CLIMATE ACTION STRATEGIES

The CAP working groups developed strategies for climate action across the Institute. Community, Equity, and Accessibility strategies are presented as an initial framework and integrated throughout the other focus areas to ensure equitable access and impact. The remaining strategies were organized into eight focus areas:

COMMUNITY, EQUITY & ACCESSIBILITY
MITIGATION & ADAPTATION
BUILDING ENERGY
Strategies that reduce Scopes 1 and 2 emissions, increase energy efficiency, and reduce energy consumption in buildings.

MOBILITY
Strategies that support fossil fuel-free mobility within campus and to and from campus.

WATER MANAGEMENT
Strategies that increase the efficiency and conservation of water management, including potable water, greywater, blackwater, and stormwater.

CARBON SEQUESTRATION
Strategies that increase the amount of carbon dioxide sequestered through natural resources on campus.

RENEWABLE ENERGY & OFFSETS
Strategies for implementing renewable energy sources and offsets.

MATERIALS MANAGEMENT
Strategies that address how materials are bought, used, recovered, and disposed.

INNOVATION
ENERGY STRATEGIES
Strategies that reduce Scopes 1 and 2 emissions, increase energy efficiency, and reduce energy consumption in buildings.

RESEARCH
Strategies that support and expand current climate-related research and solutions.

EDUCATION
Strategies that advance Georgia Tech’s academic programs to prepare staff and students for climate action.

How to Read These Pages

PRIORITY
It is important to assess the priority of each strategy for reaching 50% reduction in carbon emissions by 2030 and 100% by 2050. Estimated costs are based on assumptions in the GHG model. Strategies that were not modeled are estimated for cost based on time and resources necessary for successful implementation. The estimated cost for each strategy is indicated by dollar symbols.

- $$$: High Cost
- $$: Medium Cost
- $: Low Cost

CUMULATIVE GHG REDUCTION POTENTIAL
Modeled strategies were noted as low, medium, or high for potential emissions reductions by 2050.

Strategy met the criteria for “low-hanging fruit” based on low-cost, high-priority, and high-emission reduction potential.

Strategy had significant contributions from students or was developed by the student working group.

STRATEGY
Icons indicate if certain criteria were met:

- Strategy modeled for emissions reduction potential.
- Strategy met the criteria for “low-hanging fruit” based on low-cost, high-priority, and high-emission reduction potential.
- Strategy had significant contributions from students or was developed by the student working group.

COST OF IMPLEMENTATION
A cost analysis was developed to estimate expected implementation costs through 2050. Estimated costs are based on assumptions in the GHG model. Strategies that were not modeled are estimated for cost based on time and resources necessary for successful implementation.

TIME FRAME
Strategies will be implemented at varying start dates and require different timelines between 2024 and 2050. Some can be implemented quickly while others require ongoing implementation. Time frames are based on expected implementation dates.

- Short-term: by 2030
- Medium-term: by 2040
- Long-term: by 2050

1.1 Transition to electrification of combustion-based heating systems

Building electrification is the process of replacing equipment that relies on the combustion of fossil fuels with technologies that use electricity. The largest contributor to Georgia Tech’s campus heating load is the burning of natural gas to generate steam and hot water for the purpose of heating buildings and domestic water.

A new campus energy system diverts the heat from the existing campus heat plant and uses an existing source of waste heat from the cooling process to transform it into usable energy to serve the campus heating needs.

Heat pumps will simultaneously produce chilled water and hot water, taking full advantage of both sides of the refrigeration cycle, and will be distributed to the campus to serve both the cooling and heating requirements.

This transition can replace over 80% of Georgia Tech’s campus heating load and will operate at an efficiency of about five times greater than that of the current heating systems.

Additionally, minimizing the use of operating towers to reject heat will save millions of gallons of water annually.
Georgia Tech will strategically invest in climate research and policy work to advance local, regional, and global climate action.

Working with local and global community partners, big and small businesses and industries, government at all levels, and the best and brightest minds, Georgia Tech researchers are leading in the discovery of climate science, the brokering of trust, the defining of problems, the development of solutions, and calls to action. This section focuses on further increasing and improving support for use-inspired climate research, building connections that integrate climate research across the Institute, and working with partners on strategy to increase the discovery and utility of climate research that improves the human condition.

Implementing strategies will involve working closely with Georgia Tech’s Research Next strategic initiative, particularly within the focus area “Research That Matters.”

The CAP will not only reduce our campus’s climate impact, but also have much broader global impacts as we utilize our physical and digital assets as test beds and living labs for research, development, and demonstration.

— Timothy Lieuwen, Regents’ Professor, David S. Lewis Jr. Chair, and Executive Director, Strategic Energy Institute
7.1 Increase investment into Georgia Tech’s existing strengths in climate-related research

Priority: HIGH
Estimated Cost: $
Time Frame: Long-term, ongoing

Georgia Tech is already a leader in climate research. This strategy seeks to build on existing climate research by increasing internal support.

This requires assessing the current landscape, improving coordination, and increasing financial support of future efforts. Increasing collaboration and identifying interdisciplinary connections across the Institute will help advance and strengthen climate-related research.

THE NEW YORK CLIMATE EXCHANGE AND THE EXCHANGE AT GEORGIA TECH

The New York Climate Exchange (NYCE) is a collaborative model for developing and demonstrating climate solutions. Located on Governors Island in New York, the design and operations of NYCE facilities will serve as a sustainability model and include a Living Building, expected to be the world’s largest regenerative building.

Georgia Tech is a Core Partner, bringing a long history of environmental stewardship to the collaborative. Georgia Tech researchers, academics, and graduates were, and continue to be, globally recognized as innovators in fields such as solar, materials, and sustainability policy.

As a counterpart of the NYCE, The Exchange at Georgia Tech is an embodiment of Georgia Tech’s duties as a Core Partner. Across 12 inaugural program areas, Georgia Tech researchers, academics, staff, and students will perform research and identify best practices that lead to immediate climate action on the regional, national, and global levels.

This effort advances Georgia Tech’s commitment to lead by example, showing partners and peers across the Southeast the pivotal role of this region in advancing equitable and innovative climate solutions.

7.2 Identify and shape future climate research opportunities in which Georgia Tech aspires to lead

Priority: HIGH
Estimated Cost: $
Time Frame: Short-term

Georgia Tech will strive to contribute to the future of climate research proactively and strategically.

In this strategy, Georgia Tech investigators will identify and prioritize topics in climate research and use their influence to help shape the decisions of external organizations that sponsor climate research.

Key actions include internal strategizing on research priorities and convening with, learning from, and giving back to partners across academia, industry, nonprofits, government, and various communities, from local to global.
7.3 Leverage Georgia Tech’s unique geographical location as a platform for climate-related discovery

**Priority:** MEDIUM
**Estimated Cost:** $$$
**Time Frame:** Long-term

GHG Reduction Potential: N/A

This strategy capitalizes on Georgia Tech’s place in the Southeast and its status as the preeminent technological research university in the region to conduct novel research that engages with, is relevant to, and is inspired by the socioeconomically diverse communities in which it resides.

Georgia Tech will take steps to strengthen connections between regional stakeholders and the Institute’s world-class researchers, allowing them to help local communities, especially those nearby and most vulnerable to the dangers of climate change. This strategy focuses on providing financial, logistical, and administrative support for infrastructure to advance climate research adoption through agreements, data sharing, proliferation of community-led efforts in workforce development and other climate-focused areas, and collaboration across Georgia Tech’s research, administration, teaching, and service initiatives.

Georgia Tech researchers associated with Drawdown Georgia helped to support the development of the state of Georgia’s first-ever climate action plan.

Working with the Department of Natural Resources’ Environmental Protection Division, Georgia Tech researchers worked with partners across Georgia to help the state develop its greenhouse gas inventory, develop a plan to address the most important immediate opportunities the state can take to reduce its greenhouse gas emissions, and potentially help develop policies and programs to reach those goals.


7.4 Accelerate the transition from climate research and theory to action

**Priority:** HIGH
**Estimated Cost:** $$$$  
**Time Frame:** Medium-term

GHG Reduction Potential: N/A

This strategy prioritizes the translation of research from concepts to implementable actions by bolstering relationships with decision-makers and improving the transfer of knowledge and technology to the public and private sectors.

Key actions for advancing this strategy include providing funding and support for climate startups; nominating faculty for advisory roles in government, industry, and NGOs; the placement of students and alumni in leading organizations that affect climate; and creating infrastructure to support the dissemination of Georgia Tech’s climate research.

Georgia and metro Atlanta are gearing up to produce preliminary and then comprehensive climate action plans over the next two years. Georgia Tech’s jump-start with the production of emissions and solutions trackers is already helping them to identify priority measures to reduce climate pollution.

— Marilyn Brown, Regents’ Professor and Brook Byers Professor of Sustainable Systems, School of Public Policy
### RESEARCH: Measures of Success

**TABLE 8: RESEARCH MEASURES OF SUCCESS**

<table>
<thead>
<tr>
<th>MEASURE</th>
<th>2030</th>
<th>2040</th>
<th>2050</th>
</tr>
</thead>
<tbody>
<tr>
<td>Develop climate research and partnerships inventory</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tracking of (and increase from baseline) climate-related research¹</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Tracking multisector partnerships in climate research and action</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

¹ Tracking metrics include number of employees and departments engaged in climate-related research, number of research proposals submitted and awards received, amount of external awards/funding, and number of peer-reviewed academic publications including Georgia Tech authors.