# INDIANA UNIVERSITY CLIMATE ACTION PLAN

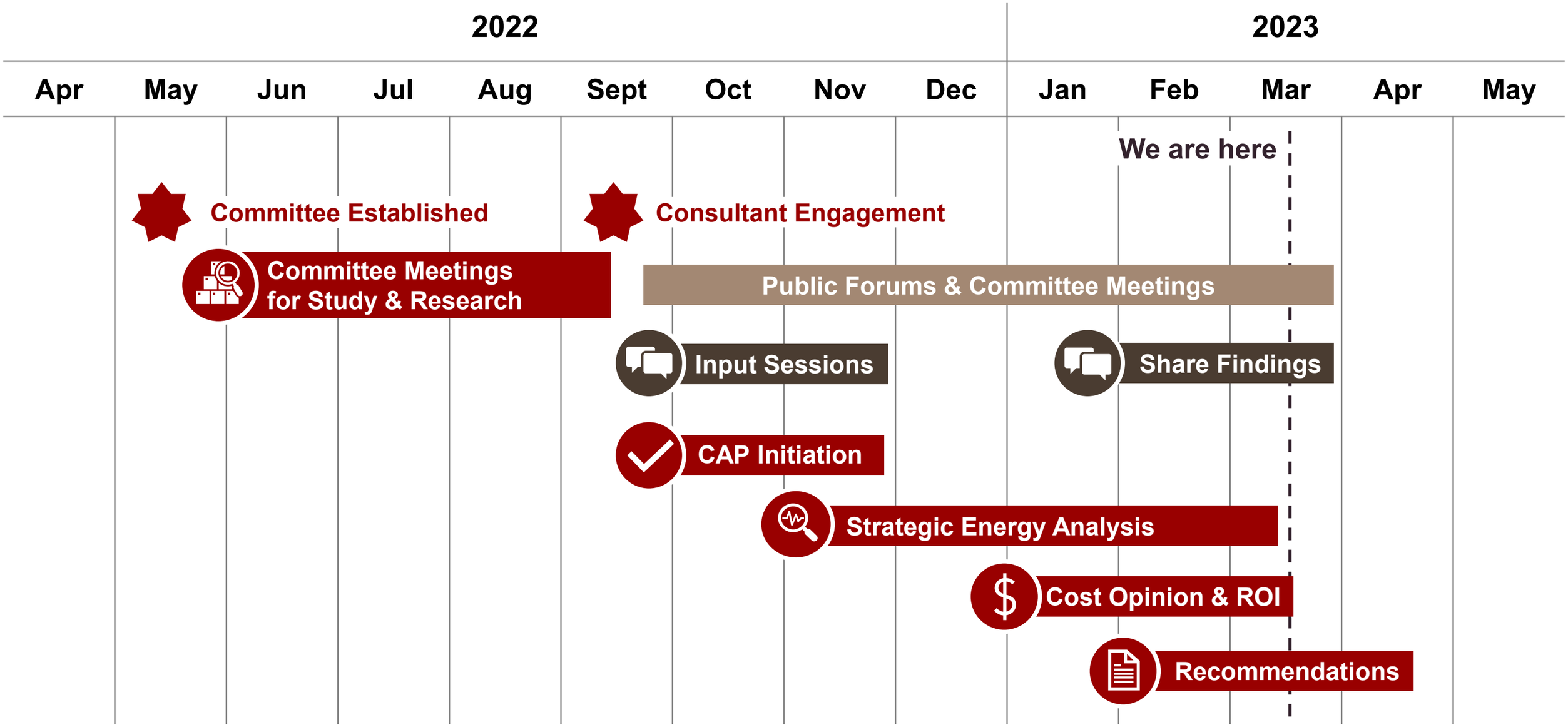
## DECARBONIZATION AND CLIMATE ACTION FOR IU CAMPUSES

**Public Presentation**
**March 2023**

Photo: Indiana University Indianapolis Campus

SMITHGROUP

# PROJECT OVERVIEW






INDIANA UNIVERSITY SMITHGROUP

# COMMITTEE GOAL

## PURPOSE OF THE COMMITTEE

Develop recommendations for short- and long-term opportunities to **reduce greenhouse gas emissions** on all IU campuses

# GUIDING PRINCIPLES

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- Complete, comprehensive, and scientifically sound
- Immediate implementation where possible
- Identify and assess financial resources required
- Funding sources and savings identified
- Broad input from students, faculty, and staff on all campuses
- Benchmarks, dashboards, and transparency of process and progress
- **Assessment by committee of target for carbon neutrality by 2040**

# TODAY'S GOALS

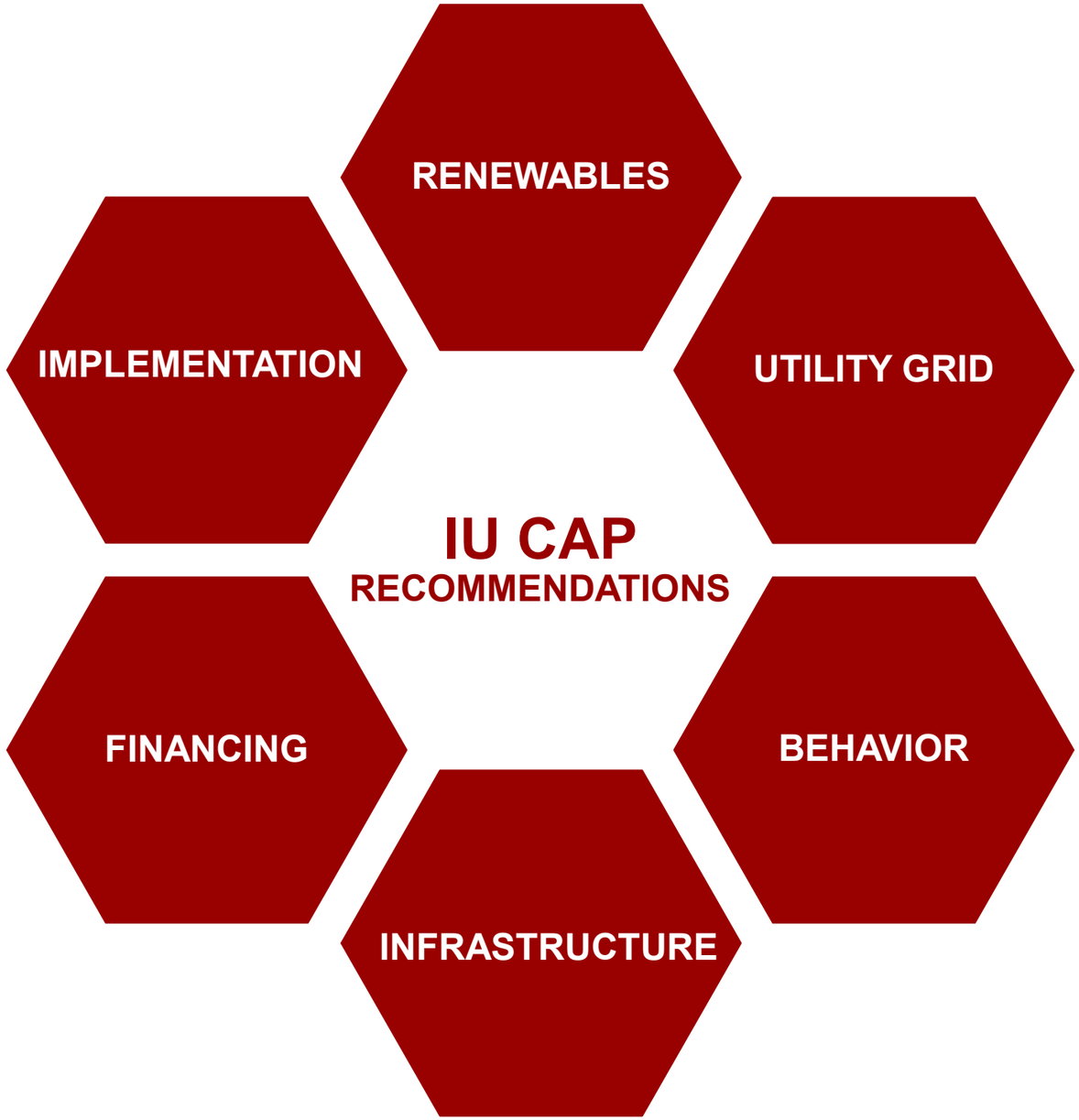
- Share the high-level recommendations that create a pathway to decarbonization by 2040
- Showcase the breadth and depth of solutions necessary to reach carbon neutrality; there is not one, singular solution
- Receive comments and input to further refine the Indiana University Climate Action Plan (IU CAP) before it is submitted to the President

# IU CAP RECOMMENDATIONS

## EXECUTIVE SUMMARY

The recommendations of the Indiana University Climate Action Plan are broken into six categories:

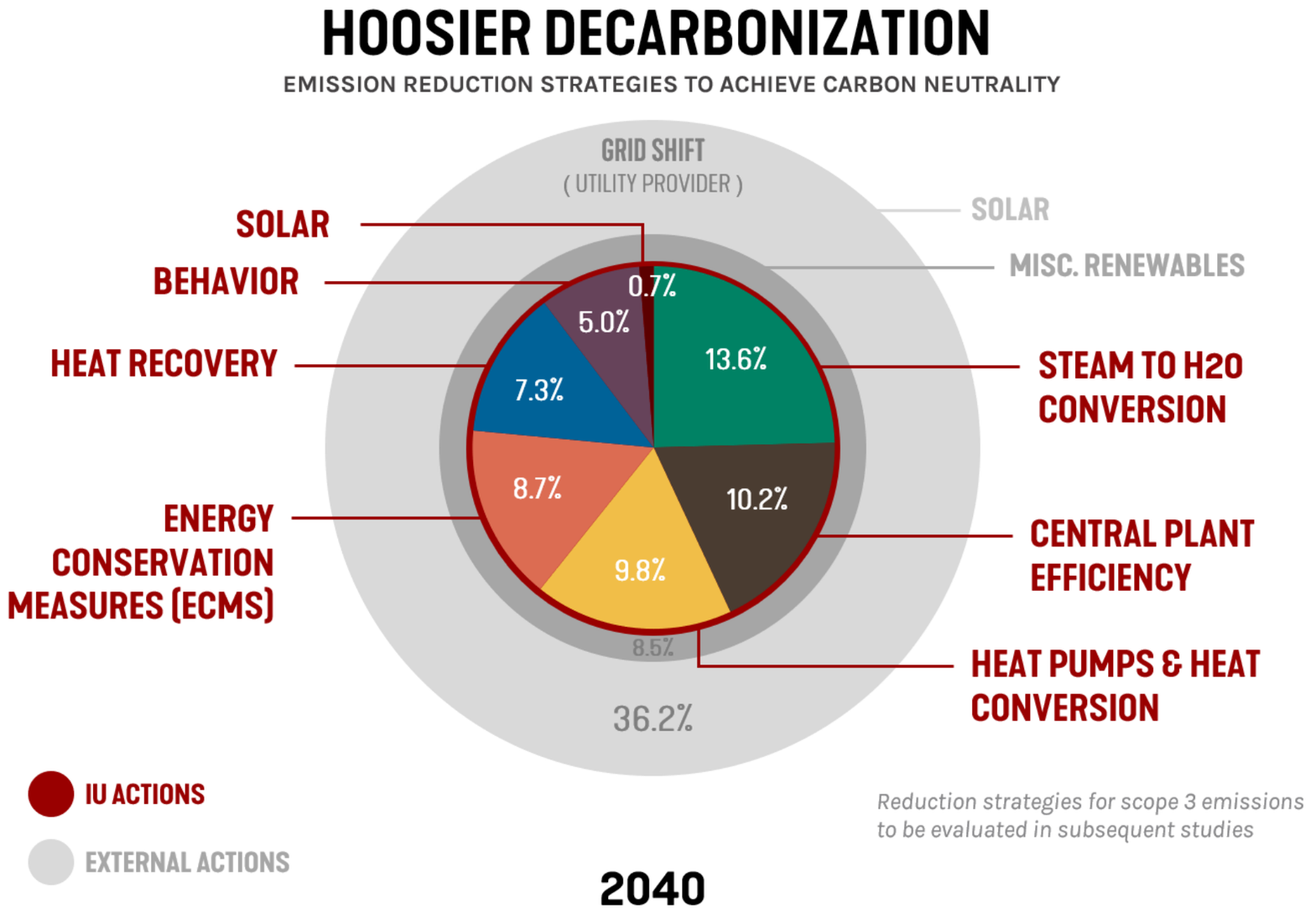
- **Renewables** - Implementing renewable energy to reduce reliance on fossil fuels.
- **Utility Grid** - Collaborating with local utilities and the state of Indiana to support grid decarbonization.
- **Behavior** - Encouraging changes to reduce energy consumption and optimize space and scheduling.
- **Infrastructure** - Enhancing energy efficiency and resilience in building design, heating, cooling, and energy distribution systems; fleet and equipment.
- **Financing** - Establishing funding mechanisms to support energy efficiency projects, renewable energy implementation, and resilience initiatives.
- **Implementation** - Developing structures to effectively execute and monitor the plan.



# THE HOOSIER DECARBONIZATION PATHWAY

## EXECUTIVE SUMMARY

The IU Climate Action Plan presents a comprehensive roadmap to achieve **carbon neutrality by 2040**, outlining strategies in renewables, utility grid cooperation, behavior change, infrastructure, financing, and implementation to reduce **scope 1 and 2 GHG emissions across all campuses.**



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# RENEWABLES

INDIANA UNIVERSITY CLIMATE ACTION PLAN RECOMMENDATIONS

**Renewables** such as solar panels and biogas reduce emissions associated with energy production by 10.9% while decreasing Indiana University's reliance on the energy grid.

## RENEWABLES RECOMMENDATIONS

| RECOMMENDATION | EXAMPLE ACTION(S) |
|---|---|
| **Decarbonize the IUB central plant and supply-side fuels** | Investigate biogas and renewable energy options to support Bloomington campus's central plant |
| | Identify opportunities for educational programs in renewable energy fields for students from traditionally underrepresented backgrounds |
| | Collaborate with industry partners and on-campus researchers to investigate new and emerging technologies such as biogas, hydrogen boilers, and carbon capture natural gas |
| | Replace aged boilers with best-available technologies |
| **Install solar** | Conduct feasibility studies and cost-benefit analysis for the adoption of solar at Indiana University campuses |
| | Install solar on campuses where financially and logistically feasible |

# UTILITY GRID

INDIANA UNIVERSITY CLIMATE ACTION PLAN RECOMMENDATIONS

Due to Indiana's regulated utility environment, the **utility grid** is an essential factor in achieving Indiana University's decarbonization goals, accounting for 44.7% of the university's path toward carbon neutrality. Through collaboration with local utilities, IU can promote innovative programs and renewable energy generation that can be deployed on or near university campuses.

## UTILITY GRID RECOMMENDATIONS

| RECOMMENDATION | EXAMPLE ACTION(S) |
|---|---|
| **Support and collaborate on transitioning Indiana's energy grid** | Monitor the Indiana Energy Grid to track forecasted decarbonization against IU's carbon neutrality goals |
| | Partner with utility providers and the state of Indiana to foster energy supply-side innovation |
| | Collaborate with utilities on demand response and energy efficiency programs |
| | As IU decarbonizes, coordinate with utilities to understand IU's role in maintaining fair energy prices with the communities its campuses sit within |

# BEHAVIOR

INDIANA UNIVERSITY CLIMATE ACTION PLAN RECOMMENDATIONS

**Behavior** strategies that reduce carbon emissions – such as changes to course scheduling, space utilization, equipment choices, and individual actions – can reduce Indiana University's energy usage and overall carbon emissions by 5%.

## BEHAVIOR RECOMMENDATIONS

| RECOMMENDATION | EXAMPLE ACTION(S) |
|---|---|
| **Foster behavior changes in faculty, staff, and students** | Encourage people to give up energy-intensive single-user appliances such as personal space heaters, refrigerators, printers |
| | Evaluate and optimize space utilization to reduce redundant or inefficient practices; eliminate duplicate and department-specific spaces to create shared break rooms, offices, and conference rooms |
| | Evaluate course scheduling and academic calendar to optimize energy usage |
| | Develop and share course scheduling across departments and schools to better foster full-occupancy building schedules |
| | Reevaluate semester scheduling to identify opportunities for minimizing classroom occupancy during shoulder months, thereby reducing energy consumption |

# BEHAVIOR

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## BEHAVIOR RECOMMENDATIONS

| RECOMMENDATION | EXAMPLE ACTION(S) |
|---|---|
| **Foster behavior changes in faculty, staff, and students (continued…)** | Develop guidelines for efficient space allocation and scheduling |
| | Encourage the use of laptops instead of desktop computers |
| | Expand space committees to regional campuses |
| | Implement diversity, equity, and inclusion training for faculty, staff, and students, highlighting the connections between climate justice and sustainability efforts |

# INFRASTRUCTURE

## INDIANA UNIVERSITY CLIMATE ACTION PLAN RECOMMENDATIONS

**Infrastructure** is critical to the operations of Indiana University. These recommendations focus on transitioning campus systems and equipment over time and across all IU campuses and will result in a 39.4% reduction in emissions.

**INFRASTRUCTURE RECOMMENDATIONS**

| RECOMMENDATION | EXAMPLE ACTION(S) |
|---|---|
| **Invest in Energy Conservation Measures (ECMs)** | Continue R&R investments for envelope (windows, roofs), controls, and other measures – not constructing new but renovating what we have |
| | Continue to upgrade to LED lighting systems in buildings and outdoor areas |
| | Adjust thermostat temperature setpoints |
| | Participate in the Commercial Kitchen Energy Star Equipment Replacement Program |
| | Continue building-level metering and expand building energy management systems for better control and monitoring |

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## INFRASTRUCTURE RECOMMENDATIONS

| RECOMMENDATION | EXAMPLE ACTION(S) |
|---|---|
| **Invest in Energy Conservation Measures (ECMs) (continued…)** | Continue retro-commissioning; focus on high energy users<br>Incorporate new and emerging technologies as available<br>Automate processes through equipment such as refrigeration monitoring, smart power strips, occupancy sensors, and fume sash closers |
| **Convert IUB campus heating systems to hot-water loops** | Conduct campus infrastructure plan to identify ages and vulnerabilities of existing assets<br>Develop phased approach to infrastructure distribution conversion<br>Encourage new build to be developed to new temperature standards; revisit and revise design guidelines with updated infrastructure recommendations |

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## INFRASTRUCTURE RECOMMENDATIONS

| RECOMMENDATION | EXAMPLE ACTION(S) |
|---|---|
| **Convert to heat pumps** | Conduct energy audits to identify suitable buildings for heat pump installation |
| | Identify space suitable for geothermal tapping |
| | Conduct a commercial kitchen heat pump water heater demonstration |
| | Conduct a temperature stress test for winter heating |
| | Deploy ground-source or water-source heat pump in new construction |
| **Recapture waste heat** | Recover energy used for heating and cooling on campus to reduce energy consumption and increase energy use efficiency |
| | Utilize waste heat from industrial processes or data centers for space heating |
| | Install heat recovery systems for HVAC equipment, such as heat recovery ventilators |

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## INFRASTRUCTURE RECOMMENDATIONS

| RECOMMENDATION | EXAMPLE ACTION(S) |
|---|---|
| **Transition to electric vehicles and equipment** | Replace gasoline and diesel vehicles with electric vehicles as they reach their end of life |
| | Install EV charging infrastructure to support electric fleet |
| | Electrify grounds and maintenance equipment as upgrades are needed and technologies improve |
| | Pilot programs and research for more efficient vehicles such as electric buses and other heavy duty/specialized equipment |
| | Partner with on-campus researchers to investigate new and emerging vehicle and equipment technologies |

# FINANCING

INDIANA UNIVERSITY CLIMATE ACTION PLAN RECOMMENDATIONS

**Financing** mechanisms, such as a Central Energy Fund, will help support energy efficient projects, renewable energy implementation, and resilience initiatives. This ensures adequate financial resources are available to achieve the university's climate action goals and reach carbon neutrality by 2040.

## FINANCING RECOMMENDATIONS

| RECOMMENDATION | EXAMPLE ACTION(S) |
|---|---|
| **Seek financing opportunities** | Identify opportunities for the allocation of energy savings to a Central Energy Fund to finance future energy efficiency and upgrade projects, as well larger infrastructure changes |
| | Partner with state of Indiana for investments in major capital improvements |
| | Continue to allocate R&R funds to projects that reduce energy usage & carbon emissions |
| | Foster joint-department and faculty-facility grant applications for federal funding opportunities |
| | Identify philanthropic, corporate, and foundations partnership and financing opportunities; Coordinate with alumni giving and/or additional university staff members to attract external philanthropic opportunities |

# IMPLEMENTATION

## INDIANA UNIVERSITY CLIMATE ACTION PLAN RECOMMENDATIONS

The **implementation** of the Indiana University Climate Action Plan prioritizes the creation of governance structures, reporting systems, and collaborative processes to ensure the effective execution, monitoring, and ongoing improvement of the Climate Action Plan across all campuses.

**IMPLEMENTATION RECOMMENDATIONS**

| RECOMMENDATION | EXAMPLE ACTION(S) |
|---|---|
| **Adopt centralized reporting** | Create a centralized operational model with sustainability staff on each IU campus and conduct regular meetings to review progress and address challenges |
| | Ensure diverse representation in the implementation of the Indiana University Climate Action Plan |
| | Establish regular internal and external monitoring, tracking, and reporting protocols |
| | Identify opportunities for collaboration and implementation within local communities |

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**IMPLEMENTATION RECOMMENDATIONS**

| RECOMMENDATION | EXAMPLE ACTION(S) |
|---|---|
| **Adopt centralized reporting (continued…)** | Develop and implement a comprehensive communications plan targeting multiple audiences, such as the state of Indiana, university vendors, and campus community |
| | Expand the existing online platform for enhancing transparency in tracking and reporting energy consumption and greenhouse gas emission data |
| | Establish procurement policies for sustainable products/usage (RFP for grounds services lists electric equipment, etc.) |

# IMPLEMENTATION

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**IMPLEMENTATION RECOMMENDATIONS**

| RECOMMENDATION | EXAMPLE ACTION(S) |
|---|---|
| **Invest in resilience strategies in planning** | Identify and evaluate potential risks and vulnerabilities to campus infrastructure and operations to prepare for – and adapt to – changing climate conditions |
| | Engage with local communities, especially those disproportionately affected by climate change |
| | Integrate resiliency measures into campus design and planning, as well as the prioritization of future R&R funding allocations to support projects that enhance campus resilience |

# NEXT STEPS

- Incorporate feedback from the open forum into IU CAP
- Adoption of the Indiana University Climate Action Plan
- Form CAP Implementation Committee to focus on:
  - Coordination of IU CAP actions and ongoing refinement of the IU CAP recommendations
  - Tracking and reduction of scope 3 emissions

Photo: Indiana University Indianapolis Campus