PRELIMINARY ANALYSIS AND FINDINGS

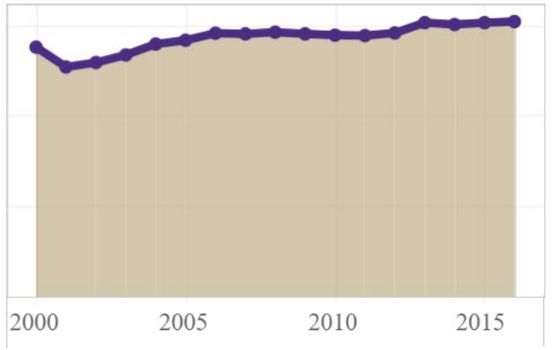
CONTENT

Reviews preliminary analysis findings and potential implications, such as:

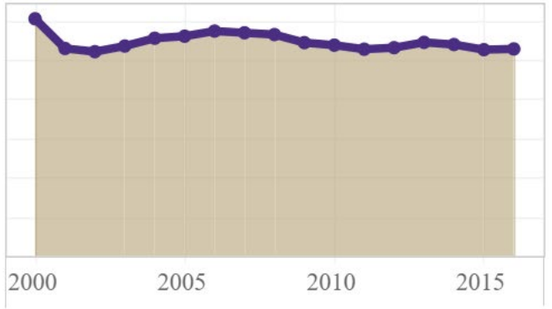
- **What have we learned?**
  - Based on committee & consultant research and analysis and benchmarking
- **Preliminary Energy Analysis**
  - Energy analysis overview (what is it and why does it matter?)
  - High level energy analysis with key takeaways
- **IU Projects to-date**
  - Summarize projects and impact by campus

Source: University of Washington

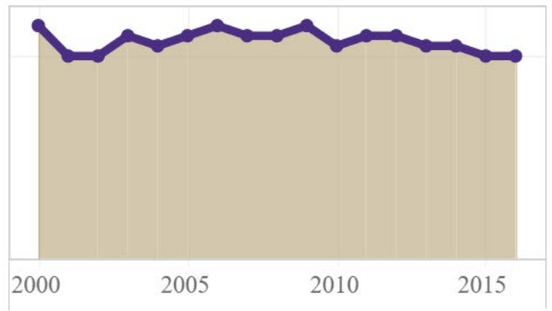
Electricity Consumption (total)



Electricity Consumption per person



Electricity Consumption per square foot



ELECTRICITY USE

Seattle Campus

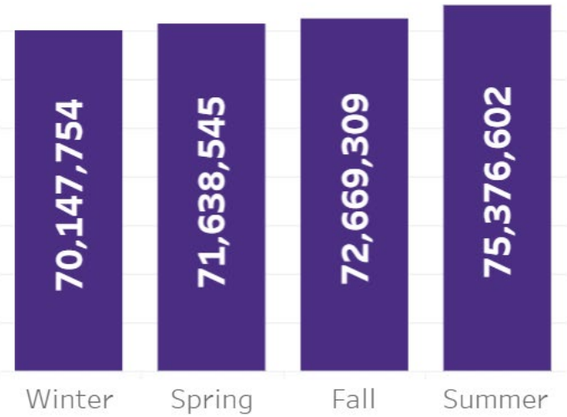
Rising or falling?

Electricity consumption has risen over the past 16 years, but the amount per person or per unit of building space has gone down slightly.

Highest in summer

We use electricity for lighting, equipment and cooling, but generally not for heating. This is reflected in the bar chart showing that our highest energy consumption rate is in summer quarter. Despite a reduction in number of people, electricity consumption rises as we cool buildings.

Electricity Consumption by quarter
(average since 2000)



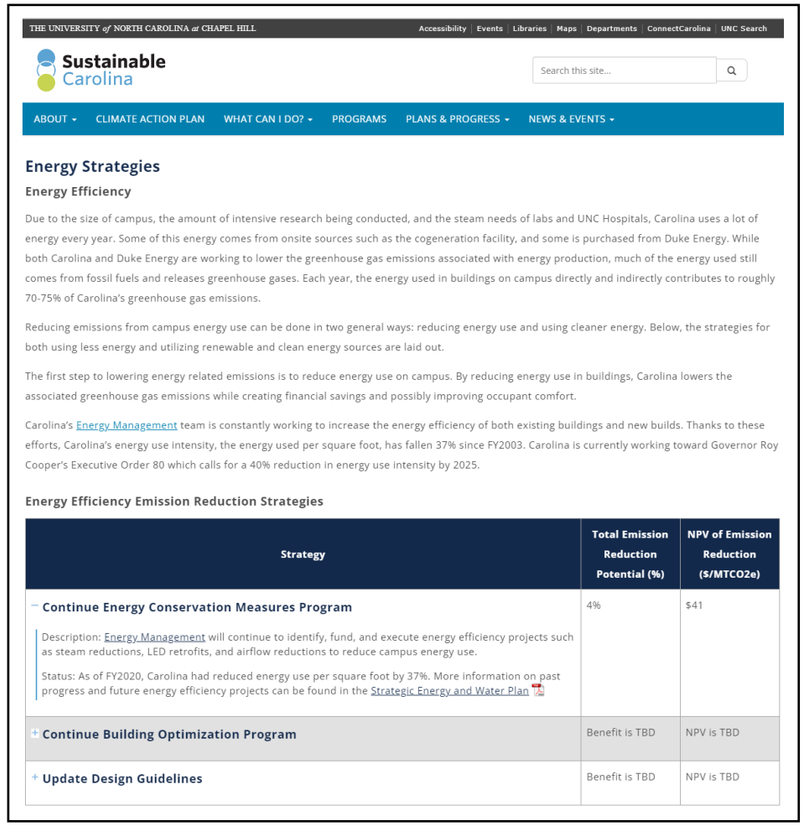
3 WHERE ARE WE GOING – AND HOW WILL WE GET THERE?

MEDIA RELEASE #3: PLANNING, IMPLEMENTATION, AND TRACKING

CONTENT

Summarizes key themes and provides insight into the finalization, adoption, and implementation of the plan, as well as tracking and monitoring:

- **Climate Action Plan Themes**
  - Main themes of CAP, as well as what type of content might be included in each section
- **Tracking and measuring progress**
  - How will IU track and communicate progress over time?
- **Next steps for Indiana University**
  - Will this plan be updated? What is the next phase of planning & implementation?



THE UNIVERSITY of NORTH CAROLINA at CHAPEL HILL

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Sustainable Carolina

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ABOUT | CLIMATE ACTION PLAN | WHAT CAN I DO? | PROGRAMS | PLANS & PROGRESS | NEWS & EVENTS

Energy Strategies

Energy Efficiency

Due to the size of campus, the amount of intensive research being conducted, and the steam needs of labs and UNC Hospitals, Carolina uses a lot of energy every year. Some of this energy comes from onsite sources such as the cogeneration facility, and some is purchased from Duke Energy. While both Carolina and Duke Energy are working to lower the greenhouse gas emissions associated with energy production, much of the energy used still comes from fossil fuels and releases greenhouse gases. Each year, the energy used in buildings on campus directly and indirectly contributes to roughly 70-75% of Carolina's greenhouse gas emissions.

Reducing emissions from campus energy use can be done in two general ways: reducing energy use and using cleaner energy. Below, the strategies for both using less energy and utilizing renewable and clean energy sources are laid out.

The first step to lowering energy related emissions is to reduce energy use on campus. By reducing energy use in buildings, Carolina lowers the associated greenhouse gas emissions while creating financial savings and possibly improving occupant comfort.

Carolina's Energy Management team is constantly working to increase the energy efficiency of both existing buildings and new builds. Thanks to these efforts, Carolina's energy use intensity, the energy used per square foot, has fallen 37% since FY2003. Carolina is currently working toward Governor Roy Cooper's Executive Order 80 which calls for a 40% reduction in energy use intensity by 2025.

Energy Efficiency Emission Reduction Strategies

Strategy	Total Emission Reduction Potential (%)	NPV of Emission Reduction ($/MTCO2e)
− Continue Energy Conservation Measures Program Description: Energy Management will continue to identify, fund, and execute energy efficiency projects such as steam reductions, LED retrofits, and airflow reductions to reduce campus energy use. Status: As of FY2020, Carolina had reduced energy use per square foot by 37%. More information on past progress and future energy efficiency projects can be found in the Strategic Energy and Water Plan	4%	$41
+ Continue Building Optimization Program	Benefit is TBD	NPV is TBD
+ Update Design Guidelines	Benefit is TBD	NPV is TBD

Source: University of Washington, University of North Carolina at Chapel Hill

INDIANA UNIVERSITY SMITHGROUP

STRATEGIES & EXAMPLES

WRITTEN COMMUNICATION

STRATEGIES & EXAMPLES

- Build narrative around plan – with clear communication strategies
- Provide details about purpose of action, progress, targets, benefits, and relevant information and resources
- Include key terms and definitions alongside information presented

Clear, bolded, impactful language

Predicting how people interact with the story *(and balancing a sense of urgency with optimism)*

Shared responsibility & call to action

Here's the thing, it's bad. Or rather, it could be. Depending on the choices we make today there are different levels to which we could experience the impacts of climate change mentioned above. In other words … if we work now to reduce our emissions, we will see fewer and much more manageable climate impacts on Boston and our residents.

If you're skimming, here's what you need to know so far: Experts agree that climate change is real, it's caused by us, it could be bad but climate change is solvable. The City is addressing the problem to protect our future and we would love your help.

Our climate action plan has 18 strategies, but all of the solutions we're proposing all fall into three main categories:

1. Buildings (and the energy that powers them),
2. Transportation,
3. Everything else.

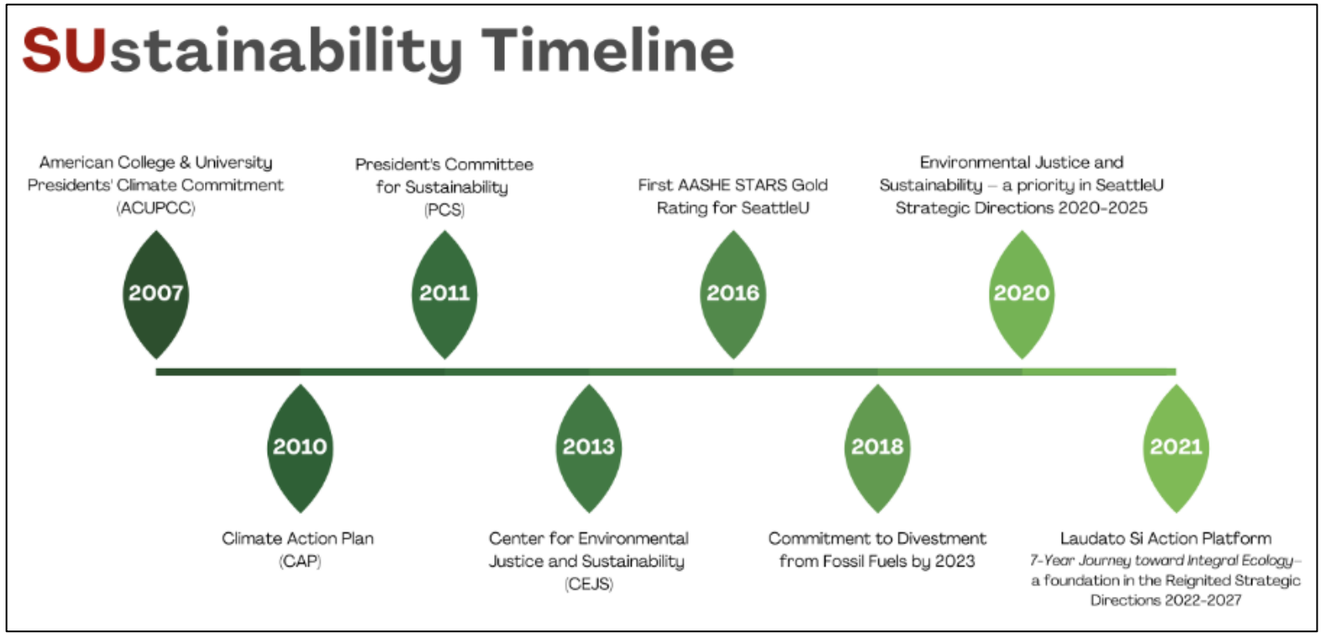
Ready to dive into the details?

Source: City of Boston 2019 Climate Action Plan Update

GRAPHIC COMMUNICATION

STRATEGIES & EXAMPLES

- Communicate timeline & process using simple visual
- Illustrate complex ideas, as well as key metrics and goals in clear, simple graphics

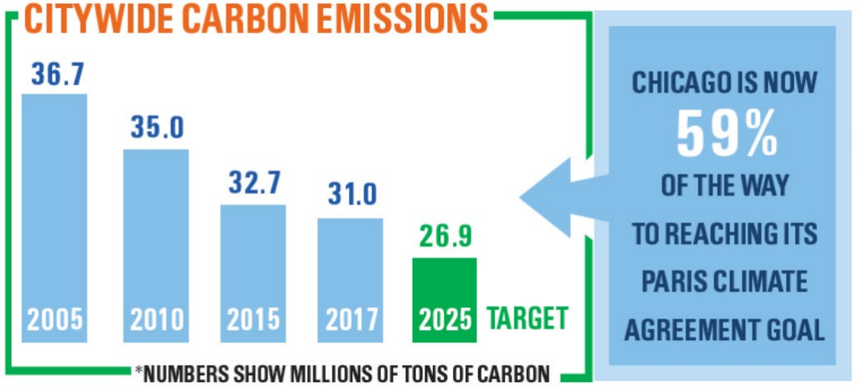


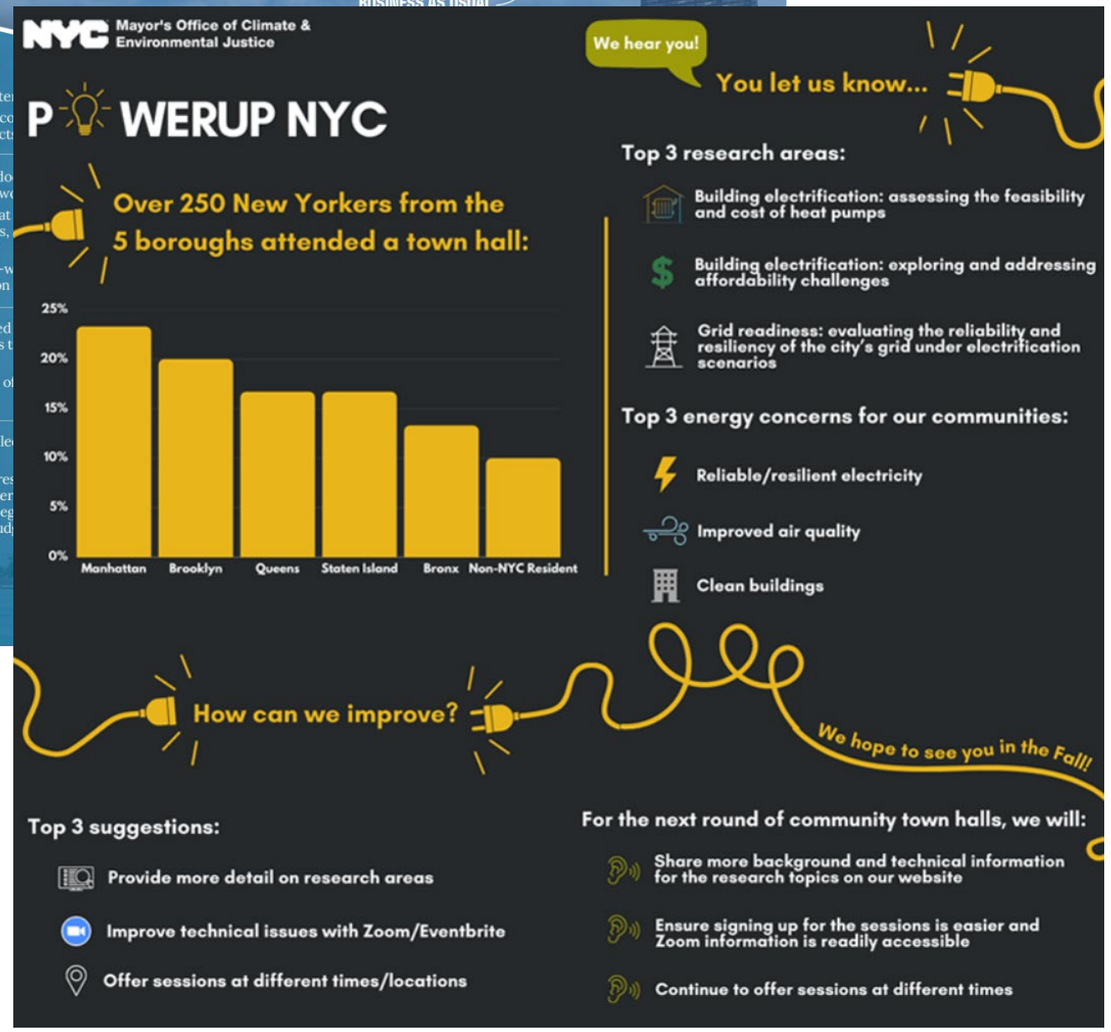
Source: Seattle University (top); City of Chicago (bottom)

WRITTEN + GRAPHIC COMMUNICATION

STRATEGIES & EXAMPLES

- Using multiple strategies to make information interesting and understandable



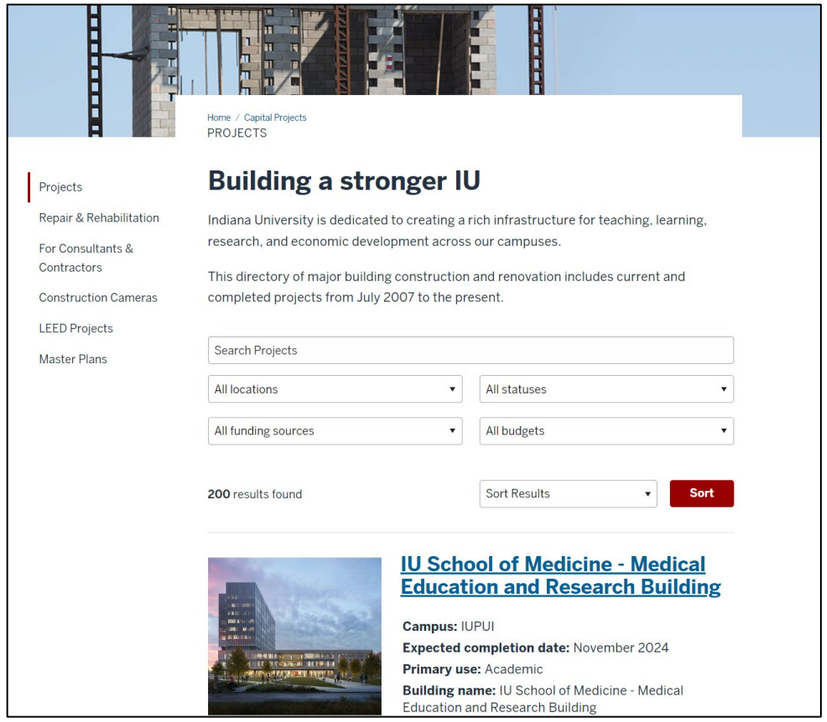


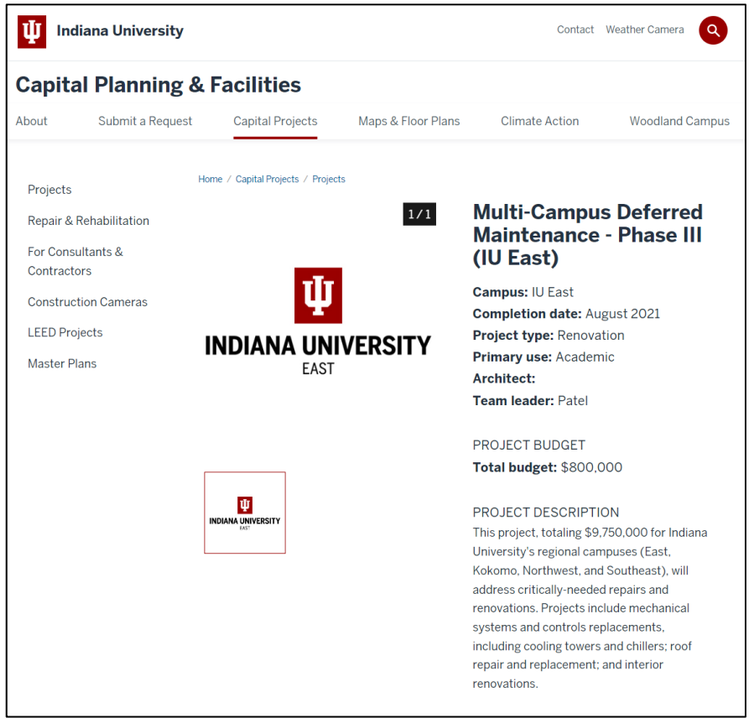
Source: City of Chicago; New York City

CAMPUS ACTION TRACKING

WHAT INDIANA UNIVERSITY IS DOING TODAY

- Tracking capital improvement projects on website
- Identifying projects with impacts to energy efficiency and energy use for IU CAP Committee





Major Energy Projects 2020-23

- Marram Hall window replacements
- Hawthorn Hall natural gas conversion and electrical renovation
- Raintree Hall – HVAC system replacement
- Facilities Services Electrical and HVAC upgrades (2022-23)
- Facilities Services Annex HVAC upgrades (2022-23)
- Tamarack Green Space
- Internal/external LED replacement program ongoing, 90% complete

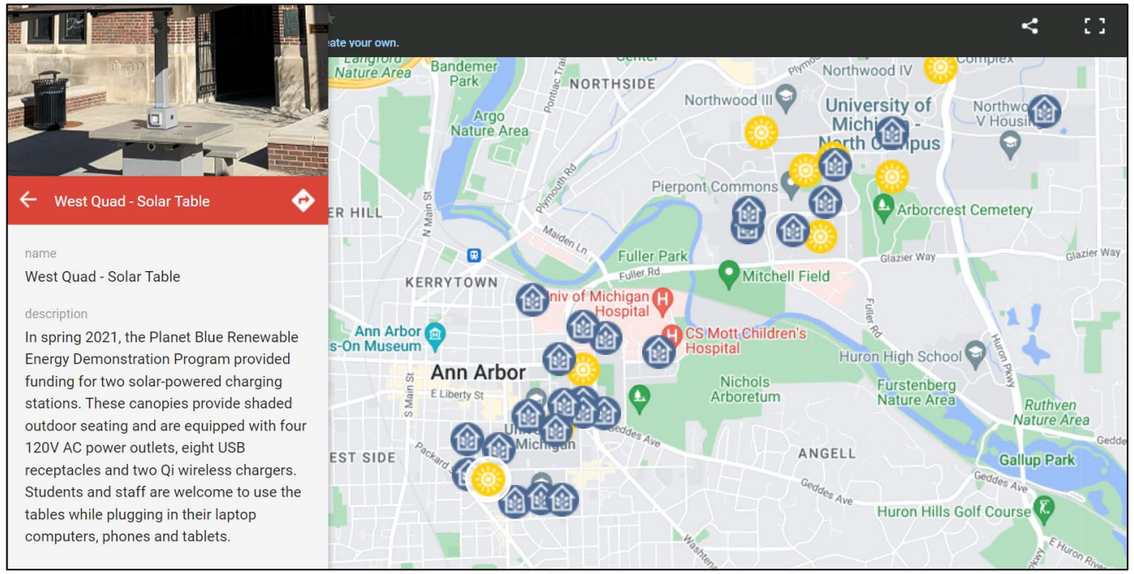
INDIANA UNIVERSITY

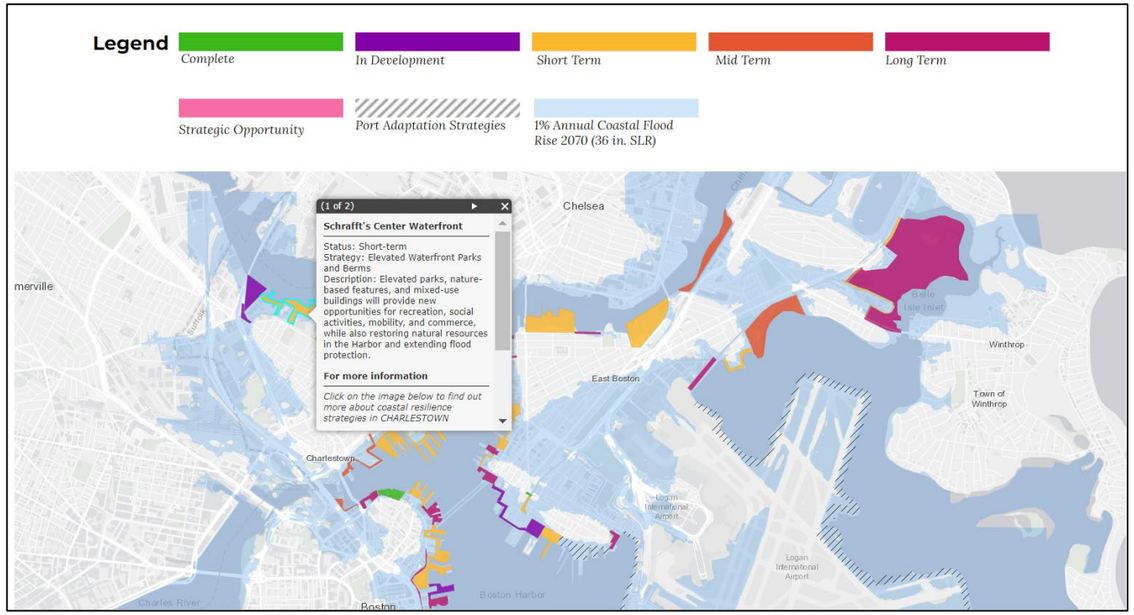
Source: IU CAP Committee Presentation; Indiana University Capital Planning & Facilities

CAMPUS ACTION TRACKING

LEARNING FROM OTHERS – UNIVERSITY OF MICHIGAN & NYC

- Track actions by campus, building on existing records
- Create interactive web interface (or map) to show location and details about past* and ongoing projects





* Reference the IU CAP Committee Presentations (June 15, July 12, July 18, Aug 10, Aug 24), as well as the IU Capital Projects web database

Source: University of Michigan (top); City of Boston (bottom)

INDIANA UNIVERSITY SMITHGROUP

CAMPUS ACTION TRACKING

LEARNING FROM OTHERS – UNIVERSITY OF OREGON

- Track actions by campus, building on existing records
- Provide details about purpose of action, progress, targets, benefits, and relevant details and resources.

UNIVERSITY OF OREGON

APPLY VISIT GIVE

Student One Stop

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Campus Planning & Facilities Management

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Emissions Reductions Actions

Steam tunnel re-insulation p
summers of 2017 and 2018 sta
loss in campus tunnel system,

- Reduced natural gas consu

Establish and fill energy manager position - Boz Van Houten was hired in Fall 2018 as University of Oregon's energy manager. Prior to this position, he spent four years as Oregon Health Sciences University's energy manager. Other relevant experience includes 15 years working for SOLARC, a local energy engineering firm.

Establish enterprise Energy Management Program - The primary goal of the Energy Management Program is to drive down costs and risks associated with the production, delivery and use of steam, chilled water, electricity, and other utilities. The program also supports university leadership in decision-making and planning by providing information from utility-related data products. The program will be guided by a strategic energy management plan. Key program elements will include procurement, metering, data management, performance monitoring, budgeting, opportunity analysis, and energy efficiency project support. The energy manager is responsible for the design, development and effective implementation of the Energy Management Program.

Re-launch energy revolving fund - In 2011, UO created a revolving loan fund with a $50,000 per year commitment. Its purpose was to support campus energy efficiency work. However, it was under-utilized. In 2018, the program was renamed and relaunched with clear processes needed to make funding decisions. A webpage with energy revolving fund program details will be published soon.

Building Optimization Program – This collaboration between CPFM and the Energy Studies in Buildings Lab will optimize heating and cooling in campus buildings. This program will reduce energy, emissions, cost, and complaints associated with automated delivery of heating and cooling services, and improve comfort in offices and classrooms. A critical component of the program is re-calibrating sensors, which will further efforts to improve building scheduling, monitor building performance against energy benchmarks, and identify maintenance needs. This action will improve data collection and accuracy. A pilot-level project was completed in the HEDCO building in 2018. Optimization processes are being refined and new buildings are being identified and prioritized for this program. A progress report will be available soon.

Thermal storage tank – The University of Oregon's new three million gallon thermal tank will provide additional cooling capacity for our growing campus without the environmental impact associated with conventional chillers. (We have five conventional chillers in operation.) Our conventional chillers use electricity during the day to cool campus. The new thermal tank creates the opportunity to use our existing chillers overnight to make and store chilled water for the next day's use. This provides at least three benefits:

- Chilling water to the required 41 degree campus standard requires less energy overnight than during daytime. This is mainly because our summer night time outdoor temperatures are routinely 30 degrees cooler than daytime highs.
- Analysis shows that night time electricity in the Pacific Northwest is significantly less carbon intensive than electricity generated during the daytime hours. This is largely due to the fact that gas-fired turbines generally operate during daytime peak demand hours. Demand is much lower during night time hours. In response most gas-fired turbines are shut off and we rely largely on carbon-free hydro and wind to meet our needs.
- Conventional chillers require refrigerants which are hundreds of times more potent than carbon dioxide. Accidental releases can be very damaging to the environment. The thermal tank provides chilling equal to two conventional chillers without requiring additional refrigerants.

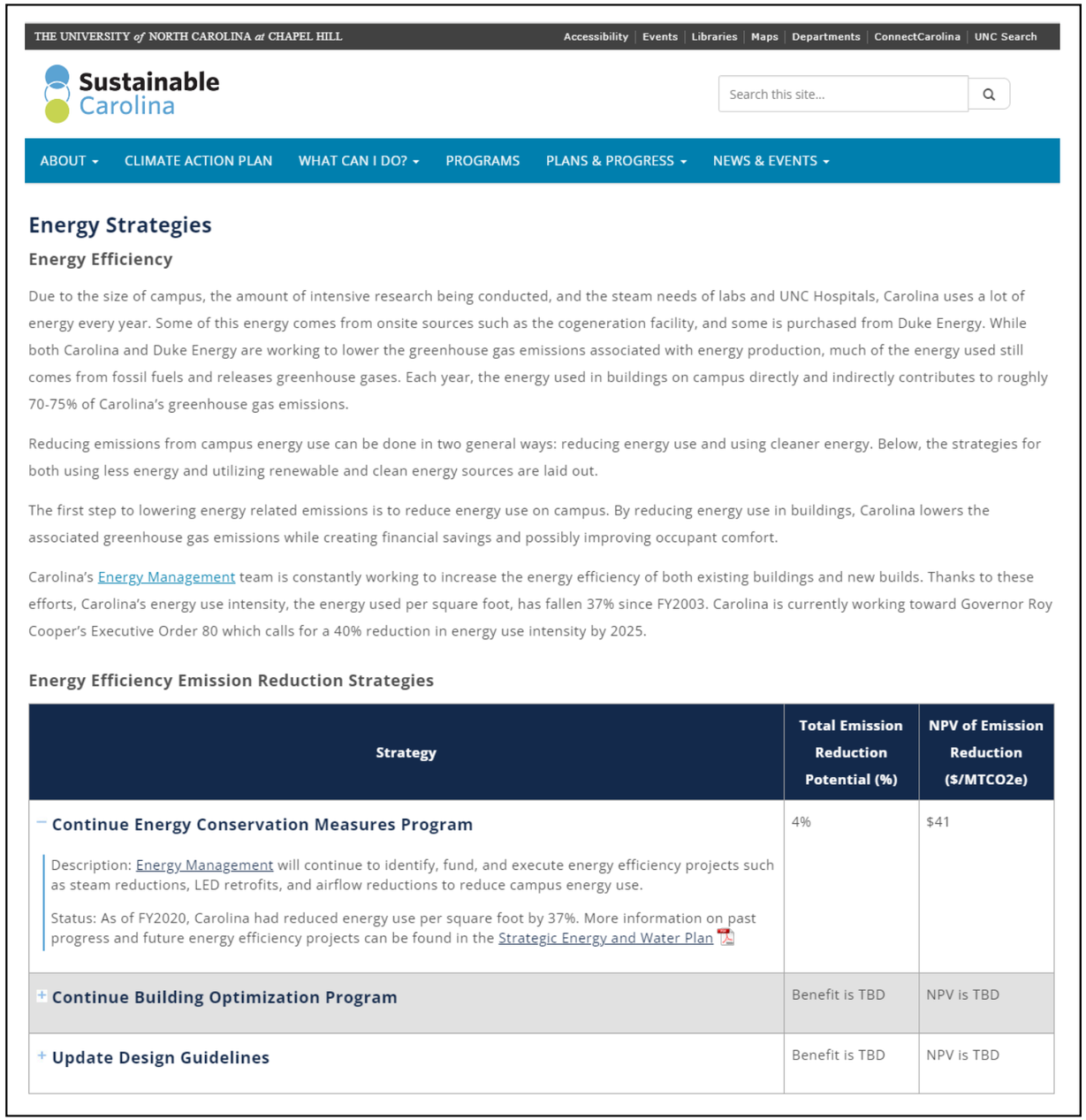
Construction on the thermal tank began in February 2022. The tank is expected to be fully operational by the summer of 2023.

Source: University of Oregon

CAMPUS ACTION TRACKING

LEARNING FROM OTHERS – UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL

- Provide context and background information
- Outline key strategies by theme or topic
- Include relevant metrics and details (emission reduction potential, NPV, cost, status/progress, resources)



THE UNIVERSITY of NORTH CAROLINA at CHAPEL HILL

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Energy Strategies

Energy Efficiency

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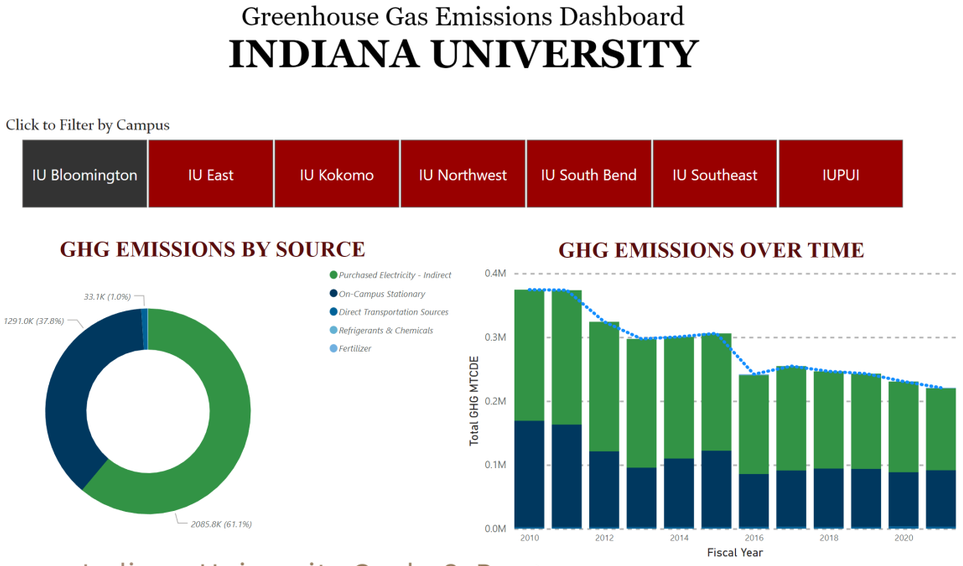
+ Continue Building Optimization Program	Benefit is TBD	NPV is TBD
+ Update Design Guidelines	Benefit is TBD	NPV is TBD

Source: University of North Carolina at Chapel Hill

DATA TRACKING

WHAT INDIANA UNIVERSITY IS DOING TODAY

- Tracking energy use and energy use intensity by campus over two-year period
- Tracking GHG emissions by type by campus

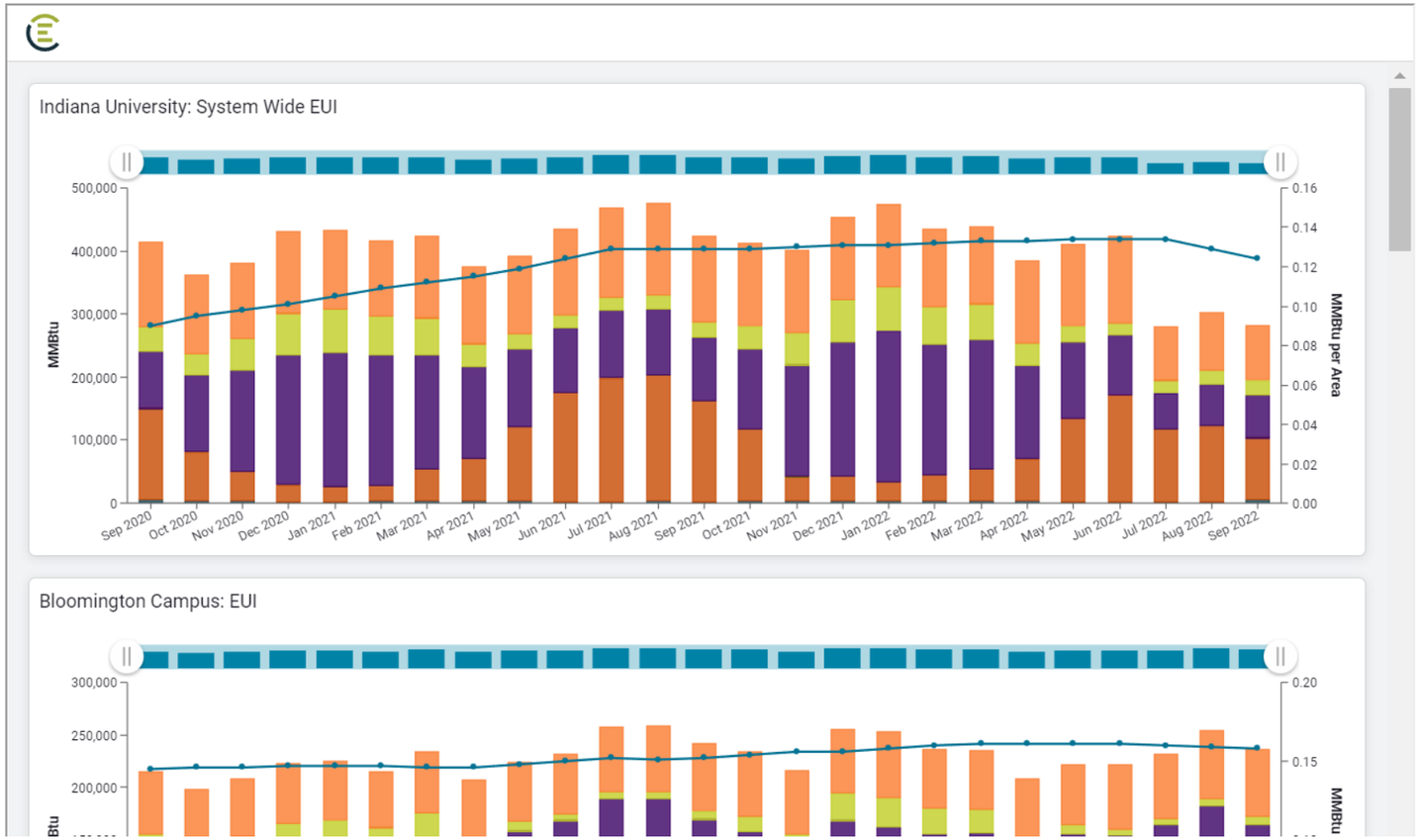


Source: Indiana University Goals & Progress

Utilities Data

View each campus' monthly energy use over the past two years in terms of both Energy Use (MMBtu) and Energy Use Intensity (MMBtu per Area). EUI represents the energy consumed by a building relative to its size. A building's EUI is calculated by dividing the total energy consumed by the total floor space of the building.

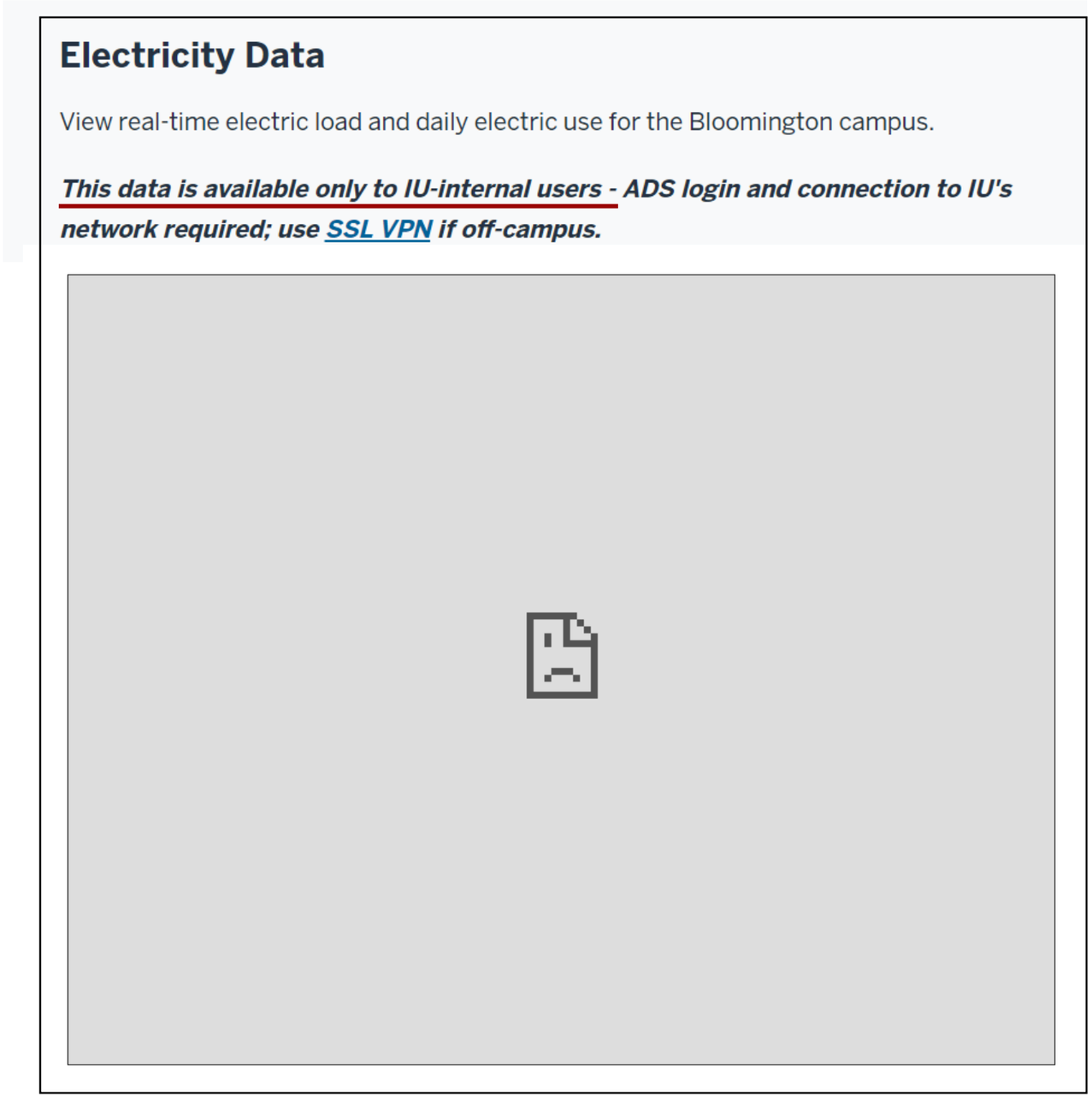
Hovering over an element in the chart will provide greater detail.



DATA TRACKING

WHAT INDIANA UNIVERSITY IS DOING TODAY

- Real-time electric load and daily electric use for Bloomington campus
- Available only to IU internal users

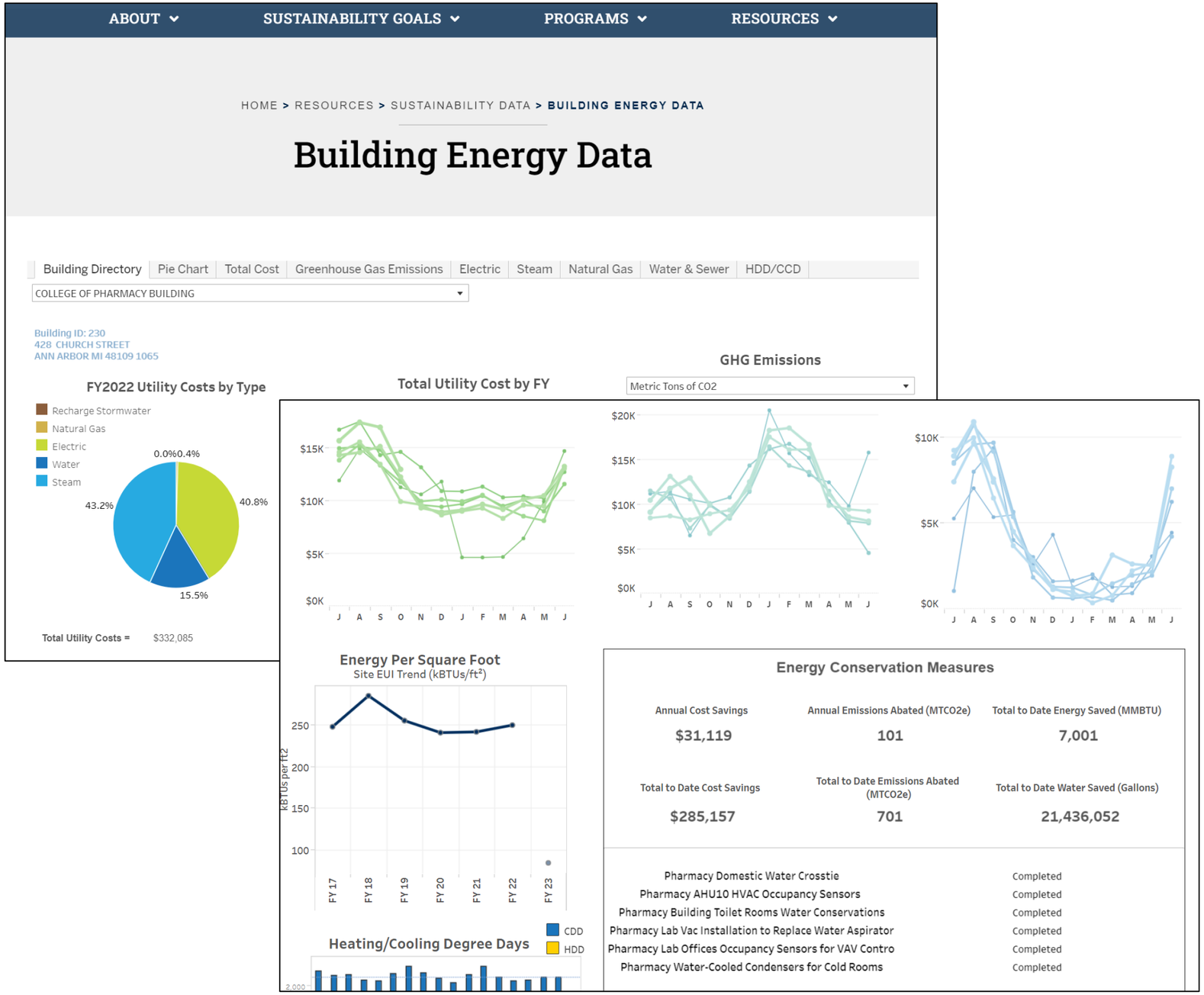


Source: Indiana University Electricity Data

DATA TRACKING

LEARNING FROM OTHERS – UNIVERSITY OF MICHIGAN

- Publicly-accessible, transparent tracking
- Detailed, building-level performance information
- Includes a variety of metrics and contextual information such as:
  - Energy usage per square foot
  - GHG emissions
  - Cost savings



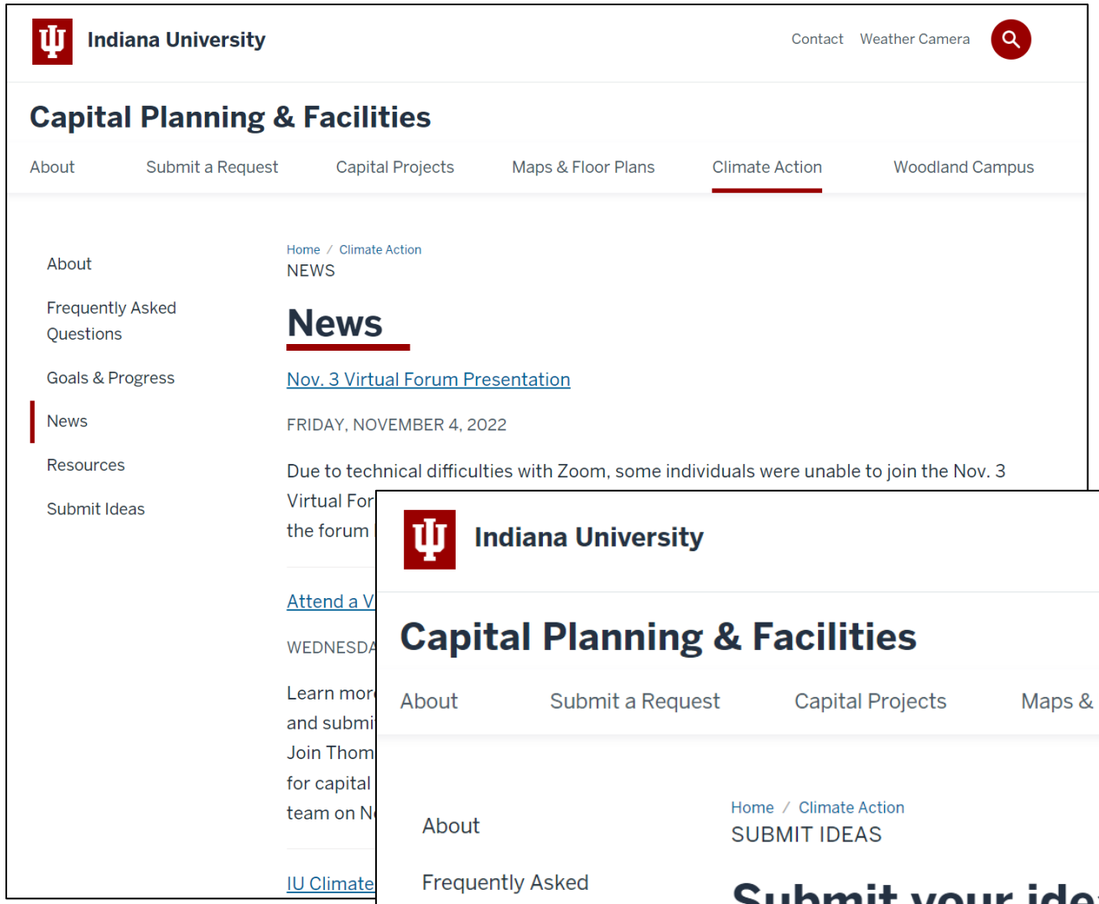
Source: University of Michigan Energy Data

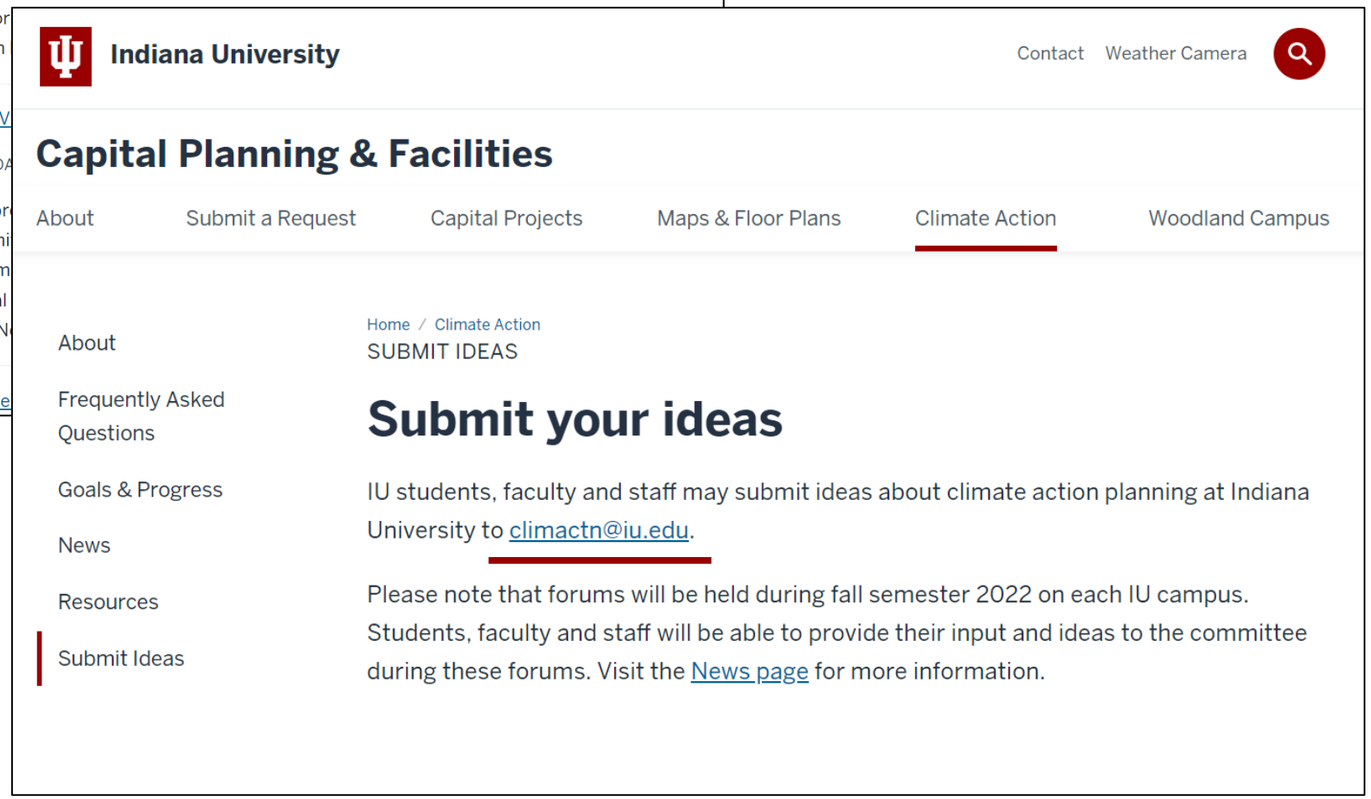
INDIANA UNIVERSITY SMITHGROUP

GET INVOLVED

WHAT INDIANA UNIVERSITY IS DOING TODAY

- Email link for questions, ideas, and comments
- News updates for upcoming events

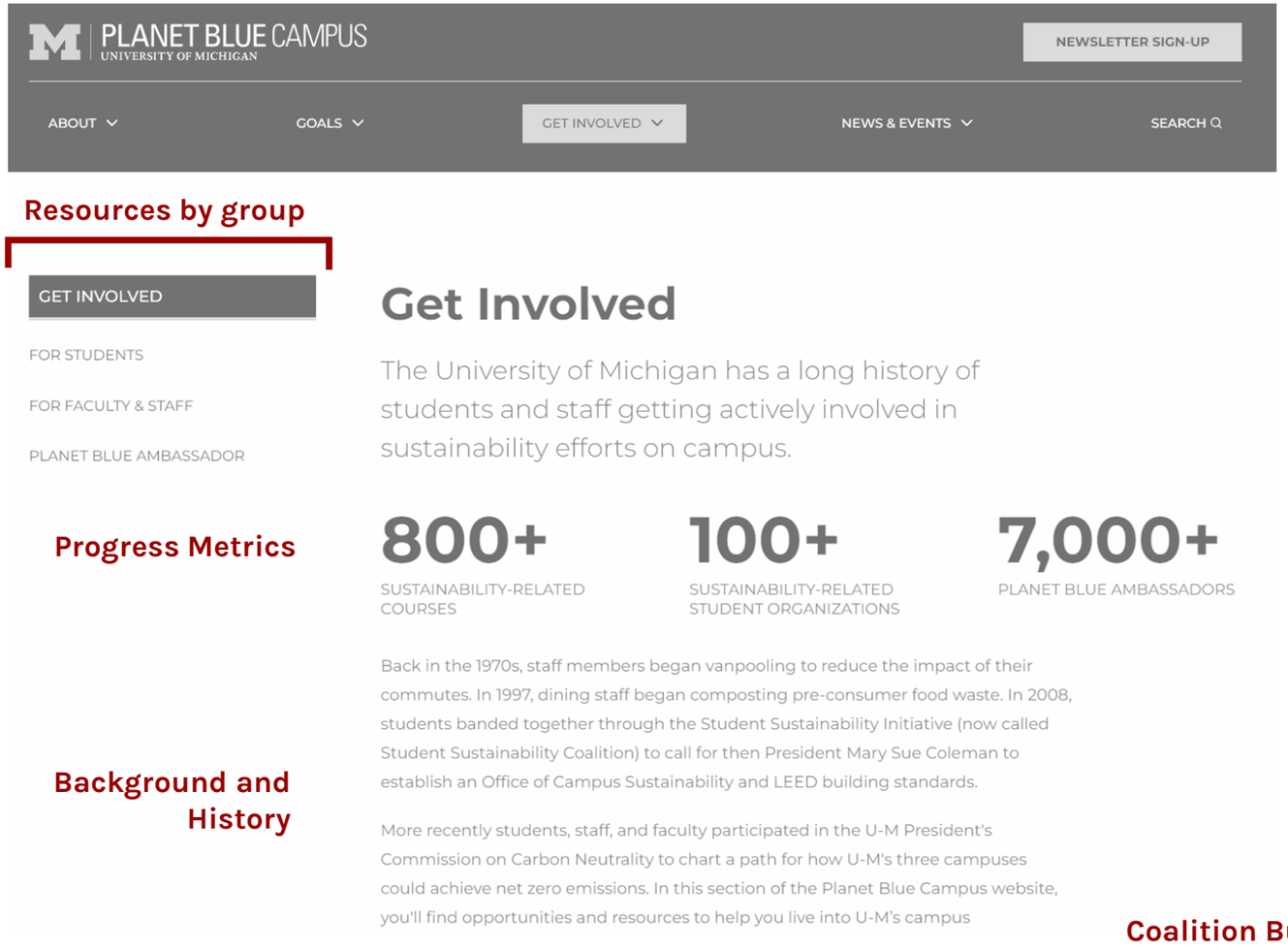




Source: Indiana University Website

GET INVOLVED

LEARNING FROM OTHERS – UNIVERSITY OF MICHIGAN



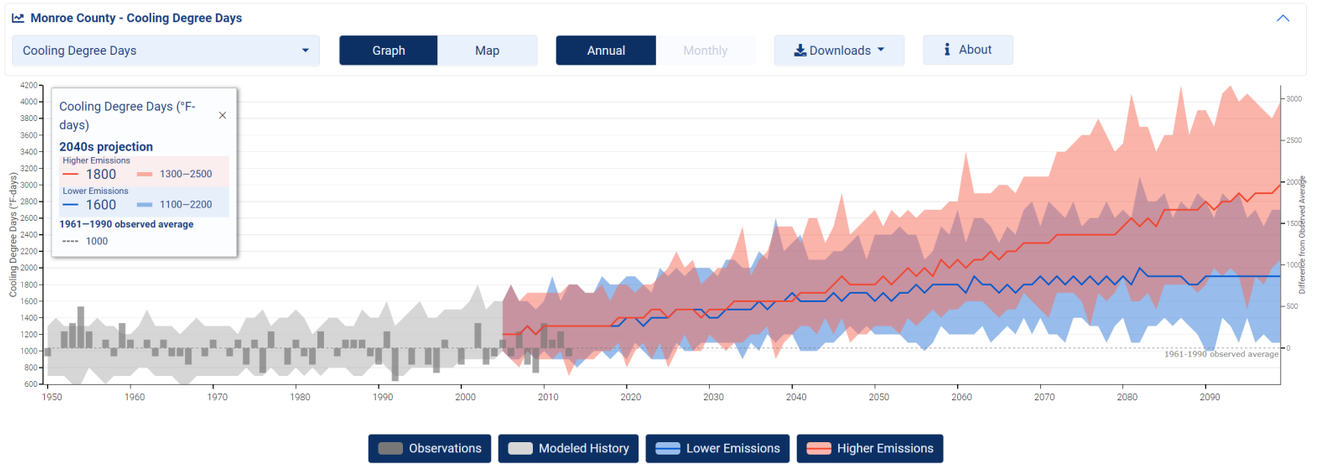
Source: University of Michigan "Get Involved"; University of Michigan "Goals in Action"

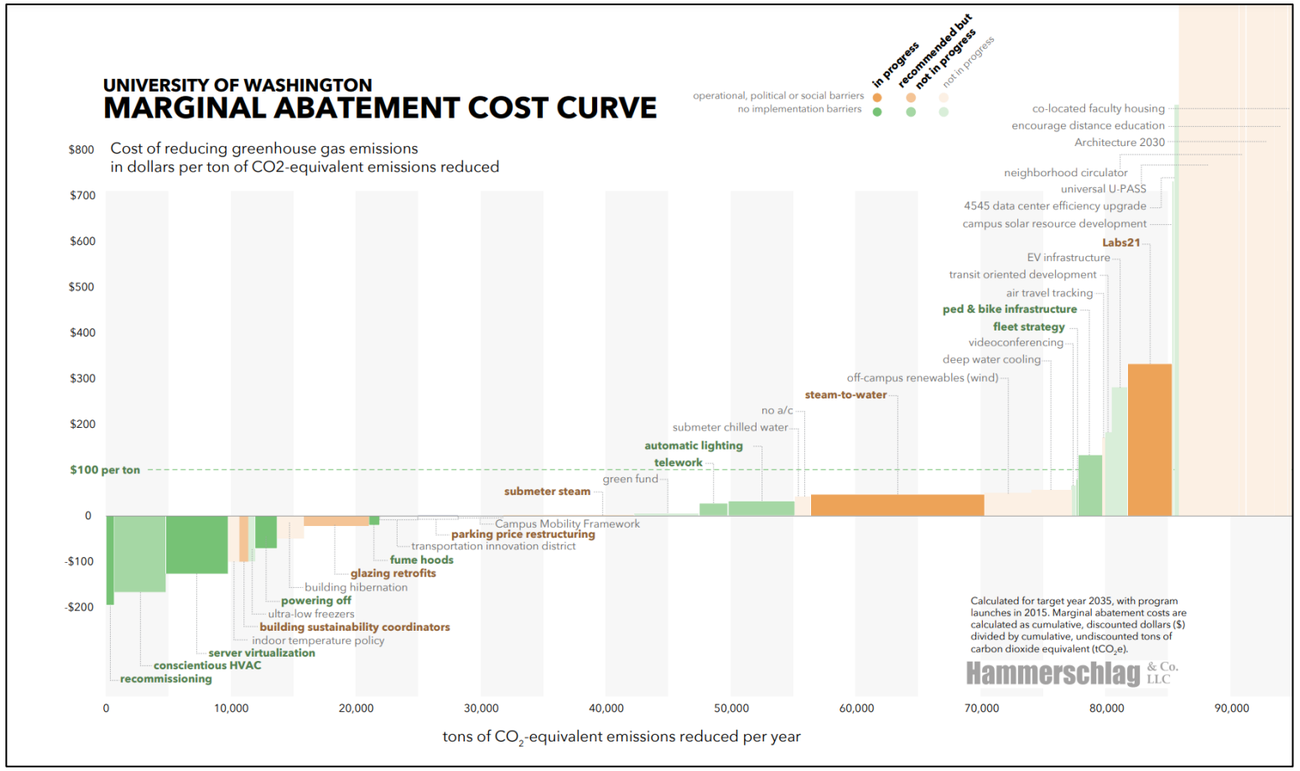
ADDITIONAL POTENTIAL TOPICS

STRATEGIES & EXAMPLES

Additional Topics

- Indiana's climate future
- Economics, costs, and financing
- Tracking and reporting (STARS & LEED)
- Space utilization
- Federal, state, and local policies
- Utility providers (goals, timelines)
- Diversity, equity, and inclusion. Environmental & climate justice





Source: Climate Explorer (top); University of Washington (bottom)

INDIANA UNIVERSITY SMITHGROUP

STARTING INITIATIVES

STARTING INITIATIVES

1. Replacing traditional fixtures with LED lighting
2. Installing motion sensors
3. Installing utilities meters at individual buildings
4. Retro-commissioning
5. Electrifying grounds maintenance equipment
6. Consistent building set points