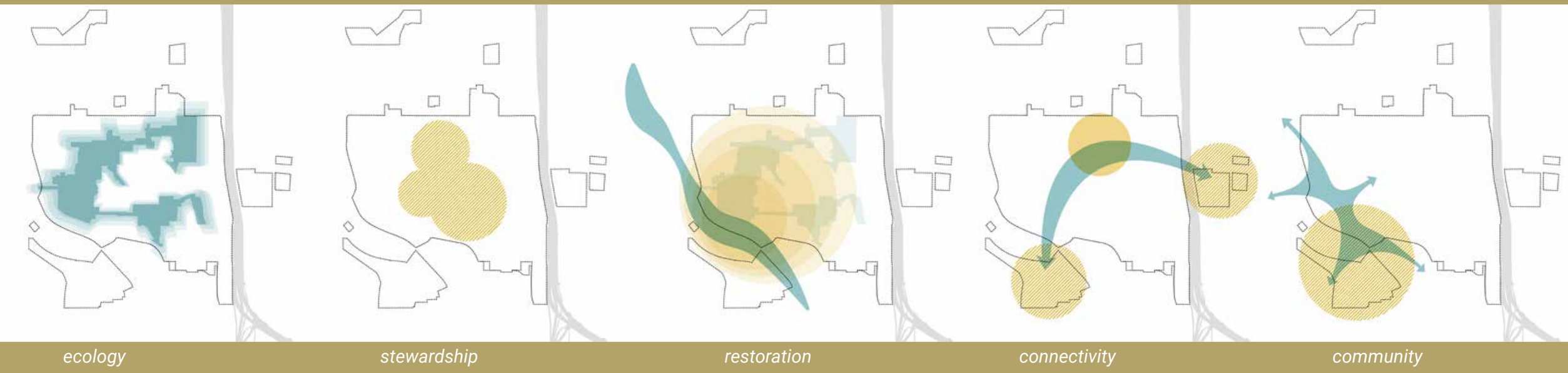

ecology *stewardship* *restoration* *connectivity* *community*

Georgia Tech

Comprehensive Campus Plan

November 2023

nbbj

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Acknowledgments

The Georgia Institute of Technology's 2023 Comprehensive Campus Plan is co-authored by the many individuals who dedicated time and effort leading up to and during the planning process. Sincere gratitude to all the campus and community members who participated in the planning process — your insights and feedback have shaped the plan recommendations.

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Campus Organizations

- Graduate Student Government Association Executive Cabinet
- Undergraduate Student Government Association Cabinet
- Student Planning Association
- Faculty Senate
- Staff Council

Foreword

Dear Yellow Jackets:

I am pleased to present the Georgia Institute of Technology's 2023 Comprehensive Campus Plan. The product of a broad collaboration across the Institute, this plan provides a framework for the overall development of our campus in Atlanta based on a set of principles derived from the Institute's strategic plan:

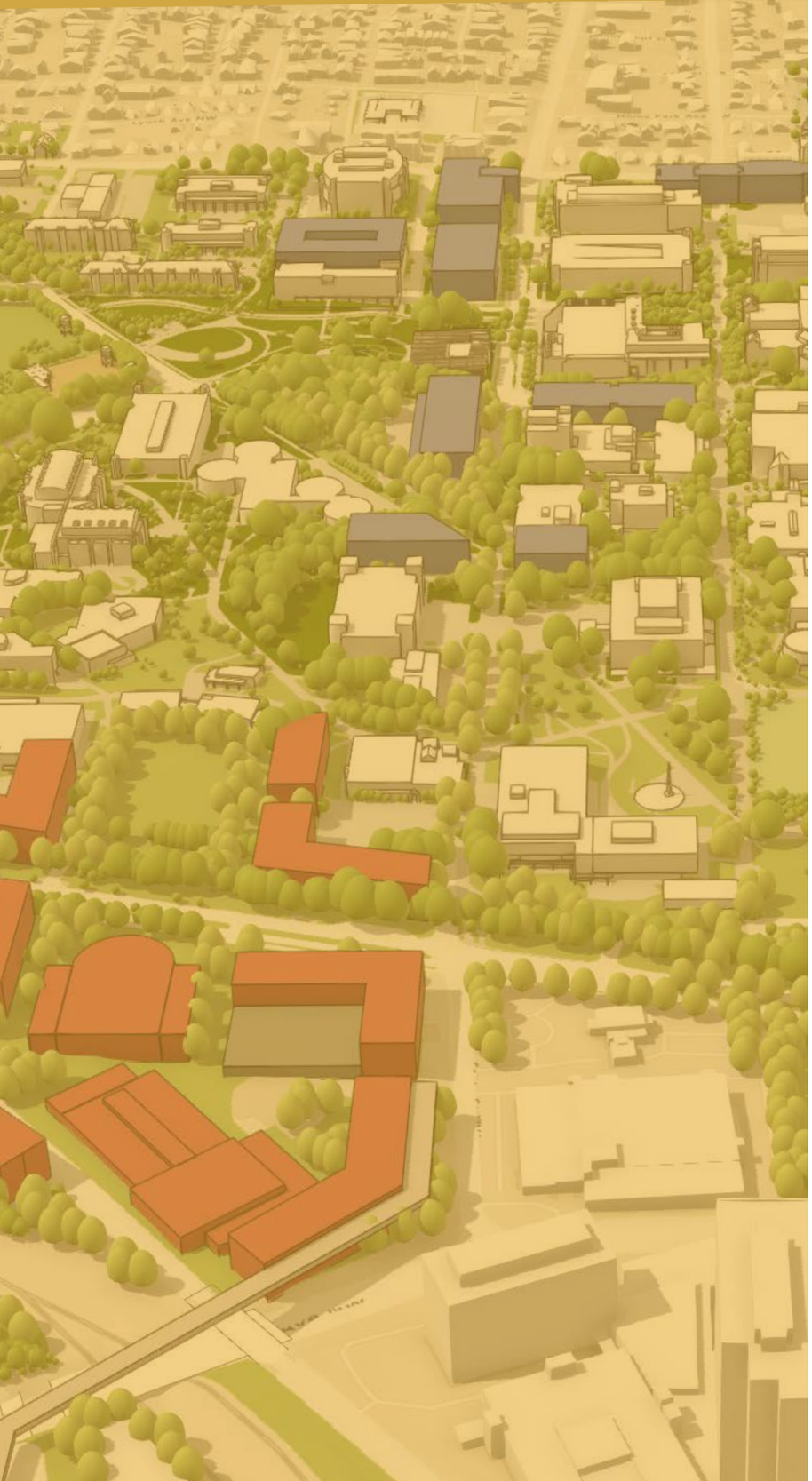
- **Student-First Experience.**
- **Transformative Campus.**
- **Access and Connectivity.**
- **Community Well-Being.**
- **Stewardship.**

Georgia Tech's previous campus plan, issued in 2004, laid the groundwork for several defining campus improvements, including the EcoCommons, the John Lewis Student Center, and the development of Tech Square. I have no doubt that this new plan will inspire an equally ambitious set of projects that will enhance our campus for generations to come.

The new plan supports the Institute's growth while reaffirming our commitment to sustainability, well-being, and symbiotic relationships with our neighboring communities. It outlines a bold future for enrollment, environmental stewardship, housing, research, student life, transit, utilities, and the workplace at Georgia Tech while enhancing and preserving the beauty of our campus.

I am grateful to everyone who participated in the development of this plan, and I look forward to the future it envisions for our campus.

Ángel Cabrera
President, Georgia Institute of Technology



Contents

1

Executive Summary

"The creation of the Comprehensive Campus Plan will guide campus development and capital investments on and around the Atlanta campus for the future. This is significant because it will also strengthen Georgia Tech as an anchor institution for the neighboring communities and Atlanta as a whole."

Maria Cimilluca,
vice president for Infrastructure and Sustainability,
Georgia Institute of Technology

View of the Campanile Fountain Plaza, and the John Lewis Student Center and Stamps Commons from Tech Green. Photo credit: Jonathan Hillye

Executive Summary

The Need for a New Comprehensive Campus Plan

This report presents the Georgia Institute of Technology's 2023 Comprehensive Campus Plan — encompassing a vision and strategy for the best use of the Institute's lands, both within and beyond the current academic core. The 2023 Comprehensive Campus Plan (CCP) is a living document that will inform how campus space can be utilized to support the growing and changing campus community for the next 10 years and beyond. Steeped in the Institute's 2020 strategic plan and with a commitment to people, research, and teaching, the CCP will demonstrate how Georgia Tech will inspire and lead by example in creating a roadmap for the sustainable development and stewardship of the campus's built environment.

Building on the Success of Previous Plans

Georgia Tech's 2004 Campus Master Plan guided nearly $2 billion in capital investment and, over the nearly 20 years since it was instituted, has resulted in significant changes on and off campus, elevating the school from a typical urban learning environment to one that is more thoroughly and ecologically integrated into the surrounding community, better serving both internal and external stakeholders. With nearly 15 million gross square feet of space on the Atlanta campus, Georgia Tech has been a key catalyst in the redevelopment of Midtown Atlanta. The CCP builds on the success of the 2004 plan, the 2011 Landscape Master Plan, and the great amount of planning work that has shaped the campus over the last decade and provides the framework for successful execution of Georgia Tech's current 10-year strategic plan.

Comprehensive in Nature

Since the 2004 campus plan, Georgia Tech has continuously engaged in diverse component and sector planning efforts related to specific campus districts, academic programs, and campus system needs. The 2023 planning scope was comprehensive and integrated these past and ongoing planning efforts to ensure a cohesive development strategy that builds toward an inspiring and sustainable future. Key components of the CCP include:

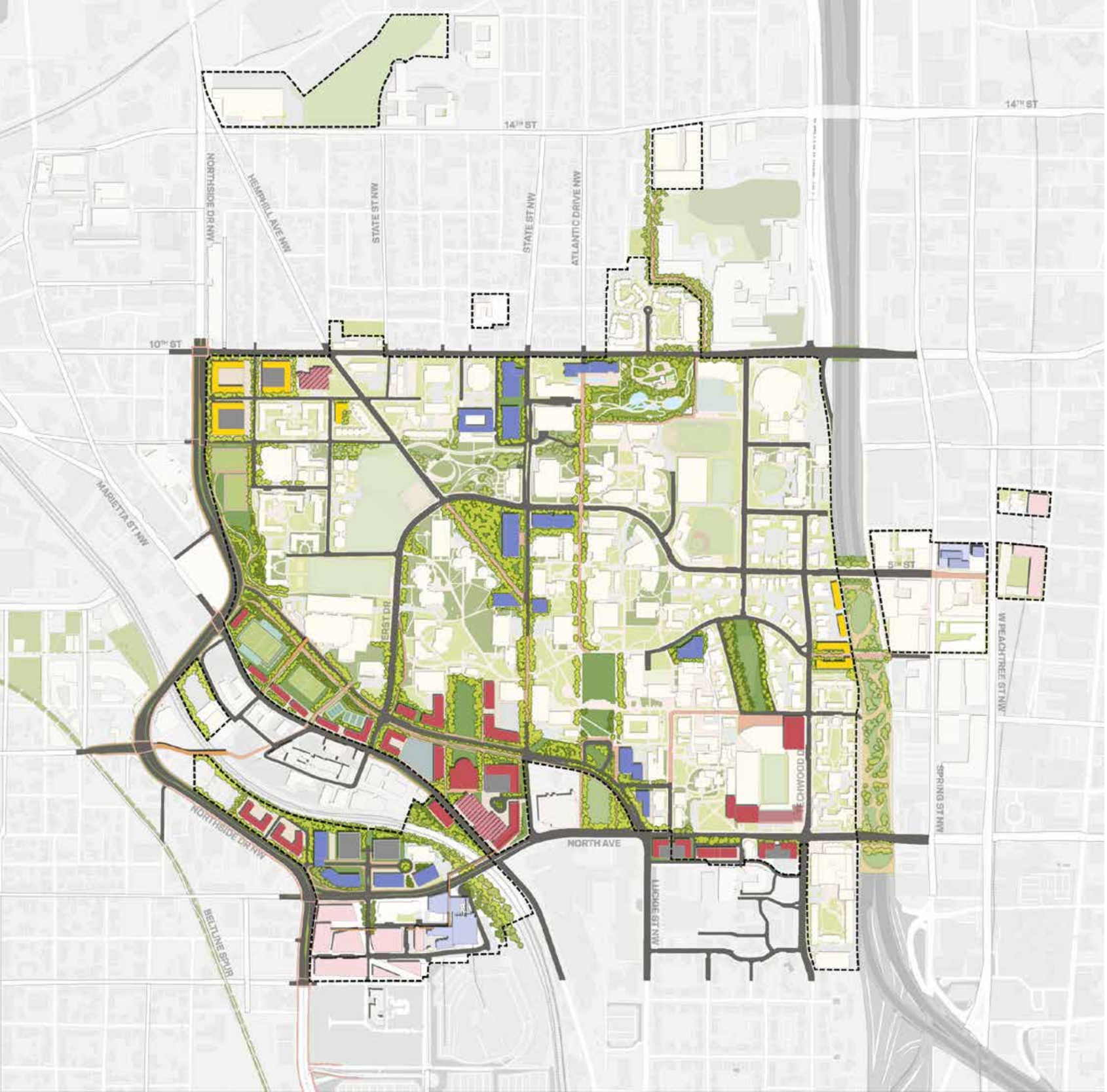
- Campus land use, facilities, and development.
- Academic, research, and office space.
- Student life, housing, and dining.
- Campus services.
- Athletics and recreation.
- Campus experiences and well-being.
- Campus open space and ecology.
- Multimodal access, transit, and parking.
- Campus utilities.
- Sustainability.

Collaboratively Conceived

In visioning the Institute's role and place within Atlanta, the Institute 's strategic plan calls for Georgia Tech to be an anchor institution, grounded in long-term partnerships with local communities. To help Georgia Tech and the surrounding communities strengthen relationships and advance community and institutional goals and interests, the recommendations of the CCP are shaped by substantive input from internal and external stakeholders. Led by NBBJ, the planning consultant, and developed over a span of 16 months, the CCP was a collaborative effort between Georgia Tech and its campus and community members. This extensive input resulted in a set of guiding principles ensuring that the CCP recommendations prioritized:

- Student-first experience.
- Transformative campus.
- Community well-being.
- Access and connectivity.
- Stewardship and resiliency.

Top to bottom:
Artist renderings capturing CCP-recommended concepts for Peters Park, Hemphill Woods Walk, and Marietta Street.



Recommendations Responsive to Evolving Needs

The Comprehensive Campus Plan provides the framework for the successful execution of the ten-year strategic plan and campus needs. The space needs, as illustrated in the CCP, are in response to projected student growth at the Atlanta campus over the next decade and aspirations of the campus and community stakeholders. The CCP assumes these needs and priorities will evolve over time and, with that in mind, the recommendations are not meant to be prescriptive, but rather flexible, goal-based criteria that serve as a decision-making framework — decisions such as where to locate specific emerging program needs or what investments in campus infrastructure and grounds will create a welcoming, safe, and synergistic campus experience. Ultimately, the CCP recommendations offer a campuswide frame of reference to guide the Institute's capital plan.

The CCP addresses these primary drivers of campuswide goals and space needs:

- 26% projected increase in on-campus students, faculty, and staff.
- Additional 2.23 million gross square feet to meet academic, research, and workplace space needs.
- Approximately 2,000 new beds for first-year students; and supporting dining growth.
- Additional indoor recreation and outdoor recreational and athletic fields and facilities.
- No net new parking.
- Increase in alternative mobility options and reliable transit services.
- A car-free campus core.
- A pedestrian- and bike-friendly campus.
- Embodiment of ecological stormwater design principles and aspirations to reduce stormwater runoff to pre-development conditions.
- Exploration of opportunities to dedicate existing campus land for ecological performance, and an increase in campus tree canopy.

◀ *Illustrative Comprehensive Campus Plan.*

2

Comprehensive Campus Plan Foundation

Chapter 2 summarizes key Institute-wide goals, the planning process, and resultant guiding principles that served as the core foundation of the Comprehensive Campus Plan.

◀ *Makerspace at the John Lewis Student Center. Photo credit: Jonathan Hillyer*

2.1 Foundational Goals

GEORGIA TECH
STRATEGIC PLAN
PROGRESS AND SERVICE FOR ALL

The Comprehensive Campus Plan will provide the framework for successful execution of the Institute's 10-year strategic plan.

Amplify Impact

Champion Innovation

Connect Globally

Expand Access

Cultivate Well-Being

Lead by Example

The Institute's Strategic Plan

In 2021, Georgia Tech launched 20 strategic initiatives to advance the goals and objectives of its new strategic plan 2020 — 2030. These initiatives are highly interdependent and are aligned within and across the strategic plan's six focus areas.

The Comprehensive Campus Plan is one of the 20 strategic initiatives, and is described as "Creating optimal places for students to thrive that promote wellness through intentional design of transportation and access to services, and fostering the development of dynamic community partnerships." This initiative primarily aims to advance the following strategic plan goals:

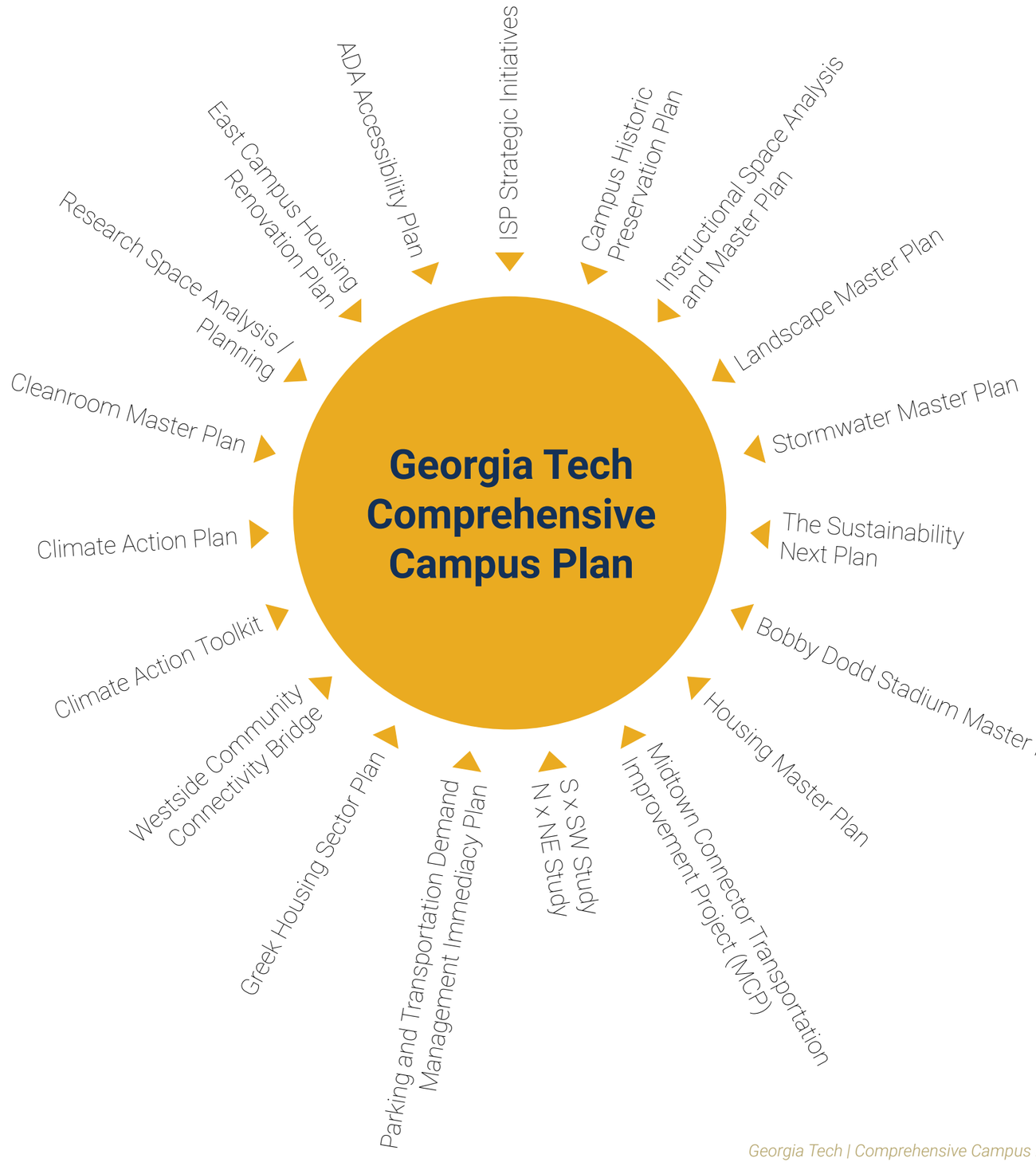
- Amplify Impact.
- Champion Innovation.
- Expand Access.
- Cultivate Well-Being.
- Lead by Example.

Previous Plans

The Comprehensive Campus Plan is a continuation of Georgia Tech's rich culture of planning and innovation. Georgia Tech's 2004 campus plan guided nearly $2 billion in capital investment over the nearly 20 years since it was instituted.

A lot of great planning work within the last decade continues to address key campus issues such as campuswide systems, sustainability, space needs, and facilities investment. This culture of planning continues with ongoing conversations and additional foundational studies being developed by Georgia Tech staff and internal experts. This incredible body of research served as a foundation for the CCP process and recommendations. The diagram on the right captures some of the existing and ongoing plans and studies that have informed the CCP.

These planning studies were integrated into the CCP process to ensure a cohesive development strategy grounded in past initiatives while building toward an inspiring and sustainable future. Several concepts and/or recommendations from these past plans have been carried forward in the CCP and are specifically called out in Chapter 3 and Chapter 4 of this report.



Community Anchor Institution

"To embrace our power as agents of change [Georgia Tech will] be an anchor institution, partner, and catalyst of sustainable development in our city and our state."

Georgia Tech 2020 — 2030 strategic plan

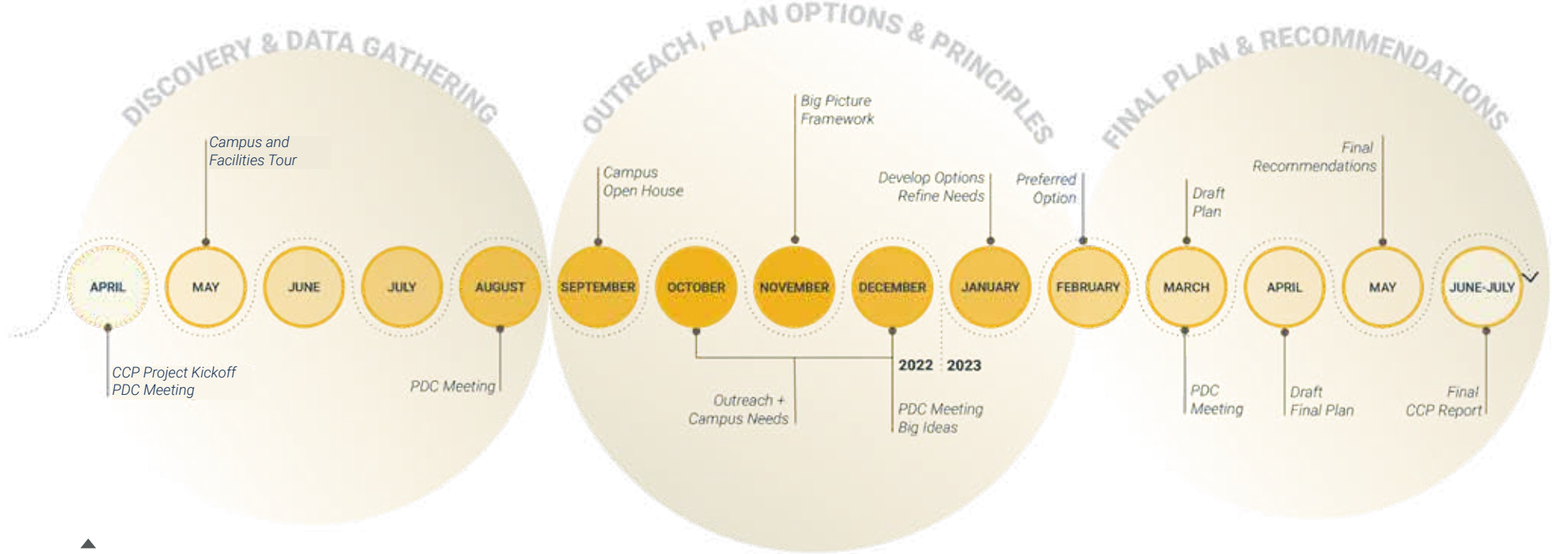
From its founding in1885 to welcoming its first students at Tech Tower in 1888, Georgia Tech's legacy is tied to its Midtown campus and the Atlanta community it is part of. Throughout this history, Georgia Tech has contributed to the success of the city; and today, with more than 15 million gross square feet of campus space, Georgia Tech continues to be a key catalyst in the redevelopment of areas surrounding the campus. Building on this foundation, the Comprehensive Campus Plan underscores Georgia Tech's commitment to serve as an anchor institution for the region and establish long-term partnerships with the local community.

To this end, external partners and the surrounding communities were engaged in the process to capture the community's perspective on how Georgia Tech can continue to be a good neighbor, positively influence community development, and garner feedback to guide the vision for the built environment of the campus.

Georgia Tech's Atlanta campus and community context. ▶

2.2 The Planning Process

A comprehensive and collaborative approach



Comprehensive Campus Plan's planning process timeline.

Overview

In 2021, Georgia Tech determined it needed a vision and strategy to guide the best use of the Institute's lands, both within and beyond the current academic core. To establish a strong foundation for the CCP, Georgia Tech staff engaged in internal pre-planning activities by establishing six working groups that provided a large amount of campus background information and data to the CCP planning team.

In the spring of 2022, the Institute, in partnership with the planning firm NBBJ and its integrated team of sub-consultants, embarked on developing the Comprehensive Campus Plan. Spanning16 months, the planning process was designed around three primary phases:

1. Discovery and Data Gathering.
2. Outreach, Plan Options, and Principles.
3. Final Plan and Recommendations.

The culmination of the planning process resulted in the 2023 Comprehensive Campus Plan delivered as a flexible living document via:

- The CCP Report: This report contains a narrative and visual summary of the CCP process and recommendations.
- GIS Hub: This online platform contains a digital clone of the campus that serves as a repository of current and future state campus data and provides a web-based portal to visualize current and future states of campus to support decision-making.
- Planning Tool: This dynamic GIS-based interactive tool contains a data-rich digital model of the future campus as envisioned by the CCP. Via this tool, additional scenarios and variations to the CCP can be created and tested. The tool measures impacts of the scenarios based on established metrics to facilitate decision-making and guide capital projects.

Moving into the future, the plan will serve as a flexible, living document that will not only provide guidance for the physical elements of campus, but will also inform Georgia Tech's approaches to areas including, but not limited to, sustainability, transportation, housing, health and wellness, energy, growing enrollment and research, and workplace of the future.

Collaboratively Conceived: Campus and Community Engagement

Institutional Subject Matter Experts

The planning process was guided by principles of innovation, discovery, and co-creation with the goal of discovering the best outcomes in collaboration with students, community, and internal institutional experts. As co-creators of the CCP, the staff from Georgia Tech's Infrastructure and Sustainability (I&S) brought their deep institutional expertise to bear. In addition, I&S staff helped identify other subject matter experts from the institution to lend their expertise during the CCP process. The deeper subject matter engagement was provided by working groups formed around the topics of campus design and development, research and workplace, parking and transportation, outreach and communication, and sustainability and climate action.

Stakeholder Outreach

Over the years, Georgia Tech has played an increasingly important role in the redevelopment of Midtown Atlanta. Georgia Tech recognizes that, as an anchor institution, its decisions regarding expansion and development affect stakeholders both on and off campus and remains committed to being a good neighbor, using its substantial influence to support the needs and visions of both its campus and community partners. In keeping with this commitment to the community, collaboration with internal and external stakeholders was identified as a key element early in the CCP process. A communications plan was developed as part of the CCP process to guide strategic outreach to engage and inform a diverse array of internal and external stakeholders, encouraging their feedback and input in the comprehensive campus planning effort.

Internal Stakeholders

- Students (including Graduate and Undergraduate Student Government Associations).
- Faculty.
- Staff.
- Colleges and Schools (deans, associate deans, directors of college facilities and capital planning).
- Research (Georgia Tech Research Institute, Office of the Executive Vice President for Research, Interdisciplinary Research Institutes).
- Georgia Tech Alumni Assoc.
- Georgia Tech Athletics.
- Georgia Tech Foundation.
- Georgia Tech Police Department.
- Campus Recreation, Housing, Tech Dining.
- Greek Life.
- Institute Diversity, Equity, and Inclusion.
- Office of Development.
- Office of Information Technology.
- Office of Sustainability.
- Parking and Transportation Services.
- Strategic Initiatives.
- Student Engagement and Well-Being.
- Real Estate Development Office.
- Imagine Lab.
- Executive leadership.

External Stakeholders

- Atlanta Public Schools.
- Atlanta Regional Commission.
- Atlanta University Center Consortium.
- Central Atlanta Progress.
- City of Atlanta, Department of City Planning.
- Georgia Department of Transportation.
- Emory University.
- Georgia State University.
- Georgia Tech Planning and Design Commission.
- Home Park Community Improvement Association.
- MARTA.
- Midtown Alliance.
- Neighborhood Planning Units.

Top to bottom right: Co-creating the CCP: Consultant team and GT I&S staff planning and design workshops.

External Stakeholders

The CCP development team identified external stakeholders who:

- Would be directly affected by Georgia Tech's decisions regarding expansion and development or accommodation for corporate partners.
- Represent organizations that play important roles in establishing and implementing the vision of Midtown, the city of Atlanta, and the region.
- Are responsible for constructing and maintaining roads and highways in Midtown, West Midtown, and other contiguous areas.
- Represent other academic institutions, to explore partnerships with Georgia Tech.

The CCP team communicated with 80 organizations about the Comprehensive Campus Plan and conducted external interviews with institutions, organizations, and neighborhoods, including:

- Atlanta Regional Commission.
- Atlanta University Center Consortium.
- Central Atlanta Progress.
- City of Atlanta, Department of City Planning.
- Georgia Department of Transportation.
- Georgia State University.
- Home Park Community Improvement Association.
- Midtown Alliance.

The team spoke with 41 individuals, shared project purpose and goals, received feedback on existing projects and activities around the campus, and highlighted the opportunities for ongoing communication. The summary of the interviews affirmed that external stakeholders are open to establishing partnerships and ongoing relationships with Georgia Tech, which is primarily viewed as a positive presence in the area. The interviews also identified a range of needs and desires of external stakeholders.

Neighborhoods' Needs:

- Help maintain residential character of neighborhoods.
- Don't increase traffic; consider setting the goal of a car-free campus.
- Increase focus on pedestrian safety.
- Recognize how new housing developments benefiting students may affect existing residential neighborhood fabric.
- Help community take advantage of the school's partnerships with tech companies to improve access to/options for broadband, other amenities or utilities.
- Advocate with corporate partners to uphold neighborhood values and goals.

City and State Agencies' Needs:

- Important to establish/maintain partnerships with agencies that focus on economic growth, quality of life, safety, air and water quality, climate change.
- Georgia Tech can contribute to public art projects and provide on-campus space for community amenities such as eating establishments, farmers markets, pop-up events, etc.
- The effect of Georgia Tech's recent changes in Midtown is felt beyond the project boundaries. Consider areas like downtown that need support when choosing projects and areas to be improved.
- Connection and access to campus is key.
- Support public transit and encourage ridership through design.
- Improve on-campus amenities for different age groups.

Higher Education Institutions' Needs:

- Many opportunities for partnership are possible, such as transit, housing, programs, student safety, etc.
- Could collaborate more on grants, development, proposals to Board of Regents – more strength in numbers.
- Cooperative arrangements on student travel modes, i.e., campus buses, public transit should be explored.

Stakeholder input was instrumental in the development of the CCP recommendations; for example, on the basis of feedback, the CCP has addressed campus gateways and access, campus experiences, programmed spaces for the community, street and pedestrian safety, etc. Additionally, continued engagement with stakeholders has been identified as a high priority for Georgia Tech beyond the completion of the CCP.

Next Steps

Continued engagement with stakeholders has been identified as a high priority beyond the completion of the CCP. An open channel of communication will be maintained to strengthen current partnerships and build new ones. Georgia Tech will welcome additional feedback from stakeholders and continue to evaluate future community needs.

"Bridges or tunnels across the major grid would make it safer and open up the campus a little more. It could also channel foot traffic entering campus to a create 'grand entrance' type location."

A neighborhood stakeholder

Internal Stakeholders

Engagement with internal stakeholders was broad and took on many forms, in-person and virtual, throughout each phase of the process. The campus community was engaged through campus open houses, town halls, one-on-one interviews and focus groups, live polls, and a campuswide online survey. Faculty, staff, and community members also provided their input directly to the I&S members of the planning team. Stakeholders were also kept updated and engaged via the project website at: campusplan.gatech.edu.

The outreach resulted in a wealth of information, feedback, and refinement of the CCP guiding principles and formulated campus needs and aspirations as described in the following chapters. Common themes that emerged included:

- Campus experience is shaped by many factors, including: aesthetics, safety, quality and choices of spaces to live/learn/work/socialize, and ease of getting to and around campus.
- While outdoor spaces are widely used across campus, Tech Green, EcoCommons, Couch Park, and Harrison Square are some of the most cherished among students.
- Price Gilbert Memorial Library, Clough Undergraduate Learning Commons, Campus Recreation Center, John Lewis Student Center and Stamps Commons, and The Kendeda Building for Innovative Sustainable Design are some of the most popular buildings on campus among students.
- The preferred mode of travel to campus varies across faculty, staff, and students, but is driven by available choices, cost, and convenience.
- Across all groups, walking is the preferred mode to get around campus.
- Students expressed the need for a bike- and pedestrian-friendly campus with reliable transit options.
- Sustainability is important. Focus future development on energy efficiency and carbon reduction.
- Regarding hybrid work, majority of faculty and staff want to be on campus at least two to three days a week. Faculty, given their research interests, prefer to be on campus more often than staff.
- Undergraduate and graduate students who choose to live on campus do so for convenience and safety.
- Undergraduate students who choose to live off campus do so for better quality and privacy, while graduate students do so for affordability and family-friendly options.
- Across all facets of campus life, the need for campus environments to be inclusive, support well-being, and support equity is important.

Campus community response to
"What is your favorite outdoor space on campus?"

Top right to bottom right: Stakeholder engagement during campus open house event.

2.3 Guiding Principles

Comprehensive Campus Plan recommendations are guided by a set of principles that embody the collective aspirations for the future of the campus as shared by campus and community members and are in alignment with Georgia Tech's vision, values, and beliefs, and further support the Institute's strategic plan goals.

Student-First Experience

Enhance the built and urban ecological environments to create a safe, welcoming, enriching, and beautiful campus where every student can thrive.

Transformative Campus

Radiate influence through transformational and innovative academic, research, living, and workplace environments. Radiate influence through adaptive infrastructure strategies that meet evolving campus needs and growth.

Access and Connectivity

Design for an active, well-connected campus that encourages physical movement and discourages car dependency by prioritizing transit, pedestrian, bike, and other modalities to provide universal and equitable access.

Community Well-being

Promote physical and environmental wellness though intentional design and robust community partnerships to improve and cultivate a safe, healthy, equitable, and adaptable urban fabric.

Stewardship

Foster resiliency and promote stewardship of campus resources through sustainable development and operational strategies in support of Institute sustainability and climate action goals.

3

Analysis and Needs

Chapter 3 describes findings from current campus conditions analysis and summarizes current and projected campuswide needs that the Comprehensive Campus Plan addresses.

◀ *View of the Campanile Fountain Plaza with the John Lewis Student Center and Stamps Commons.*
Photo credit: Jonathan Hillyer

The shop building (left), and the academic building (Tech Tower), circa 1888. Photo credit: Georgia Tech Alumni Magazine, Vol. 95 No. 1, Spring 2019 Published on March 29, 2019, "Constructing Campus" by Melissa Fralick.

Georgia Tech is a forward-pacing Institute with nearly 140 years of experience developing a living museum of current best practices and construction technology, rooted in time and place. All future buildings, and their accompanying architecture, will continue to represent this proven strategy.

3.1 Campus Through the Ages

Historical Relevance

Georgia Tech's legacy is tied to its Midtown campus and the Atlanta community. The Georgia School of Technology, founded in 1885, served as a pioneer in initiating the shift from an agrarian economy to building an industrial economy in a post-Civil War United States. What started as a college offering only a mechanical engineering degree with 84 students is now the Georgia Institute of Technology, one of the foremost advanced technological and scientific research institutes in the world.

After Georgia Governor Henry McDaniel signed the bill to create and fund the school in 1855, pioneer and philanthropist Richard Peters donated to the state 4 acres of green space of what is currently Peters Parking Deck. The Georgia Tech campus continued to grow around the Peters Parking Deck, near the northern limits of the city of Atlanta.

The Georgia Tech campus started with two structures: what is presently Tech Tower, housing administrative spaces and classrooms, and the second building featuring a shop with a foundry, forge, boiler room, and engine room. The first student housing was constructed on campus in 1896 under President Lyman Hall, followed by the Knowles Dormitory in 1897, the first residential quarter to have electricity and running water. The campus continued to expand with the advent of additional course offerings in engineering, biosciences, computing, architecture, administration, liberal arts, and others. Georgia Tech has now established itself as a cutting-edge institution of research and innovation "developing leaders who advance technology and improve the human condition."

Source: gatech.edu/about/history-traditions and strategicplan.gatech.edu

Campus Context Today

The Georgia Tech campus is uniquely situated at the seam of some very distinct and evolving urban neighborhoods. The eastern edge of campus is flanked by the interstate (I-75/85) and the extremely dense corporate-commercial neighborhood of Midtown. This area has seen tremendous growth over the past decade, anchored by Georgia Tech's development of Tech Square. North of the campus is Home Park, a dense residential neighborhood that is home to many Georgia Tech students.

The western edge borders residential areas (Blandtown, the Marietta Street Artery, and English Avenue) that are in the midst of transformative investments to encourage and stabilize homeownership. Some of these investments have resulted in the adaptive reuse of existing industrial buildings and an uptick in denser, mixed-use developments, particularly along Marietta Street.

Southwest of Marietta Street is a varying mix of institutional, industrial, and commercial uses including the Means Street Historic District, workshops and makerspaces (NARA-North Avenue Research Area), and the ongoing development of a mixed-use research community at Science Square.

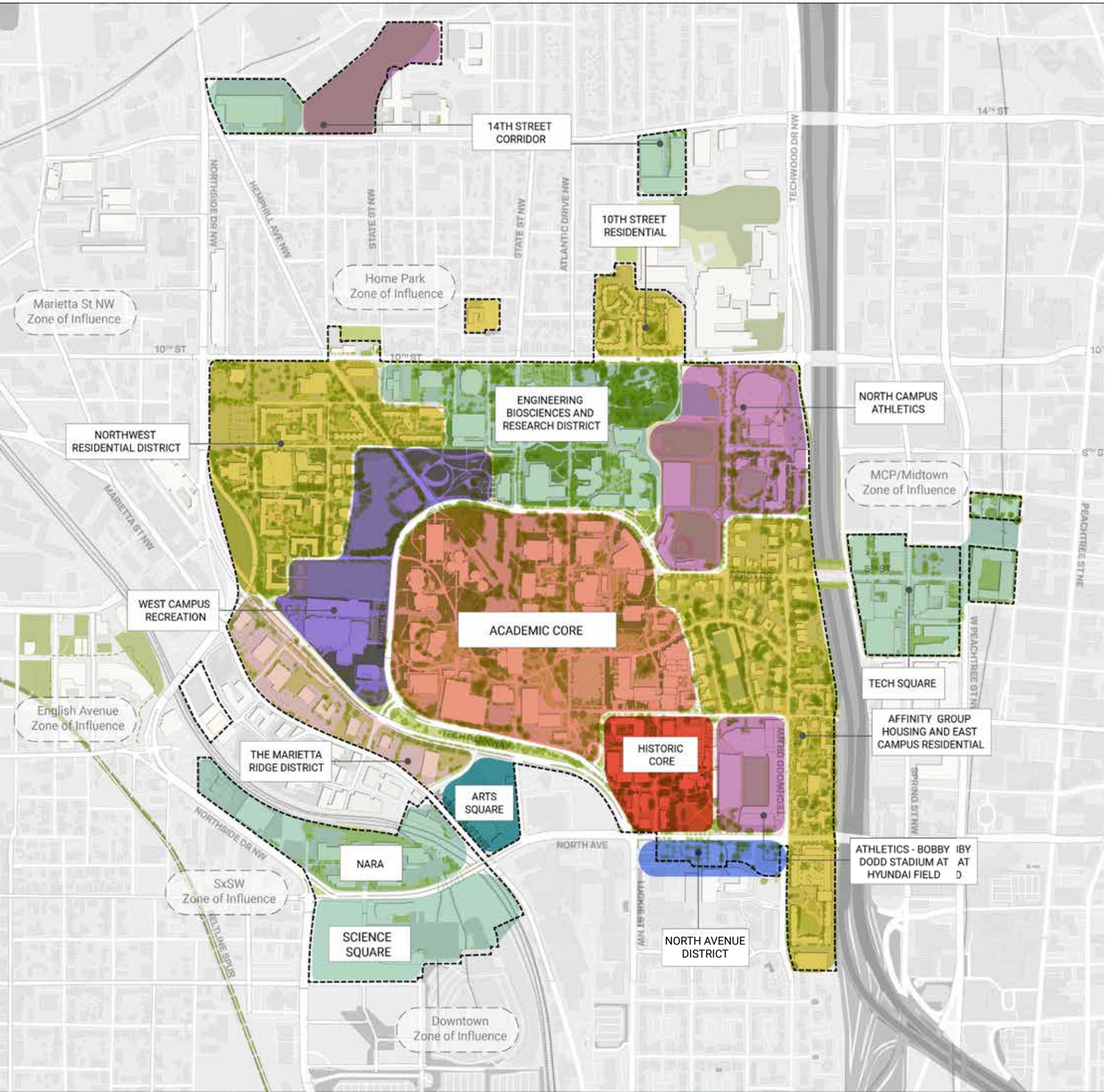
Higher Density Neighborhood

Medium Density Neighborhood

Emerging Medium Density Neighborhood

Lower Density Neighborhood

Georgia Tech campus neighbors and surrounding densities.



Existing Campus Districts

The Georgia Tech campus consists of a series of well-established and distinct neighborhoods or districts that have developed over time in support of strategic, programmatic, and campus needs. Starting with the "Historic Core" on North Avenue, the campus eventually grew to the north, east, and west. The "Academic Core" expanded to serve the growing academic needs of the Institute. As the Institute evolved into a more residential campus, transitioning from single family houses to residence halls, it resulted in the build-out of the adjacent "Affinity Group Housing and East Residential Area." The residential growth continued into the "Northwest Residential" neighborhood, taking advantage of the city of Atlanta's Couch Park setting, now part of the "West Campus Recreation District." Housing on the campus grew dramatically with the 1996 Summer Olympics in Atlanta, the construction of new housing for the athletes, and the 2007 transfer of a portion of that housing to the Institute.

The need for large footprint research buildings led to northern growth along 10th Street and the "Engineering, Biosciences, and Research District." Research programs that were messy, produced unwelcome noise and odors, or required outdoor storage space were moved to the edge of campus and became the "North Avenue Research Area" (NARA). The Institute's desire to build stronger partnerships with the Atlanta business community led to investment in Tech Square, thus bridging the I-75/85 divide.

"Athletics and Bobby Dodd Stadium at Hyundai Field" are nestled at the southeast gateway of the campus between the Historic Core and the East Campus Residential districts. The other large format athletic facility needs were accommodated and consolidated in the "North Campus Athletics" area, along 10th Street and the I-75/85 corridor.

The concept of campus neighborhoods or districts provides a strong framework for future campus growth and expansion.

CCP recommended campus zoning map.

3.2 Stormwater and Ecology

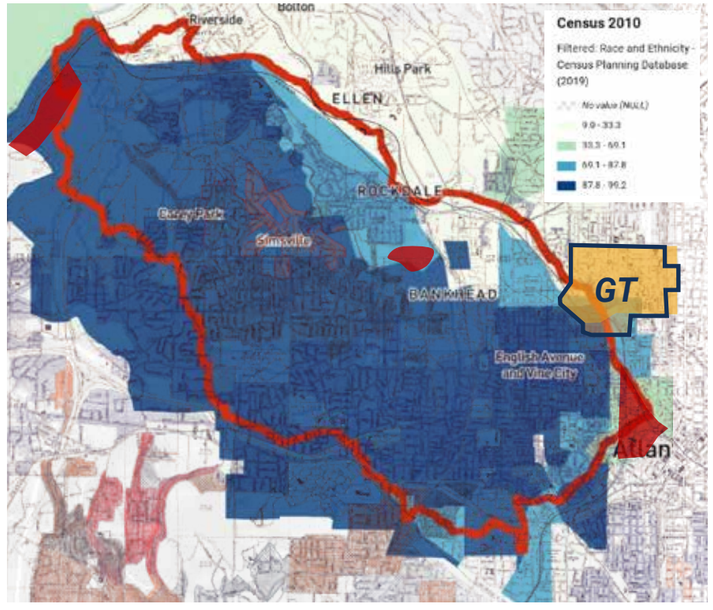
Historical Significance

Understanding Atlanta's history of development, ecology, and drainage patterns is crucial to the goal of restoring the natural drainage patterns on Georgia Tech's campus.

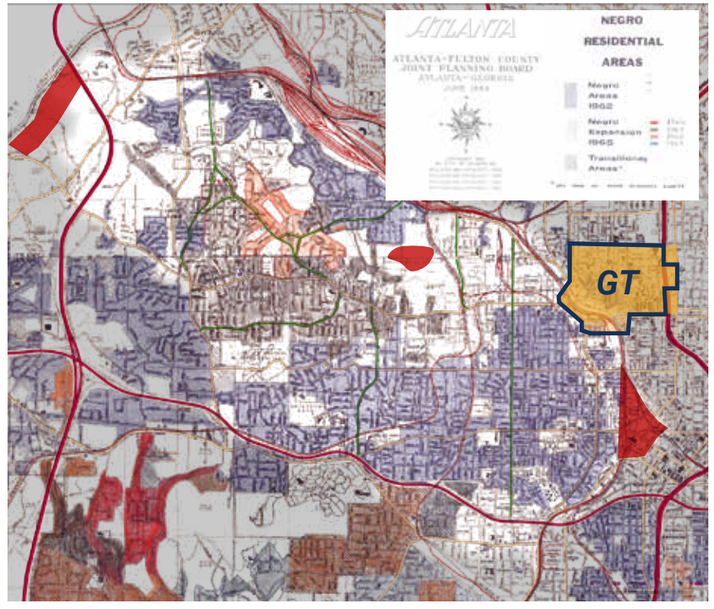
Atlanta is situated at a unique intersection of the past, present, and future, where historical and current drainage patterns converge. The city is built on a hill in the Appalachian Mountains' foothills, with downtown serving as the central hub of a damaged ecological landscape that extends toward the city's lower regions. Understanding Atlanta's history is crucial for restoring the natural drainage patterns and addressing the challenges they present.

The land on which Atlanta stands today was shaped by the meeting of the Appalachian Plateau and the Piedmont Plateau, forming ancient foothills of the Appalachian/Blue Ridge Mountains. Around 500 million years ago, during the Cambrian period, the underlying granite formations beneath the Appalachian-Piedmont caused the folding of the terrain, redirecting the Chattahoochee River westward. This fold created what is now known as Peachtree Ridge, dividing rainfall between the Atlantic and the Gulf. Atop this fold, Peachtree Street was built and remains as the oldest human artifact in Atlanta.

In the 19th century, Atlanta's strategic location at the intersection of three ridges comprising the Eastern Continental Divide made it an ideal spot for rail development. This geographical advantage facilitated the connection of the Southeast Gulf, Western Atlantic, and Eastern Atlantic regions, which had historically been separated by the Appalachian foothills and Chattahoochee River. Thus, Terminus, now known as Atlanta, was founded in 1836 at the Gulch, a flat area fed by natural springs along Peachtree Ridge. It served as a crucial junction between



Proctor Creek demographic shifts in 1962 — 1965 compared to 2010 census data. Image source: Regime Politics, Planning Atlanta



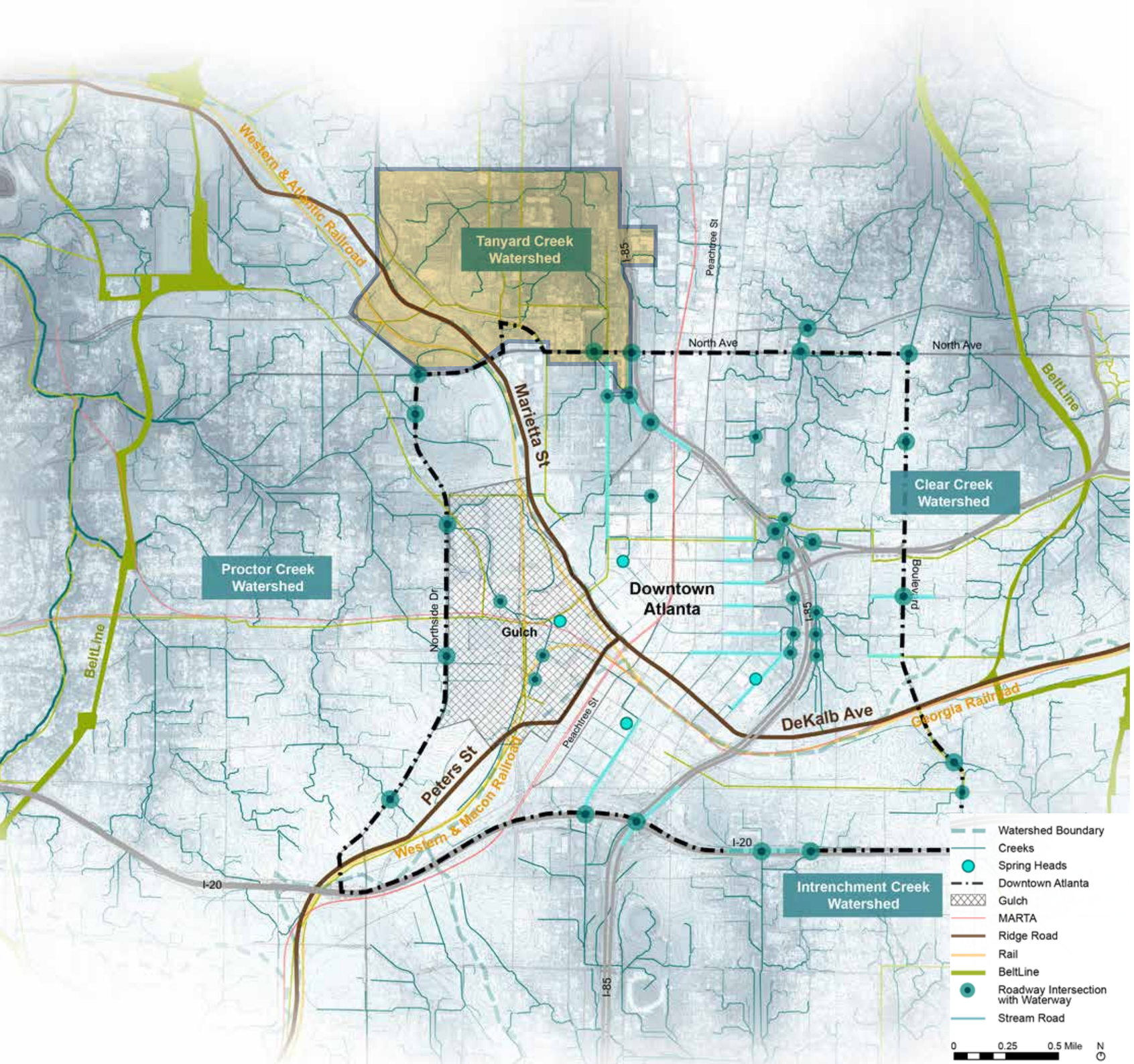
The Gulch (highlighted in red) is a flat saddle at the intersection of the three ridgelines that define the region. Image source: Regime Politics, Planning Atlanta

rail lines from Chattanooga and Savannah, bringing together the region's economic drivers through railway connectivity. The city experienced rapid growth and industrial development throughout the late 1800s.

The marginalization of Black communities was exacerbated by the 1954 Housing Act and Urban Renewal programs. These initiatives prioritized business interests, particularly real estate developers, which led to the forced relocation of Black families from places like Perry Homes, Bowen Homes, and Hollywood Court in the Proctor Creek lowlands. Over time, this area became overcrowded, intensifying racial, geographic, and socioeconomic challenges, resulting in blight and displacement. Throughout the 1950s, a practice known as blockbusting led to violence, intimidation, and organized political pressure in some white neighborhoods to discourage Black families from buying homes there. Mayor Ivan Allen Jr. attempted to create barriers to satisfy white residents while negotiating Black expansion into nearby undeveloped land. However, legislative action removed these barriers before any agreements were finalized.

Some remnants of these historical boundaries still persist, evident in 2023 public parcels that separate the pre-1962 Black community (shown in purple above) from the historically white Center Hill community to the north (shown in brown), as well as Bowen Homes (purple) and Carey Park (brown). These disconnections in road grids and sidewalks continue to impede equitable access for community members in the Westside.

Source: Stone, C. N. (1989). Regime Politics, Governing Atlanta 1946-1988. University Press of Kansas



As Atlanta expanded, a system of ditches, gullies, streams, and rivers was paved over and piped into a combined sewer system. While these topographic and hydrologic elements that defined the urban infill slowly disappeared from view, the rain never stopped. When storms pass through these flow paths, pools and lowland interactions resurge into existence. The only difference is that tension in the natural drainage paths that once filtered, slowed, and conveyed these flows no longer exists. Streets and homes flood, streams and rivers are polluted, and combined sewers reach capacity and overflow into the lowlands and the vulnerable communities downstream.

Georgia Tech sits in a unique position near the nexus of the very ridgelines Atlanta was founded upon.

The ridgelines, marked today on the southwest edge of campus by Marietta Street and on the east by Peachtree Street, define the headwaters of Proctor Creek and Tanyard Creek, which downstream become the primary arteries toward the Chattahoochee River. While the campus is located in the highlands of Atlanta on a city-scale, highland to lowland typologies still exist on a campus-scale as the majority of stormwater originates at the ridgelines on the fringes and conveys toward the northern heart of the campus, mimicking the feeding tributaries of Tanyard Creek that once flourished onsite.

◀ *Georgia Tech's relationship with regional watersheds.*

The campus is roughly 50/50 highlands to lowlands with large topographic slope occurring in the transition between the two.

Tech Parkway is a large, flat, level drainage pattern at the top of the watershed. Large junctions of natural drainage patterns occur at Tech Green, Hemphill Ave & 8th Street, Peters Parking Deck, and Ken Byers Tennis Complex.

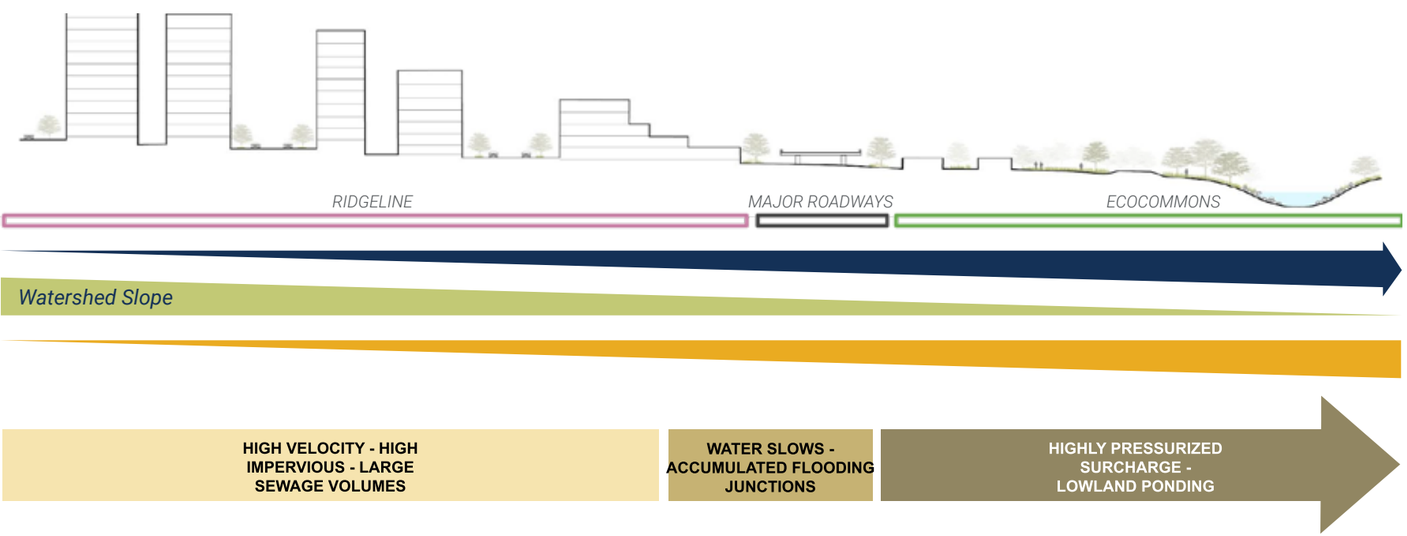
Driest (high point of the ridge)

Wettest (prone to flooding)

EcoCommons

Surface drainage

Lowlands



Surcharge surplus / combined sewer system / unmitigated stormwater flow.

Habitat size.

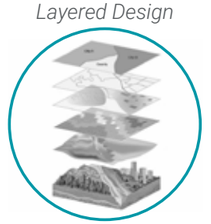
Campus Drainage

At the confluence points of where natural ditches and gullies once met, water is still present, hinting at the hydrological features of the past, but causing flooding nuisances today. This is still evident in drainage pinch points today, as seen near both the School of Architecture and Couch Park Field.

Building on the "ecological performance" based recommendations of the Georgia Tech Landscape Master Plan, future stormwater should continue to be considered from an ecological-based lens so nature can be worked with rather than against. Georgia Tech should also be intentional environmental stewards of both campus and the larger city that the campus calls home.

As a key component in the city landscape, Georgia Tech must recognize its role on the ridge in the larger story of Atlanta. Stormwater should be considered at a holistic scale, including not only the areas where symptoms of flooding occur in lowlands, but also in the areas where the underlying cause of downstream symptoms originated. Stormwater interventions on the ridgeline should work in tandem with interventions downstream to reduce the rate at which water conveys downstream, mitigating flooding impacts in both the local lowlands of the campus and the regional lowlands downstream.

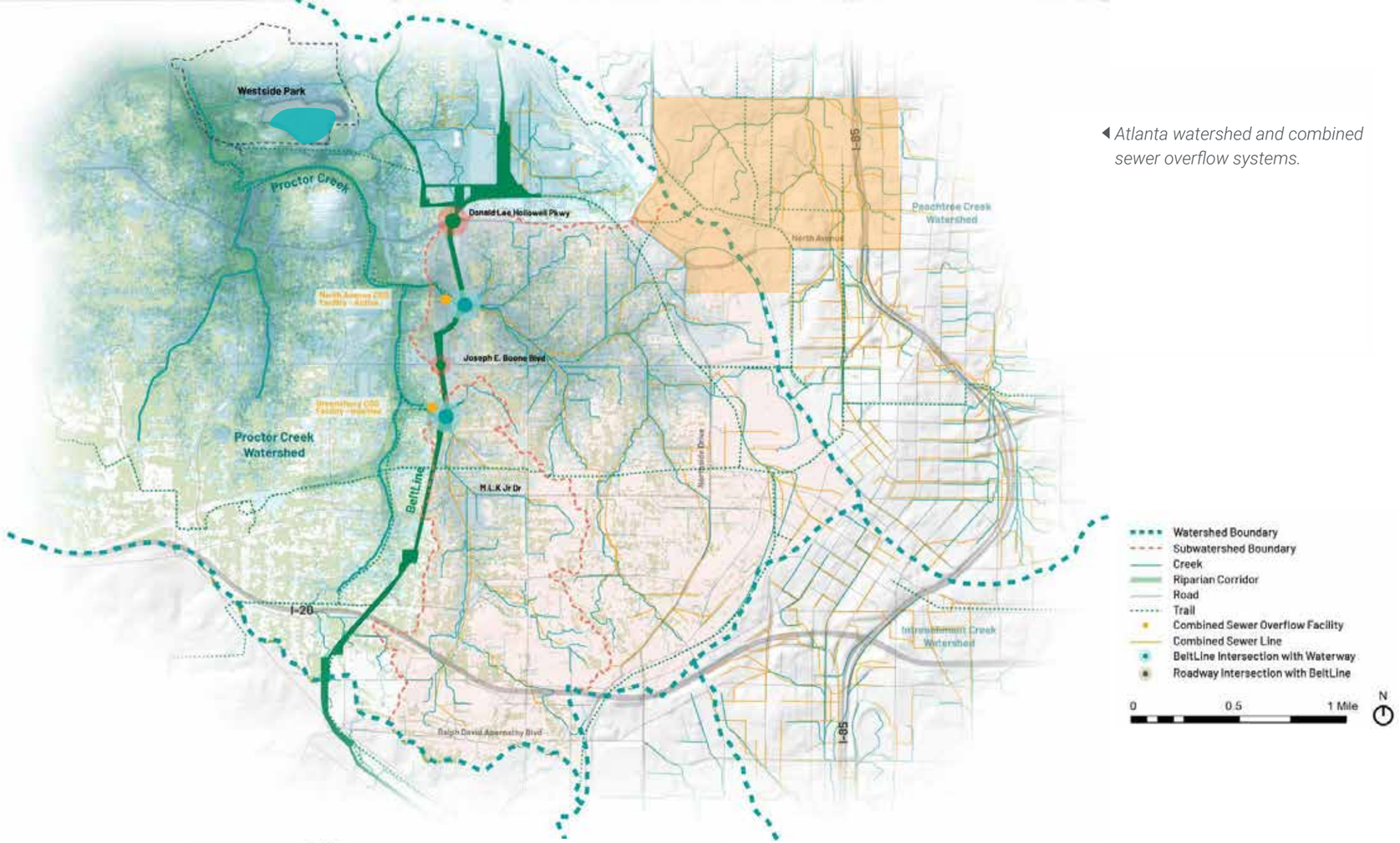
Layered Design



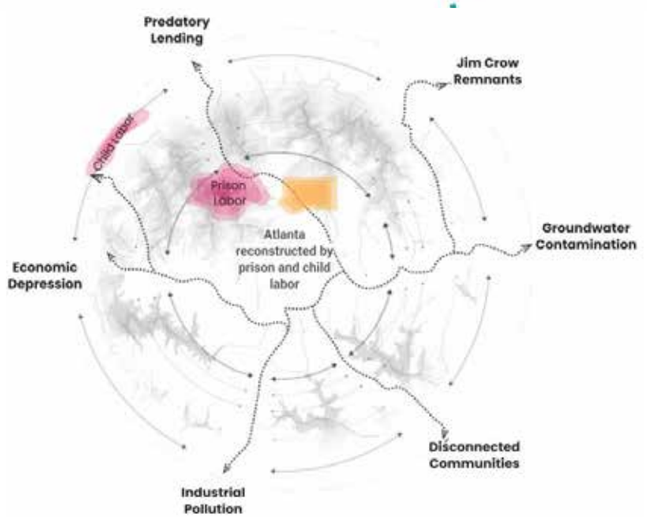
Holistic Thinking

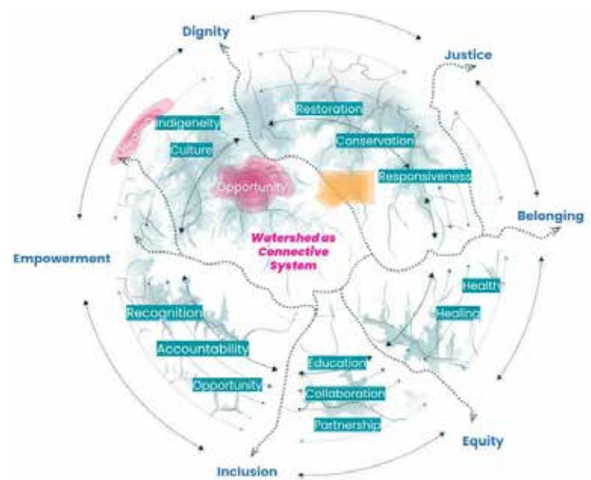
Ecological Sensitivity

Ecological-based lens for stormwater performance.



Atlanta watershed and combined sewer overflow systems.





Bottom left: Atlanta's turbulent and fragmented growth.
Bottom right: Leveraging the watershed as a connective system to heal the legacy of Atlanta.

What if Watersheds Were the Connective Tissue of Atlanta?

To provide restoration on a broader level, the importance of integrated systems must be recognized: environmental, social, cultural, and mobility. From these connections, Georgia Tech can provide a place for profound engagement across the diversity of its students, faculty, and staff, which leads to creativity and innovation. Georgia Tech has the opportunity to emulate its motto of Progress and Service by acknowledging the past, understanding the role that campus has in the larger watershed, and advancing holistic solutions that mitigate flooding both on campus and downstream.

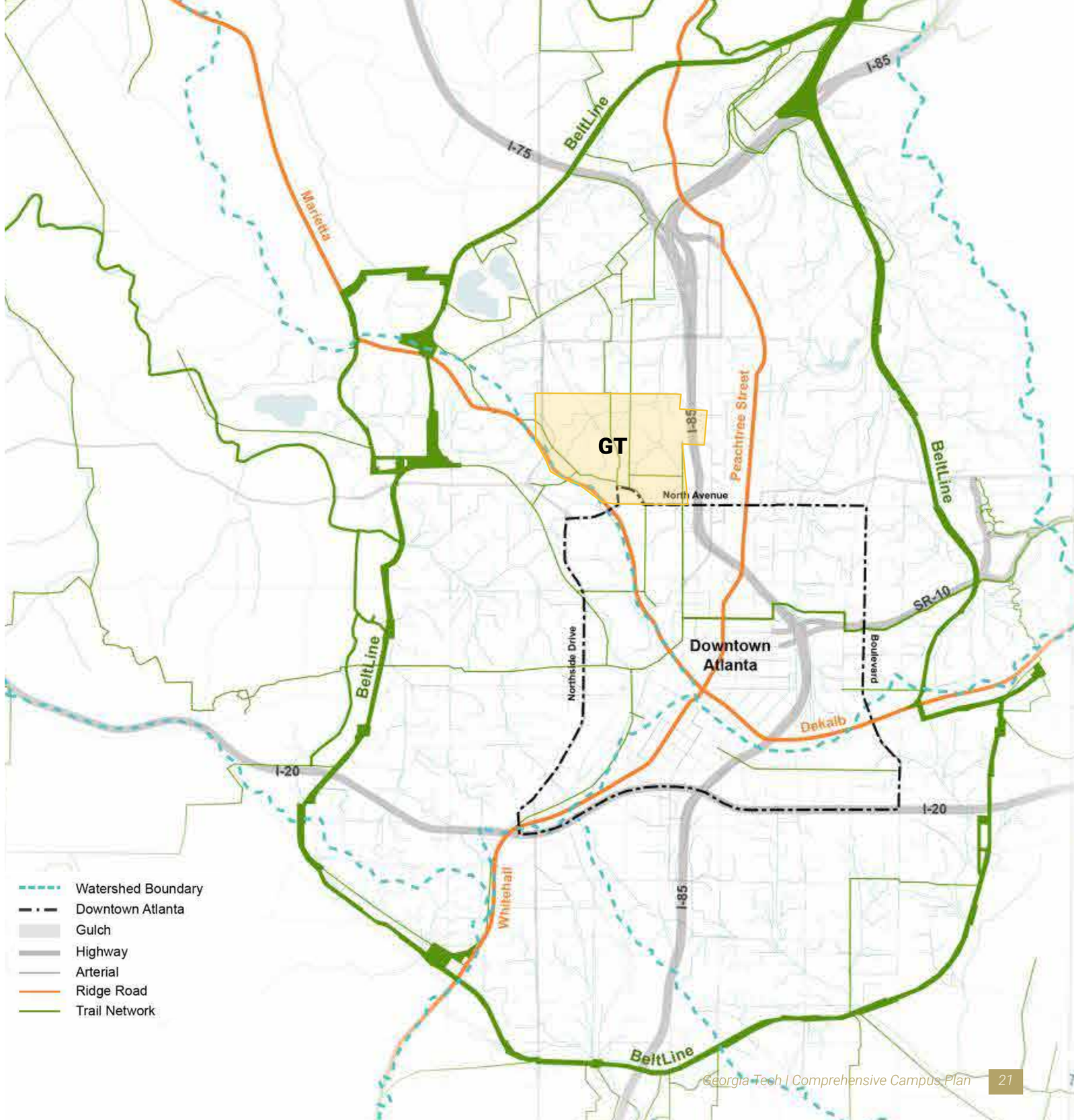
By acknowledging the natural drainage network that defines the city and how development changed those patterns, Georgia Tech can leverage its position on the ridge to restore its watersheds as a connective tissue between the campus and Atlanta to heal the legacy of the ridge.

Beginning at each of the headwaters in downtown, runoff drains toward the lowlands, accumulating volumes, debris, and velocity along the way. With the steep topography of Downtown Atlanta, the upstream systems near the ridge promote high velocity flows in infrastructure and through blocks and streets. As the runoff reaches the lower portions of the watershed, capacity of conveyance infrastructure is met and waters slow, pond, and spill into highways, street junctions, and low parcels within the lowlands. This phenomenon results in flooding in the lowlands, further propagating instances of environmental injustice in areas where disadvantaged populations were historically located. Examining stormwater impacts beyond the boundaries of campus and reducing both the volume and rate that stormwater conveys downstream is the first step to mitigating environmental impacts.

Historically, spring heads originated in Downtown Atlanta and carved out a riparian character as streams conveyed stormwater downhill from the top of the hill that defines the city. The riparian corridors and stream zones that naturally would have buffered the lower watershed from flooding and debris have visibly disappeared with development. Today, when it rains, these corridors come back to life with unmitigated flows and pollution rushing from the highlands, through streets and blocks, and into downstream infrastructure.

These natural buffers provided an ecological context that can be leveraged and mimicked in future plans and designs. Between aquatic ecology and adjacent upland habitat, riparian ecosystems provide critical transitions and ecological linkages along their hydrological corridors. These natural riparian corridors contain river and stream flows, soil and sediment erosion, and many of the most critical ecological habitat zones of the increasing ridges of Atlanta.

By expanding campus ecology and restoring these riparian corridors, it can be assured that the ecosystem is optimized, including: vegetative filtration of pollutants, vegetation uptake of stormwater by transpiration, and provision of placemaking opportunities for Georgia Tech and its neighbors.



Georgia Tech's relationship to the ridge and trail network.

3.3 Landscape Open Space

Overview

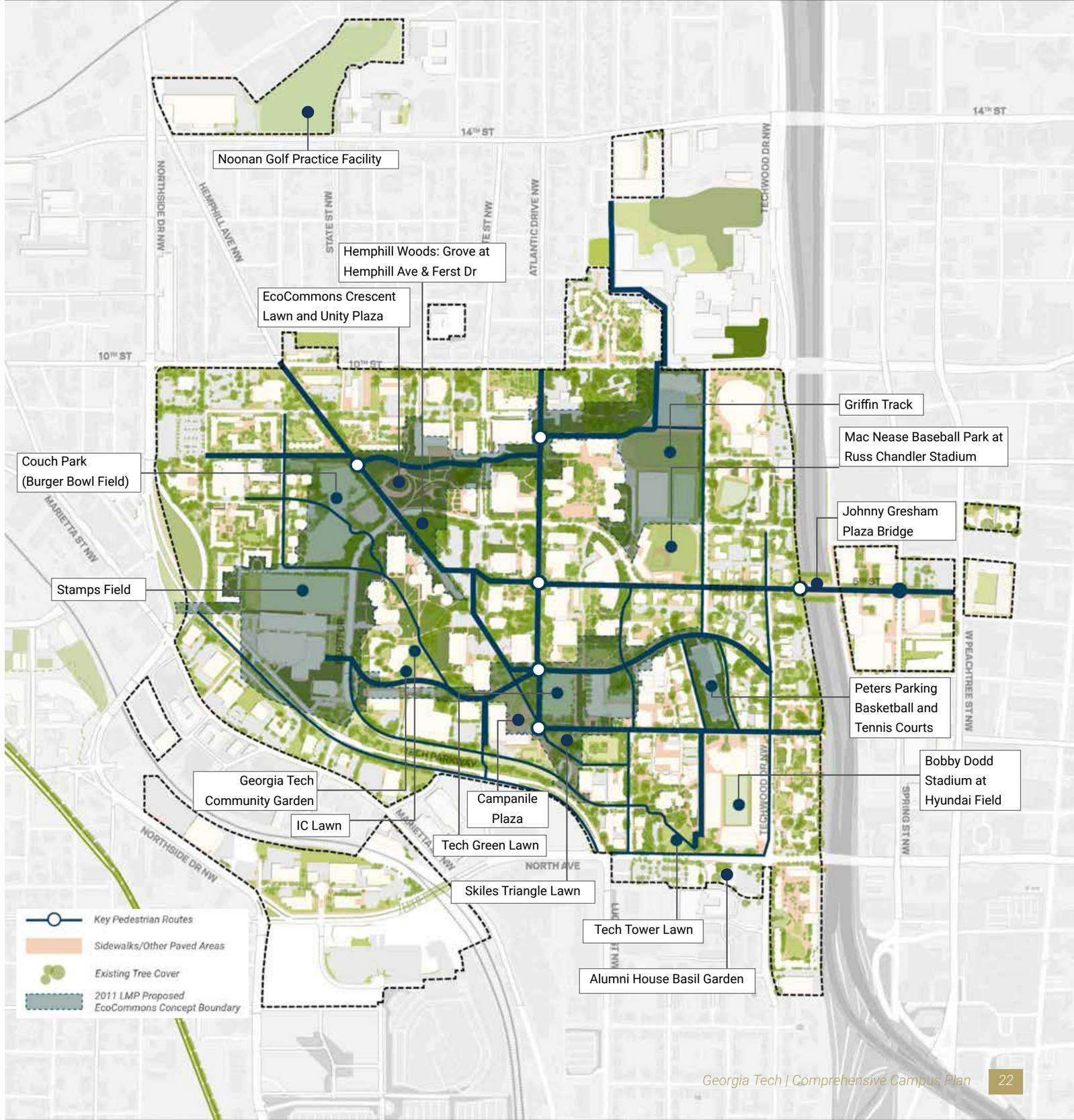
The Landscape Master Plan "put forth the idea that the landscape could perform valuable ecological work for the Institute, and established the EcoCommons as a permanent open space in the heart of campus for stormwater management and outdoor recreation."

Georgia Tech Landscape Master Plan, Revised September 2011

The Georgia Tech campus open space network has changed dramatically since the recommendations of the 2011 Landscape Master Plan, which grew out of the 2004 Campus Master Plan, and highlighted the role of open space in achieving goals of sustainability and livability. Over the past couple of decades, Georgia Tech has made a concerted effort to transform surface parking lots into impervious green space, increase campus tree canopy, and manage stormwater runoff sustainably. These efforts have dramatically changed the character and quality of the campus environment.

Largely driven by the desire to create a 'Performance Landscape'*, reduce stormwater runoff to pre-development conditions, and enhance the student outdoor experience, the campus now benefits from the investments in Tech Green, development of eight acres of the EcoCommons, and other smaller open space interventions throughout the campus.

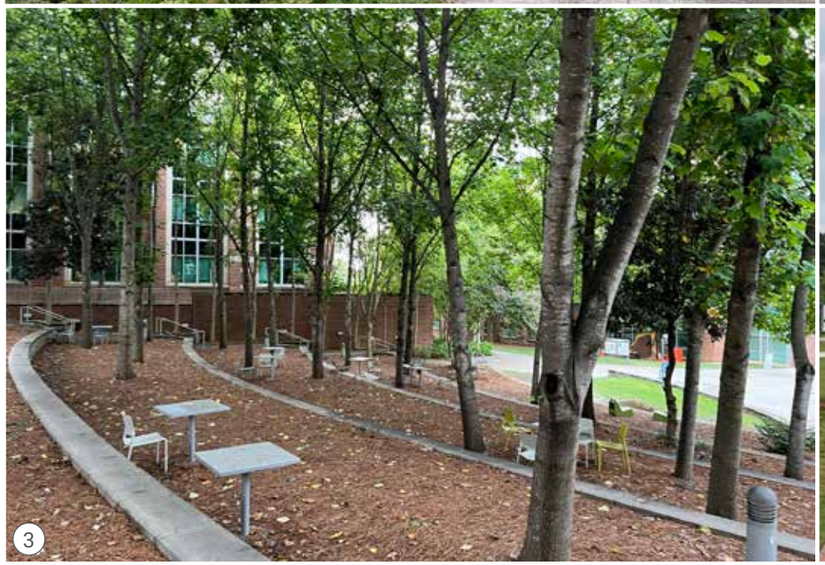
*(*Performance Landscape: A landscape that performs valuable services for the human community, such as stormwater management.)*

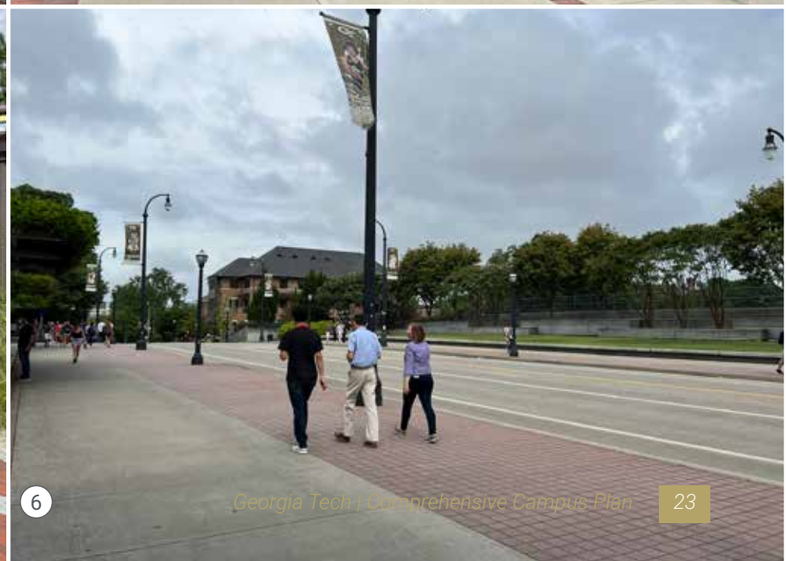


Campus map indicating the existing campus open space system and the 2011 Landscape Master Plan proposed EcoCommons boundary.

There are two distinct parts of interconnected green spaces across the campus, The northern part consists of the wooded wetland area by the President's House, the EcoCommons Crescent Lawn, Unity Plaza, multi-use pathway and gardens by The Kendeda Building, Couch Park, and Stamps Field. The central part includes the Instructional Center Lawn and community garden, Tech Green, and the Tech Tower Lawn. These large, contiguous green spaces are further linked by smaller interstitial green spaces such as courtyards, plazas, and tree groves that together create a unique system of stormwater management, and open passive and active recreation areas and woodland areas that provide enhanced tree canopy and natural ground cover all striving for greater ecological impact and enhanced human comfort.

In addition to the Performance Landscapes and experiential open spaces, the Georgia Tech campus has integrated a series of spaces celebrating the social, historical, and cultural impact of the Institute on the Atlanta community and around the world. These unique and special celebratory spaces include Unity Plaza, Women's Walk, Veterans Walk of Honor, Progress Pride Staircase, and more.





1. Part of the EcoCommons by The Kendeda Building for Innovative Sustainable Design.

2. Walkway along Ferst Drive.

3. Cisco Amphitheater near the Biotech Quad.

4. Tech Walkway and Tech Green.

5. Pedestrian Walkway on Atlantic Drive NW.

6. Johnny Gresham Plaza Bridge on Fifth St NW.

Campus open spaces. ▶

Outdoor Human Comfort

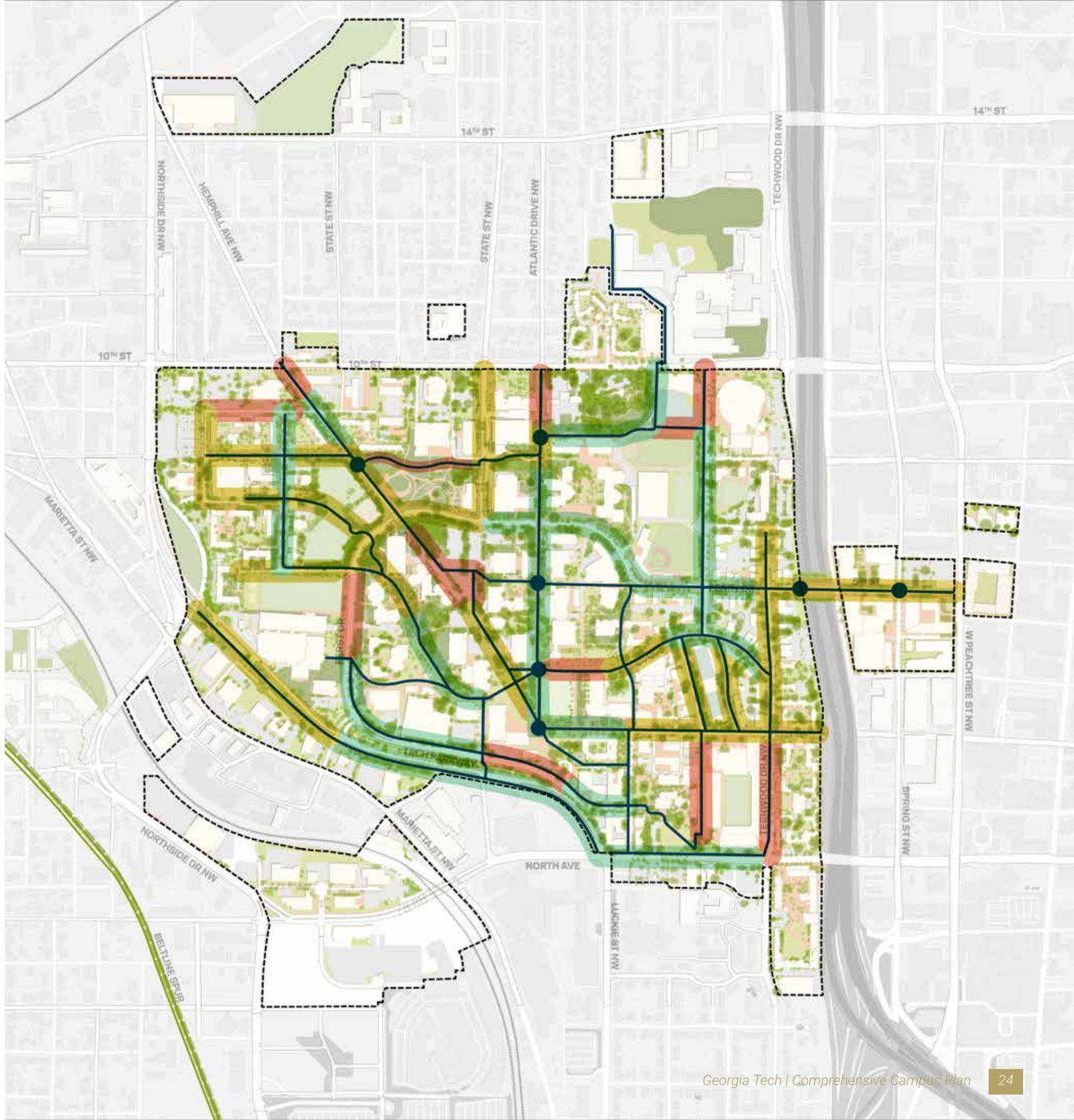
Atlanta's microclimate in the summer months is typically hot and humid, with temperatures ranging from 60F to 90F or above with an average humidity of 75%. (Source: National Weather Service, weather.gov/wrh/Climate?wfo=ffc) For the Georgia Tech campus, this necessitates outdoor spaces, streets, walkways, and gathering areas that are sufficiently protected by either shade tree canopies or overhead structures to create a comfortable and walkable campus.

The Georgia Tech campus has a very well-connected network of pedestrian paths and walkways that are used extensively by students, faculty, and staff to traverse the campus on foot, bicycle, or other micromobility means.

However, not all walkways provide the same level of outdoor human comfort. Some pedestrian walkways are lined by large-canopy shade trees and provide abundant relief from the heat, whereas others offer little to no shade for pedestrians and cyclists.

The CCP team analyzed key campus paths, walkways, and paved areas using GIS Data, on-campus observations, and input from Institute staff to determine their classification as "shaded," "partially shaded," and "barely shaded". This analysis and classification helps to inform CCP recommendations around increased tree cover, shade protection, and enhanced human comfort.

Campus map showing outdoor human comfort levels along the existing system of campus pedestrian pathways.



Landscape Open Space Opportunities

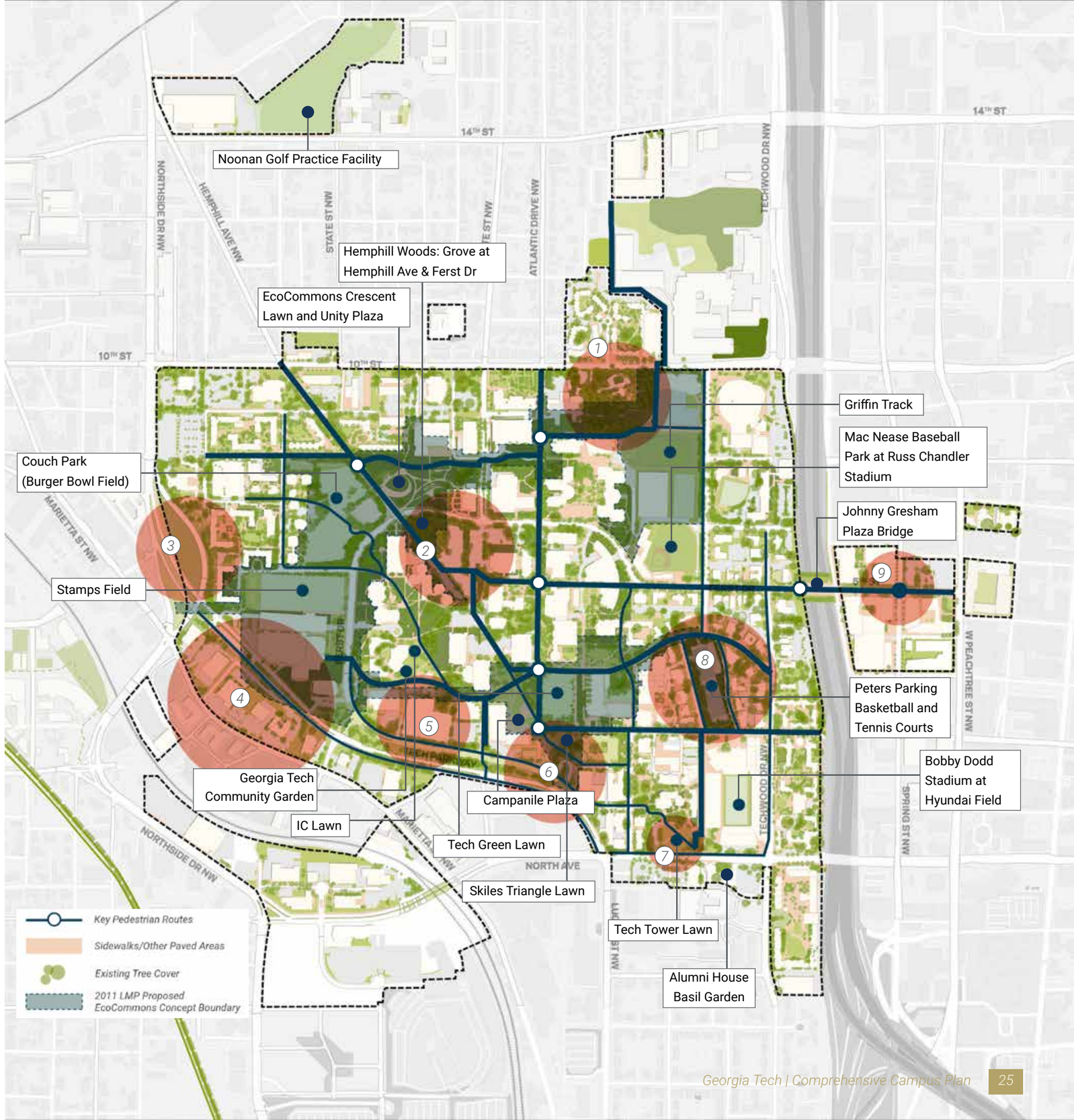
Some of the most cherished outdoor spaces on campus include: Tech Green, EcoCommons Unity Plaza and Crescent Lawn, Couch Park, Harrison Square, and the outdoor space around East Campus housing.

In addition to recognizing these assets and building on the recommendations of the 2011 Landscape Master Plan and the NxNE Plan, the CCP has identified nine major key open space opportunity areas (as noted below and annotated on the map to the right) that will further Georgia Tech's goals of reducing impervious surfaces, decreasing stormwater runoff, increasing campus tree canopy and biomass areas, and enhancing outdoor recreation amenities:

1. President's House Wooded Wetlands - NxNE Plan Update.
2. Hemphill Woodlands (with removal of W21 surface parking lot).
3. Northside Drive Re-alignment Area.
4. The Marietta Ridge District.
5. Instructional Center Lawn extension to Tech Parkway (with removal of Student Center Parking Garage).
6. Tech Green "expansion" (to Coca Cola campus).
7. Tech Tower Lawn extension (to south side of North Ave).
8. Peters Park (with removal of parking garage).
9. 5th Street Plaza at Tech Square (closure of 5th Street to create urban plaza).

In general, Georgia Tech should continue to find opportunities to plant trees within campus outdoor spaces, streets, walkways, and gathering areas. Georgia Tech should also consider constructing and maintaining vegetated roofs (green roofs/living roofs) in all new facilities.

Campus map indicating key open space opportunity areas.



3.4 Campus Facilities

Historic Preservation

The development of Georgia Tech's core campus can be broken down into four phases: 1885 — 1922, 1923 — 1945, 1946 — 1956, and 1957 — 1968. These years were crucial in the development of the 'Historic Core' and the academic fabric of the campus. As a part of the 2009 Campus Historic Preservation Plan Update, the University System of Georgia classified these buildings based on the level of rehabilitation treatment anticipated. At the time of this CCP process, another update to the Campus Historic Preservation Plan was underway.

In addition to the historic architecture, the campus also has archaeological importance related to a number of potentially significant historic sites identified, along with areas of known Civil War activity. A fairly significant area under the Georgia Tech/Board of Regents ownership has also been listed on the National Register of Historic Places. Georgia Tech should continue its stewardship efforts regarding historically significant sites and facilities as part of the historical and architectural legacy of the institution.

Historic Landscape Architecture Resources

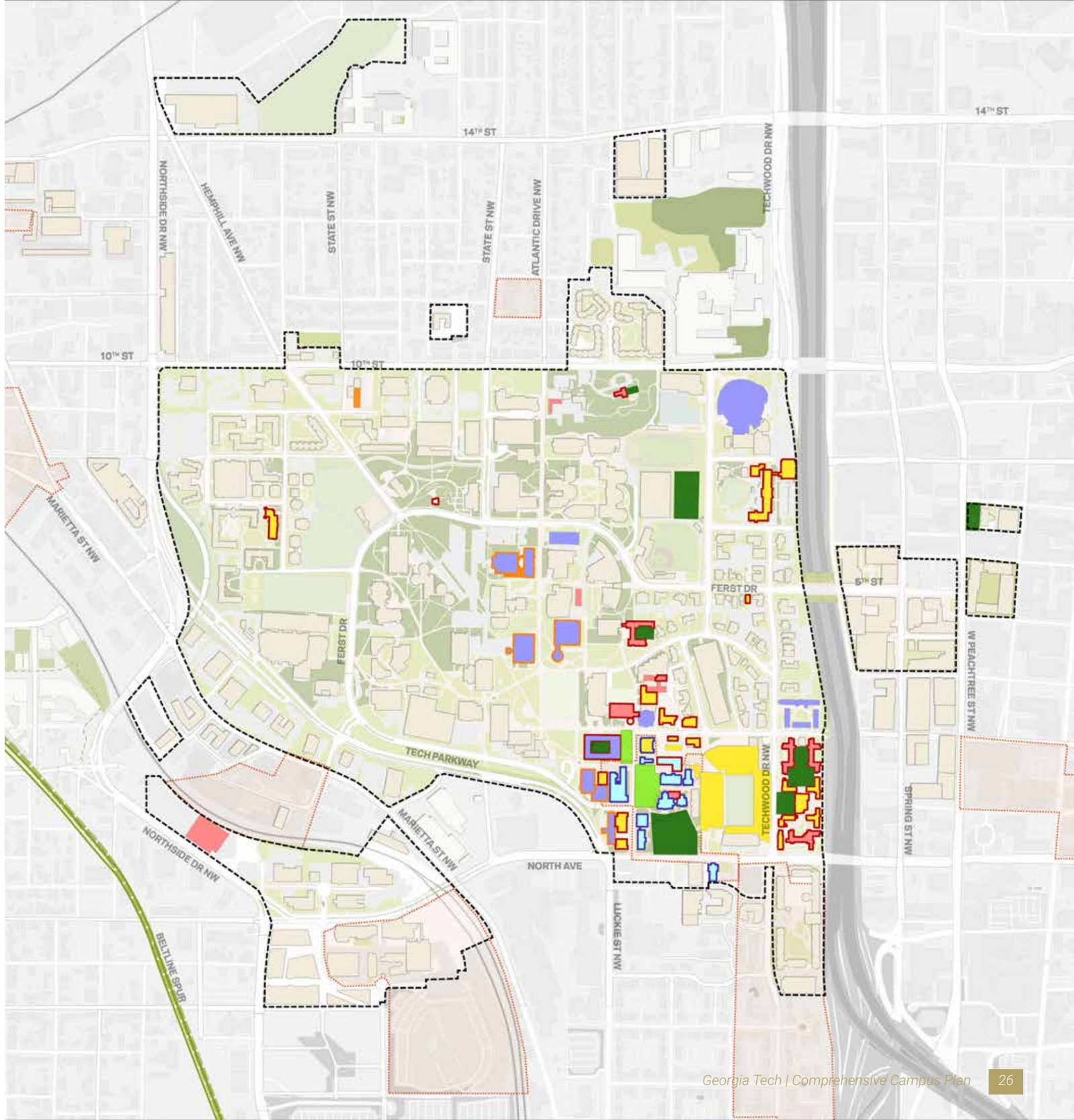
- Historic Landscape Architectural Resource
- Other Landscape Architectural Resource

National Register of Historic Places Eligibility

- NRHP Eligible
- NRHP Listed
- NRHP Maybe Eligible

Historic Buildings Time Frame

- Phase I
- Phase II
- Phase III
- Phase IV
- Phase V
- Existing National Historic Districts



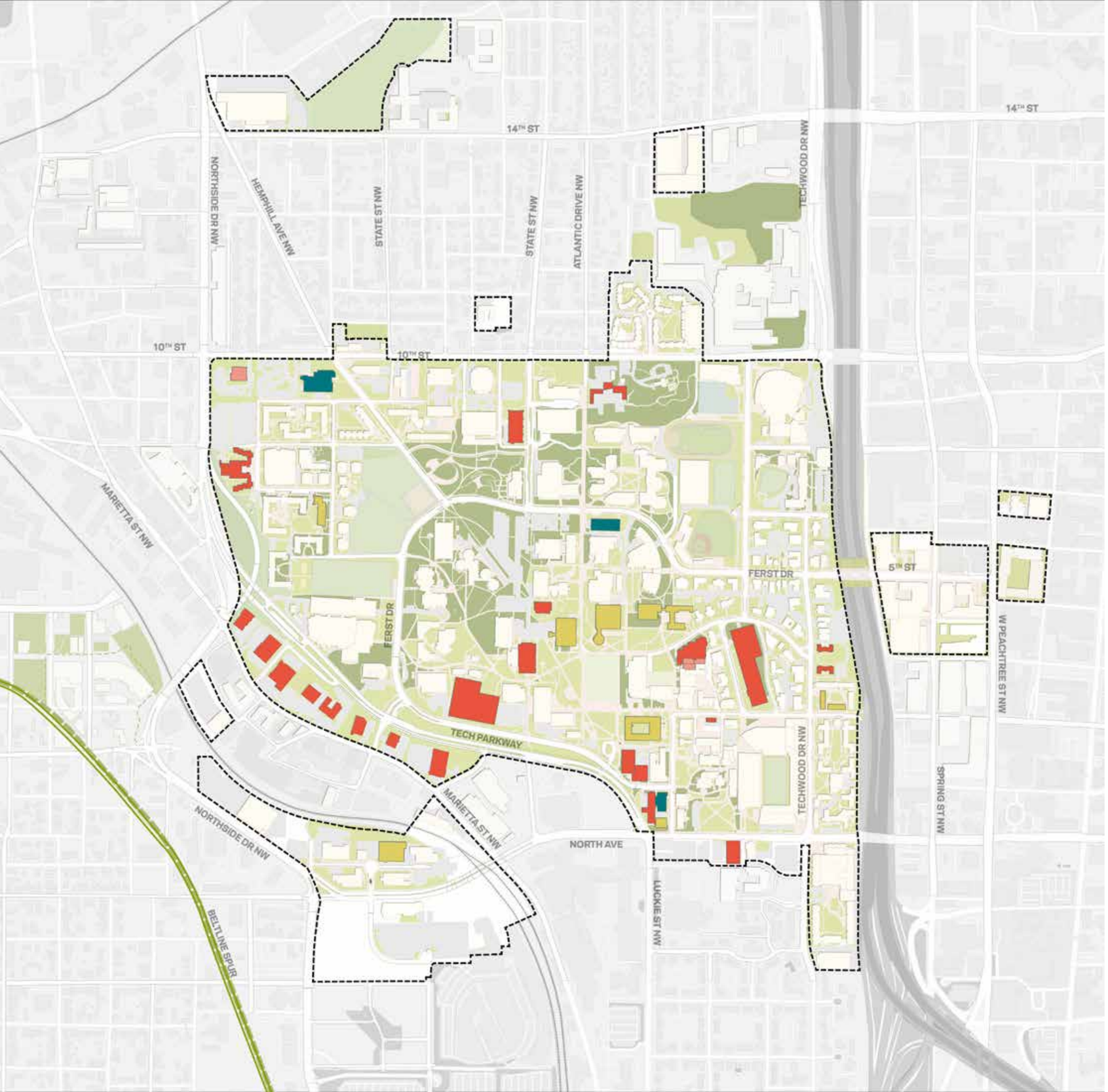
Campus map indicating key historic facilities and sites.
Source: 2009 Campus Historic Preservation Plan Update

Building Conditions

Georgia Tech has a robust building stock, with structures in varying stages of their life cycles. While a majority of these buildings are high functioning and in good condition, a few are approaching the end of their lifespan and/or are now functionally obsolete. There are also a handful of structures that are in good shape but are unable to support the uses that are currently housed in them and should be considered for renovations or repurposing. After an extensive facilities conditions analysis of the existing building stock by Georgia Tech, the Infrastructure and Sustainability (I&S) staff identified facilities that would be ideal candidates for renovation in support of their current use, renovation for repurposing, redevelopment, or in need of further assessment to determine their potential for redevelopment .

The following key considerations will inform the stewardship strategy outlined in the CCP and the Climate Action Plan.

- Where possible, aim to reuse existing spaces by renovating them to increase efficiency, performance, and functionality.
- If a facility is past its prime, reconsider its existing use and repurpose the structure for a new use.
- If warranted, demolish and redevelop the property. All new facilities should be constructed to be carbon neutral.
- Consider the carbon impact of any additional square footage (new construction) on campus.
- Consider the long-term contribution of any structure, old or new, to the fabric of the campus.



To be maintained

Potential redevelopment/
Further assessment required

Further assessment required

To be renovated
for current use

To be renovated and repurposed
to a less intensive use

Campus map indicating recommendations for existing facilities based on facilities conditions assessments.

3.5 Campus Population Growth

10-Year Projection

Over the next decade, Georgia Tech's Atlanta campus is projected to grow by 26% across multiple measures.

Enrollment increase of 26% over the next 10 years will be the primary driver for campus growth. The enrollment growth will result in additional space needs across all spaces types, which in turn will result in added demand for mobility services and infrastructure capacity.

Georgia Tech provided the team with the current and projected population data for the following groups:

- Full-time and part-time personnel.
- Faculty and staff.
- Research faculty by research type (wet, high-bay, computational, and dry).

This rate of growth was approved by the key stakeholders and Georgia Tech leadership and applies to the student, faculty, and staff populations. The accompanying chart illustrates the projected growth of student enrollment, which will total 31,853 in 2031. These totals were used in the calculation of additional space needed to accommodate growth.

- 26% student enrollment growth
- 26% estimated staff and faculty growth

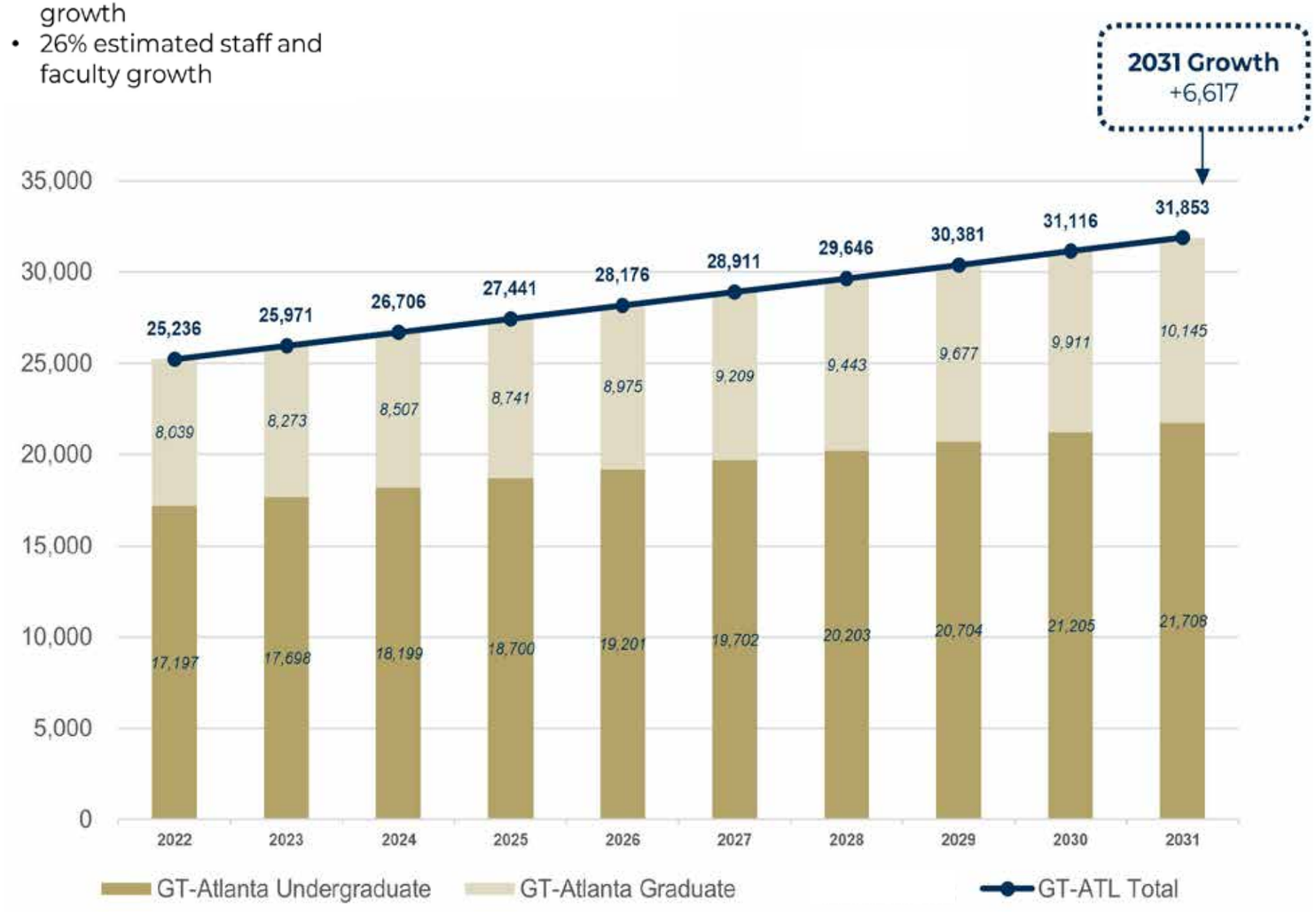


Chart above illustrates projected annual student enrollment growth (2022 — 2031).

3.6 Research and Workplace Space Needs

Assessment Methodology Overview

The space assessment for research and workplace spaces on campus was driven by a need to translate strategic goals for students, faculty, and staff to space needs and financial impacts for a 10-year growth period.

Recognizing the campus's physical constraints for growth in the Atlanta urban core, scenarios were explored to utilize existing research and workplace spaces more efficiently and sustainably, while strategically determining additional space needs.

Information was gathered from engagements, current state facility data, and population growth projections. GT strategic initiatives (Research Next and Sustainability Next) were included in the synthesis of current and future data.

The following steps were conducted:

- Analyzed current square footage of laboratory and office space on the Atlanta campus.
- Evaluated growth of campus population in relation to spaces, and initiatives.
- Constructed framework for future space planning to continue to explore issues.
- Provided range of space increases for synthesis with the Comprehensive Campus Plan.

LEADERSHIP INTERVIEWS

Each interview engaged stakeholders of research and workplace spaces.

COLLEGE DEAN INTERVIEWS

Each interview included the dean, associate dean for Research, and a Facilities lead.

WORKING GROUP

Spearheaded the project and participated in workshops alongside CCP team, to review and refine the scenarios.

SUBJECT MATTER EXPERTS

Provided ongoing project guidance through detailed review of data collection, analysis, scenarios, and final program recommendations.

STAKEHOLDERS

Each interview engaged stakeholders of research and workplace spaces.

Engagement Findings

Leadership and stakeholders from across Georgia Tech provided input throughout the process to help understand the current state, vision, and goals related to the future of research and work. The engagement formats included leadership interviews, feedback fairs, and town halls to gather stakeholder input and assessed current-state research and workplace facilities, programs, and populations at a high level to identify needs and priorities. Questions were focused on current roles, physical conditions at Georgia Tech, and top priorities for the future.

These takeaways represent recurrent themes in the conversation across all interviews. While a broad range of topics were discussed, these takeaways focus on the areas of impact in this study.

Plan for Adaptability

Laboratory and workplace environments need to be easily updated over time based on new and unknown future requirements.

- Current spaces are expensive to adapt to new uses/users. New investigators have unique needs and spaces need to be sufficiently flexible to adapt to these dynamic needs.
- There is a desire to standardize labs and build new labs so that the process of reconfiguring lab space for new PIs or new types of research is easier and cheaper, or not necessary at all.
- Building new is less desirable if spaces are not easily adaptable to evolving needs.
- Availability of swing space to house displaced teams during renovations is limited. There is a need to account for future renovation and movement of teams.

Increase Flexibility

There is a need for spaces that can be used for multiple functions and by multiple groups without changing the physical architecture, to increase utilization.

- With interdisciplinary approaches increasing, so too is the need for spaces that can accommodate multiple users' activities. Multipurpose and shared use spaces are desired in order to achieve greater utilization and efficiency.
- While hybrid and remote work has been successfully integrated into Georgia Tech, in-person presence is still desirable due to cultural norms or the need to interact with physical space, equipment, and people on campus.
- Sharing space and specialized equipment, across campus and among interdisciplinary teams and outside researchers, can increase the efficiency of those spaces.

Continue Interdisciplinary Work

Research teams will continue to be more interdisciplinary but need clearer definition of how this work is changing and evolving.

- Georgia Tech is already well-versed in interdisciplinary work and anticipates that it will grow in the future.
- Research neighborhoods in the Krone Engineered Biosystems Building are a great example of how interdisciplinary teams can be supported by space.
- In addition to internal interdisciplinary research teams, there are many external corporate or governmental partners who require adjacent space with Georgia Tech researchers.

Bend the Space Curve

Efficiently use space to support Research Next and Sustainability Next, while implementing innovative methodologies to create spaces.

- AI, machine learning, and robotics are growing and will require more open, high-bay, flexible space. They may also require less in-person attendance.
- Government contracts are getting bigger, which means research teams are growing. Current space on campus does not accommodate these team sizes.
- Growth in grants and in headcount does not necessarily have to mean growth in amount of space. Many groups are open to opportunities for more efficient use of space.
- Sustainability is a major priority for the campus and for the Comprehensive Campus Plan. Reusing existing buildings through increased utilization is one sustainable way to accommodate growth.

Stakeholders Included

- Institute Strategic Initiatives
- Strategic Growth Management Steering Committee
- Executive Vice President for Administration and Finance
- Executive Vice President for Research
- Georgia Tech Research Institute
- Interdisciplinary Research Institutes
- Office of the Provost
- College of Computing
- College of Design
- College of Engineering
- College of Sciences
- Ivan Allen College of Liberal Arts
- Scheller College of Business
- Professional Education
- CREATE-X
- Faculty Services Committee
- Staff Council
- Human Resources
- Office of Information Technology
- Undergraduate Student Government Association
- Graduate Student Government Association
- Campus Services
- Student Engagement and Well-Being

Plan for Adaptability

Laboratory and workplace environments need to be easily updated over time based on new and unknown future requirements.

Increase Flexibility

There is a need for spaces that can be used for multiple functions and by multiple groups without changing the physical architecture, to increase utilization.

Continue Interdisciplinary Work

Research teams will continue to be more interdisciplinary but need clearer definition of how this work is changing and evolving.

Bend the Space Curve

Efficiently use space to support Research Next and Sustainability Next, while implementing innovative methodologies to create spaces.

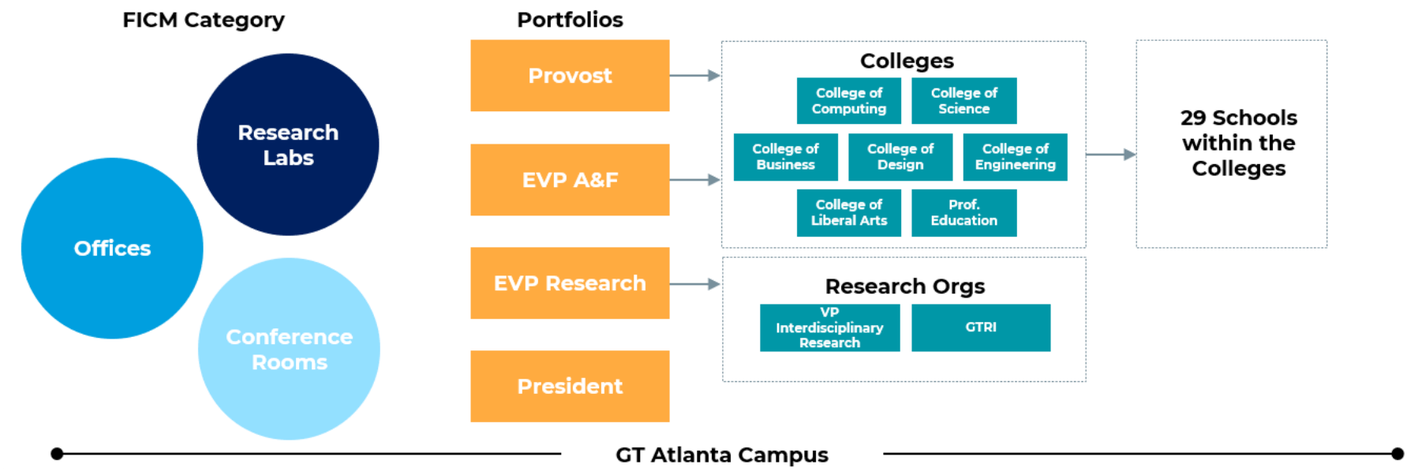
Current State Research and Workplace Spaces

The overall research and office/conference rooms on the Atlanta campus today comprise 3.2 million assignable square feet. Office space takes up the largest percentage of space.

Georgia Tech provided current state data — gross square feet (GSF) and assignable square feet (ASF) — for all buildings on the Atlanta campus, including lab, office, conference space types, and organizational assignments. The scope of the study also included Georgia Tech occupied space in the Tech Square district, including the Coda Building. Additional data provided by Georgia Tech included current and projected population data for students, faculty, and staff and qualitative information about current and future programs.

Current State Space Analysis Goals:

- Assess the current research and workplace facilities, programs, and populations at a high level.
- Create a compelling vision for the future of research and workplace spaces to meet planned growth targets.
- Quantify space needs to accommodate growth (and account for new spaces already planned).
- Identify research and workplace space needs and priorities to guide the overall Comprehensive Campus Plan.



The research and workplace future space demands analysis focused on the above set of spaces.

Name	Grouping	Total ASF	ASF by FICM* Category		
			250 Research Laboratories	310 Offices	350 Conference Rooms
A-College of Design	Academic Unit	76,334	18,890	47,909	9,535
C-College of Computing	Academic Unit	191,805	67,792	105,787	18,226
E-College of Engineering	Academic Unit	974,854	629,524	303,262	42,068
I-Ivan Allen College of Liberal Arts	Academic Unit	94,568	5,095	79,491	9,982
M- Scheller College of Business	Academic Unit	63,613	519	57,894	5,200
S-College of Sciences	Academic Unit	440,258	272,948	151,836	15,474
GTPE	Academic Unit	28,112	0	24,630	3,482
PROV-AA	Admin	108,828	942	97,534	10,352
EVP-A&F	Admin	193,096	1,167	170,982	20,947
PRES	Admin	65,675	108	58,105	7,462
EVP-RES	Research	137,553	17,154	85,646	34,753
GTRI	Research	564,455	153,250	378,122	33,083
VPIR	Research	323,809	163,145	134,063	26,601
TOTAL		**3,262,960**	**1,330,534**	**1,695,261**	**237,165**

Inventory of the research and workplace spaces included in the analysis as described in this section.

**FICM: The Postsecondary Education Facilities Inventory and Classification Manual (FICM) manual describes standard practices for initiating, conducting, reporting, and maintaining a postsecondary institutional facilities inventory. For more information refer to:* nces.ed.gov/pubs2006/ficm/index.asp

Of the approximately 3.2 million assignable square feet of campus area, categorized under research and offices/conference spaces, office space takes up the largest amount of space at approximately 1.9 million assignable square feet and is included in all portfolios.

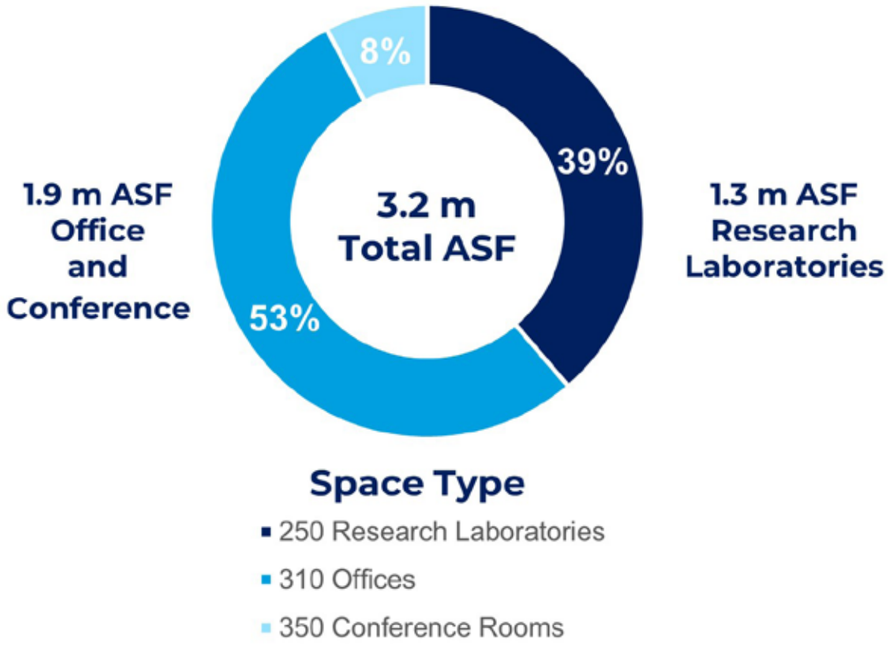


Chart above illustrates how the 3.2 million ASF are distributed across research laboratories, offices, and conference rooms.

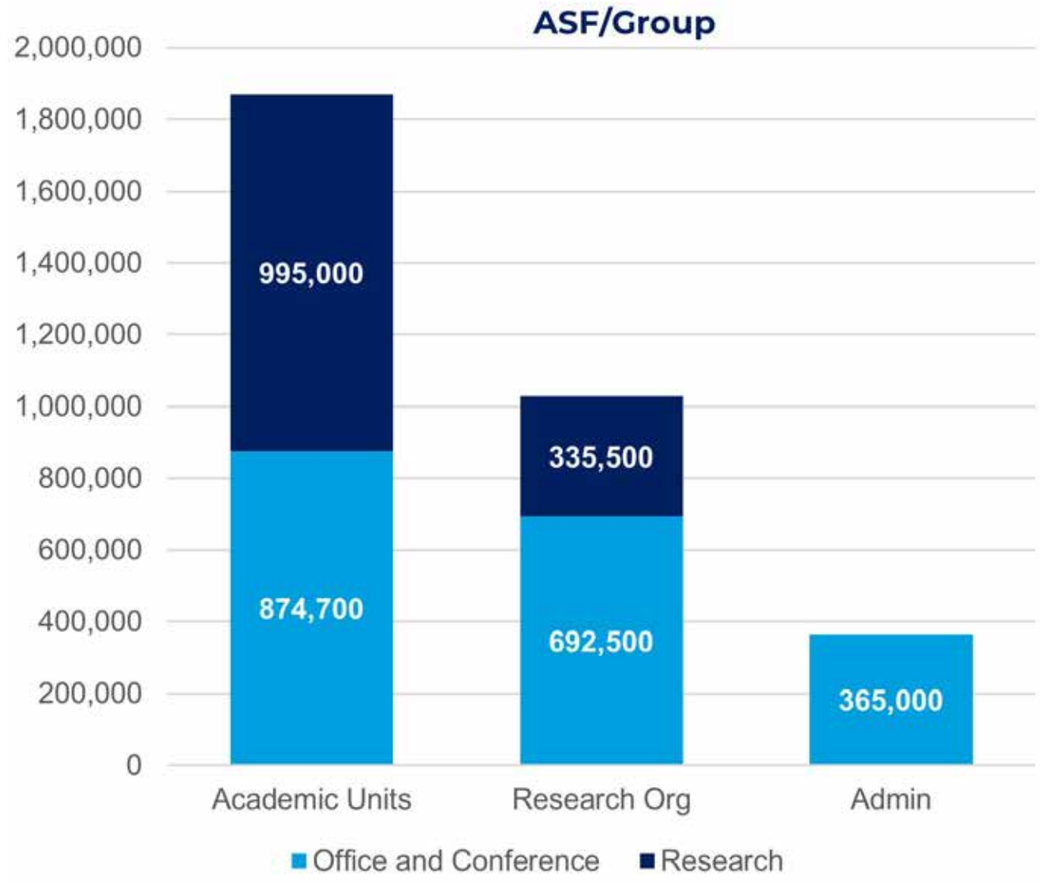


Chart above illustrates how the 3.2 million ASF are distributed across academic units, research organizations, and administrative units.

Peer Research and Workplace Space Benchmarking

Compared to many of its peers in urban campus settings, Georgia Tech uses more research and workplace space per person.

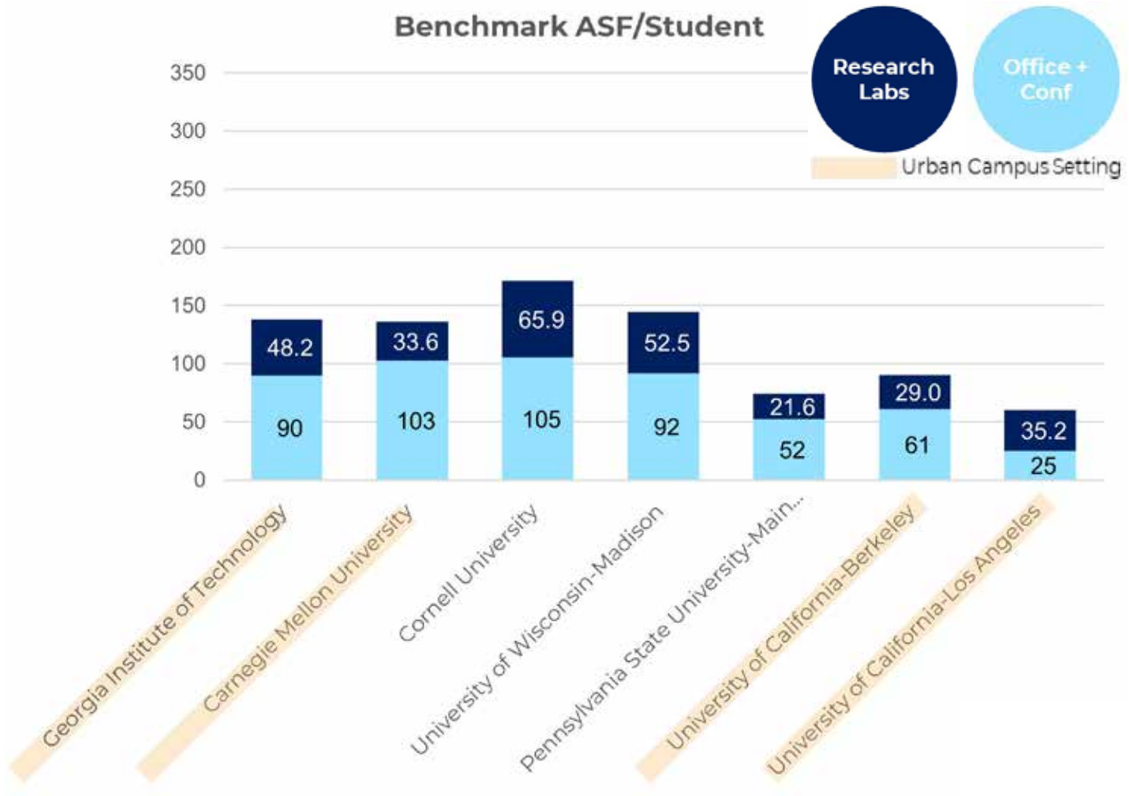
A key component to determining the 10-year forecast for space need was to benchmark the space per person for peer institutions. The National Center for Educational Statistics (NCES) Post-Secondary Education classifications from the Facilities Inventory and Classification Manual (FICM)* was employed for this exercise. Each space type, e.g. "classrooms," was assigned a space code: e.g.,"100." Using these space use codes, existing spaces were classified by use within campus facilities and then divided by the relevant population (faculty, staff, students, or total) to get the ASF per person benchmark figures.

For Georgia Tech, the benchmark space per person metrics were assessed for the Atlanta campus only, using a list of peer schools with similar research and academic programs. It has been noted by the project team that the research types at each institution vary, and that GTRI is unique when comparing to peers since GTRI is incorporated into the research fabric. Not all peers had the same data available, thus the comparative space sizes may differ. Keeping Georgia Tech's urban campus in mind, institutions that have urban campus settings and may be challenged to find additional space or land for expansion were also included in the list of peers. While the comparative metrics between peers included factors which were different, the benchmarking provided an understanding of the spaces utilized by peers and the direction of space utilization in the future for Georgia Tech.

The space per person metrics for each FICM category were multiplied by the relevant population figure (students, faculty, and staff, or the entire on-campus community) to deliver the forecast space needs for each FICM category. Office space was calculated using an ASF per student metric, and research space was calculated using an ASF per FTE (full-time enrollment) metric.

At the time of this study, there was insufficient research funding data (awards and expenditures) available to support research growth metrics. It is recommended that Georgia Tech undertake a research growth study to better understand impact of future research funding on personnel growth, research priorities and ultimately on future space needs.

Given the Institutes's projected growth, the current space utilization is unsustainable to meet budgetary constraints and net zero carbon commitments.



Above bar graph compares the amount of research labs and offices/conferences space Georgia Tech has on the Atlanta campus compared to its peer institutions.

Space Projections and Needs Scenarios

Space Need Projections

Space need projections were calculated using growth factors that were established during the planning process. This forecast is based on the future student, faculty, and staff projections and uses space per person metrics to project needs by space type. The space per person metrics were determined by synthesizing benchmarking analyses, qualitative insights from stakeholder engagements, and best practices for planning academic offices and research facilities. Metrics and projections reflect a range of potential scenarios based on various program emphases and were reviewed, refined, and validated with project committees.

Office and conference space growth factors were determined by analyzing the current office space types and ASF per HR headcount. Georgia Tech has deployed several workplace pilots that employ a free address system for activity-based work. These pilots have generated information that assisted the establishment of ASF/headcount for workplace in each scenario. The proposed metrics were uniformly synthesized and applied to organizational groups. The office space strategies were reviewed with the project key stakeholder groups to gain an understanding of the most suitable workplace elements for the identified user types. It was agreed that a mix of workplace strategies would be most appropriate to forecast space needs at the campus level. The Institute will continue to employ hybrid and remote workers, and the proposed metrics take this into consideration to allow for more space sharing. It was also found that academic and ancillary staff can utilize more efficient office types and the faculty may continue using allocated individual offices. It should be noted that as space needs evolve over time, the Institute must reevaluate the efficiency of private offices in the future.

Organizational Group	*Status Quo*	*Benchmark*	*Progressive*	*Innovative*
Academic Units	*187 ASF/ Headcount*	*149 ASF/ Headcount*	*98 ASF/ Headcount*	*122 ASF/ Headcount*
Research				
Admin				

Workplace ASF/headcount – consistent to all organizational groups.

Research laboratory space growth factors were determined specifically for each organizational group, due to the varying nature of how each group works. Existing ASF per person for lab type (wet, dry, and computational) was determined for each group. Georgia Tech conducts a significant amount of institutional research that is largely populated by non-student research teams and has multiple sources of funding. Recommendations for space per person metrics are based on qualitative findings from interviews, quantitative analyses, and best practices for programming for each group. Research group stakeholders prefer to use metrics defined by ASF/Principal Investigator (PI) in addition to ASF/Person. This data was not available and is recommended to be gathered and used for future studies.

Organizational Group	*Status Quo*	*Benchmark*	*Progressive*	*Innovative*
Academic Units	*53 ASF/ Student*	*39 ASF/ Student*	*40 ASF/ Student*	*45 ASF/ Student*
Research	*831 ASF/ FTE*	*835 ASF/ FTE*	*738 ASF/ FTE*	*765 ASF/ FTE*
Admin	*62 ASF/ FTE*	*90 ASF/ FTE*	*75 ASF/ FTE*	*80 ASF/ FTE*

Research ASF/Student or ASF/FTE – specific to each organizational group.

Steps involved in calculating space needs projections.

GTRI (Georgia Tech Research Institute) provided their projected ASF growth, having recently conducted their own study. The GTRI ASF (159,000 square feet) was included in the overall projections and was removed from the calculations.

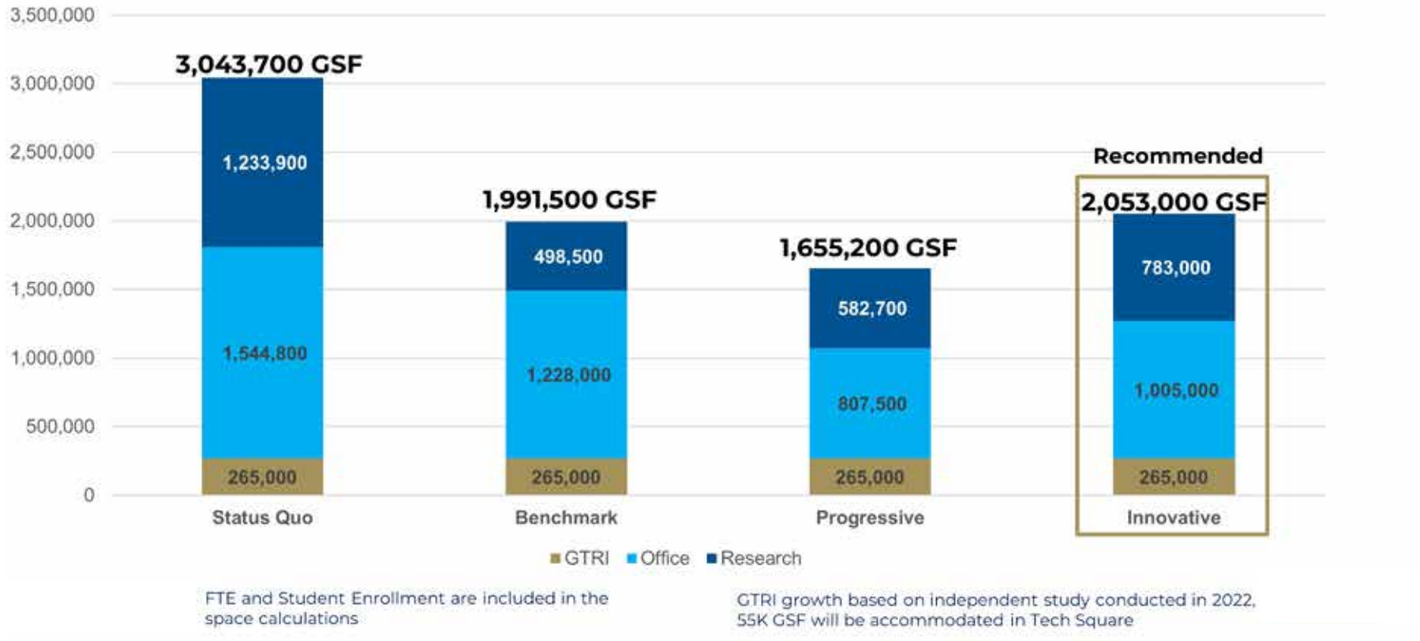
Research laboratory growth strategies were proposed and reviewed with the lab group stakeholders. Recent lab project and buildings such as the Krone Engineered Biosystems Building, were cited as examples of research building spaces that have been successful. The amount of space needed for computational labs was shown to be closer to office space metrics, which provided an opportunity for space savings in the total calculations. Each of the research lab strategies were reviewed and aligned with the on-campus buildings. These findings, along with benchmarking of lab types, determined the growth metrics.

Space Need Scenarios by Type

The space needs scenarios developed and analyzed as part of this study are a result of an approach synthesizing the qualitative and quantitative elements that were established in the planning process.

The project space needs were determined based on the scenarios listed below. Each scenario uses square foot per person (headcount, FTE, or student) factors that are based on the workplace and research strategies. The quantitative result is gross, high level numbers at the scale for the campus plan and includes the need to recognize flexibility for future projections.

The qualitative strategies that will set the future direction of space allow experimentation and iteration around these strategies, aligned with strategic initiatives like Research Next and Sustainability Next.
The total projected additional space needed was calculated by ASF, and a grossing factor of 60% was applied.



Above bar graph compares the space need scenarios by type.

Status Quo

Develop at the same rate that we have been, without considering sharing spaces, hybrid work potential, new lab/workplace models.

Benchmark

Use industry and peer trends and benchmarks to estimate development growth.

Progressive

Efficient and sustainable. Embrace virtual/global campus, maximize sharing spaces, remote work, compact lab sizes, automated research.

Innovative

Balance the need to expand and to grow while promoting what Georgia Tech does best: being an innovator among higher ed institutions, and for Atlanta and Georgia as a global hub. The recommended "Innovative" scenario is slightly more in total space than the benchmark scenario, due to providing ample research space allocation for colleges while being more aggressive for workplace components.

Detailed strategies that address the projected space needs and recommended scenario are described in 'Component Plans' within Chapter 4 of this report.

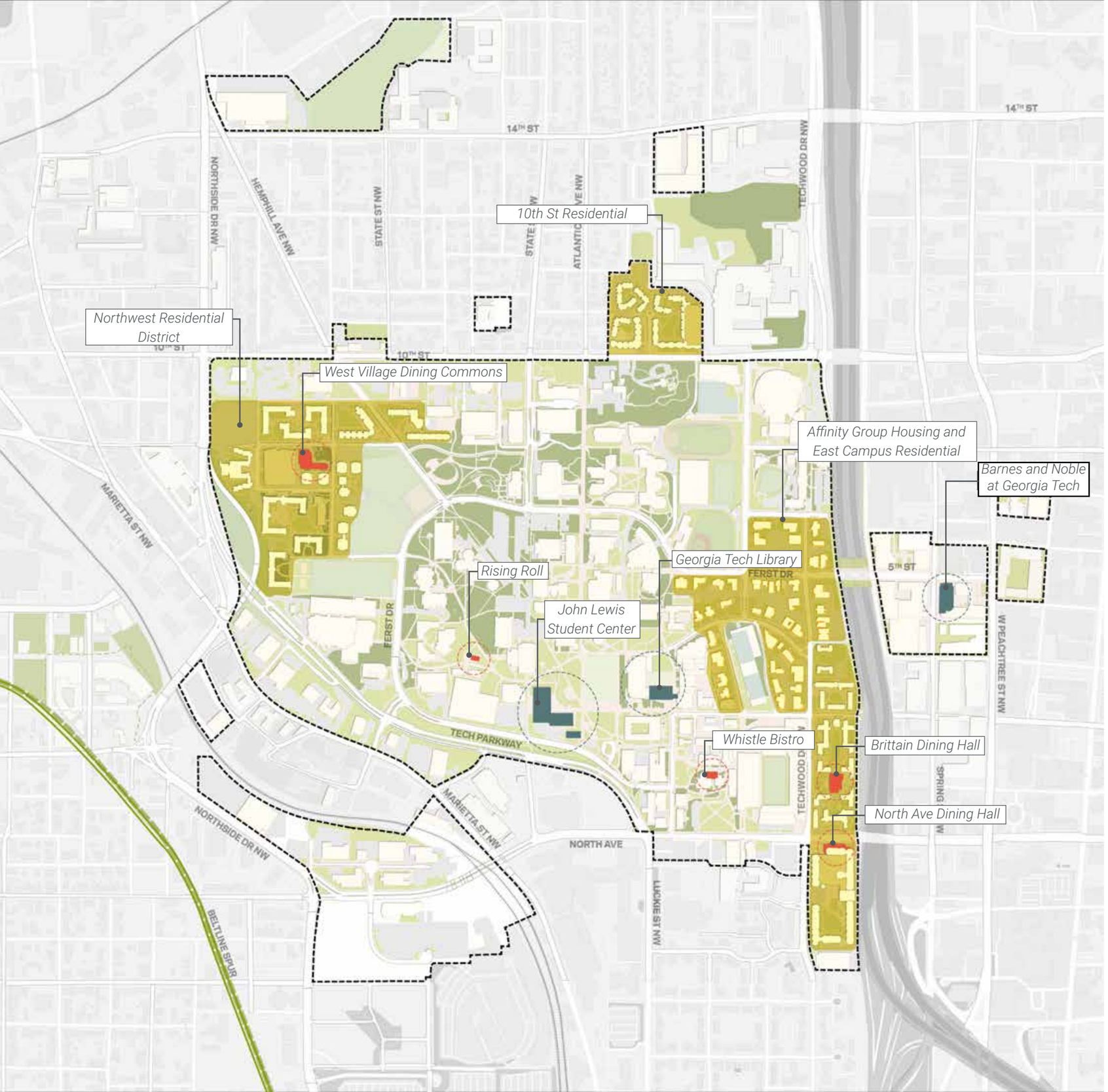
The innovative scenario is in alignment with the strategic plan goal of "Champion Innovation" as it balances campus growth while promoting what Georgia Tech does best: innovate.

3.7 Student Life

Overview

Georgia Tech is committed to supporting its students within and beyond the classroom. The Institute's Student Life division is focused on developing and maintaining an inclusive, accessible, and engaging experience that serves a diverse student population and contributes to student success, wellness, learning, and leadership. The student experience is enhanced by a robust set of facilities, programs, and initiatives that seeks to comprehensively address student needs and establish a learning environment where members of the Georgia Tech community can thrive. These services further Georgia Tech's mission to develop "leaders who advance technology and improve the human condition."

The CCP examined the physical components that support student life at Georgia Tech, with a key focus on housing, dining, and recreation. These on-campus facilities deliver comprehensive and engaging programs and resources that promote engagement and well-being throughout the student community. As Georgia Tech's student population continues to grow and students' needs evolve, the Institute must expand its facilities and programming. The CCP aims to reconcile existing and projected space needs related to student life with other academic, research, athletics, and administrative space needs across campus. These space needs are detailed in the following pages.



Campus Residential Zone

Residential Buildings

Student Dining/Cafes

Student Hubs

Campus map indicating existing indoor and outdoor student housing and dining facilities.

Student Life Facilities Needs

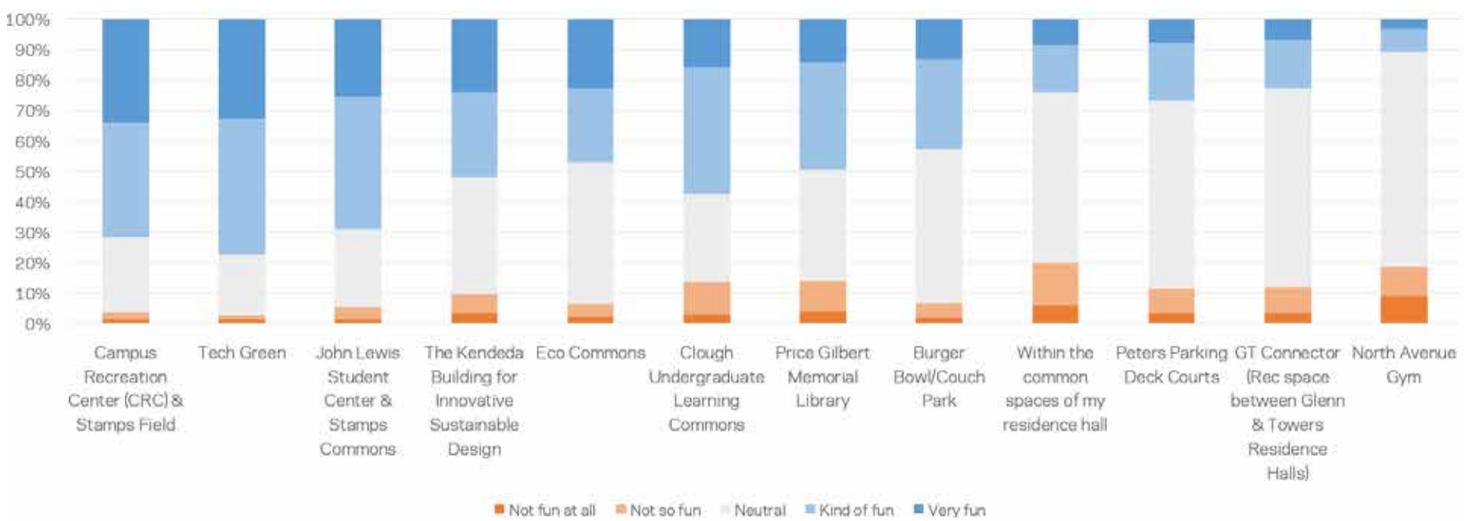
A major thrust of GT's larger goals for student well-being is increasing the opportunity for students to have fun together. When asked where they have fun on campus now, students' top choices were the Campus Recreation Center (CRC), Tech Green, the John Lewis Student Center, and Clough Undergraduate Learning Commons. The Kendeda Building and Price Gilbert Library were also among the top spots. This list of places suggests that GT must seek a balance in its Student Life facilities going forward. The spaces should be able to be programmed or host events, and thus provide some structure, but also allow Georgia Tech's students to engage with them at their own pace and allow for informal socializing.

As Georgia Tech accommodates future campus growth, it must keep in mind a consistent theme gleaned from these engagements. Students, faculty, and staff are extremely busy and value the rigorous academic environment of the Institute. If a resource requires too much effort to use and does not fit within a manageable window of time, students and faculty will use it less. Campus amenities are highly valued at GT, but many respondents felt they were impractical to use in the course of their daily lives. This applied across many sectors, from the ability to go grocery shopping to using the weight machines at the CRC – in some anecdotes, the difference between a 15 minute walk and a 25 minute walk was the difference between fitting something fun and beneficial into a student's day or not. Because the Institute has a significant interest in increasing students' well-being by deploying these facilities and programs, the CCP must reduce the friction students experience in using Student Life resources.

This means that such resources must be located on the way for users and have sufficient capacity so that students feel they can use them. Student Life facilities of sufficient capacity will be smaller than some standalone facilities, like the CRC or Stamps Health Services, but large enough to bring a critical mass of people together. A satellite-site model has been utilized before, to provide recreation space within housing, for example, but it was not seen as uniformly successful. Housing and Residence Life and Campus Recreation have since taken steps to optimize these efforts. Therefore, the campus should avoid small spaces that are easily missed, or do not feel welcoming to all students and can be "owned" by one user group (i.e. only on-campus residents, or only residents of a particular hall). Student Life amenities must also be highly visible – to the extent they are included in mixed-use buildings, they should have significant exterior signage and prioritize visibility on the ground floor.

Student Life facilities on the way will be located on primary pedestrian paths within the interior of campus and within gateway precincts. Locations adjacent to or integrated with destination uses, such as parking, housing, and academics, will be prioritized. Location decisions should be customized based on target user groups. For example, graduate students are predominantly commuters and would likely benefit from amenities collocated with transportation hubs. First-year students living on campus benefit from dining proximate to housing or academics. Recreation or wellness assets could serve a broad segment of the GT population in the campus core. Each of these asset types should be considered in greater detail once the specific need or program has been identified.

Survey results for: How fun are the following spaces?



Establishing a Student Life facility of sufficient size allows for more efficiency and less friction in use, creates a wider sense of belonging by bringing together multiple uses, and creating a culture of "being in the space."

Housing Assessment

On-campus housing is a critical component of the student experience, particularly for first-year students and other undergraduates who feel living on campus enables them to acclimate to life at Georgia Tech.

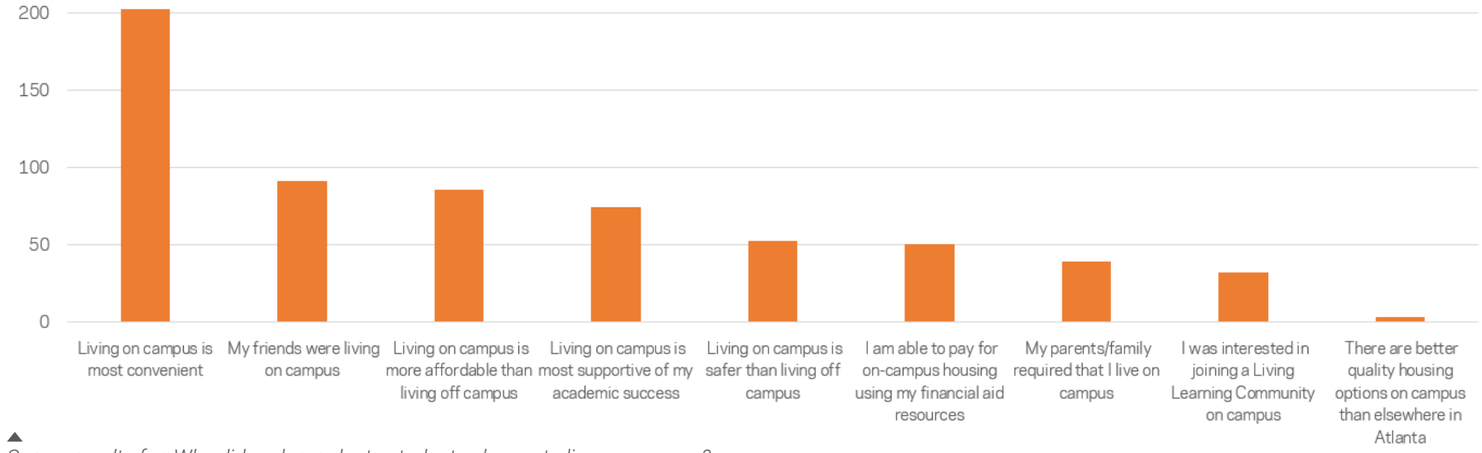
In 2020, Georgia Tech completed a Housing Master Plan that comprehensively examined:

- Existing conditions, residence life trends and innovations, off-campus market inventory.
- Repositioning opportunities to establish a framework for the delivery of new on-campus housing.
- Renovation of existing on-campus housing.

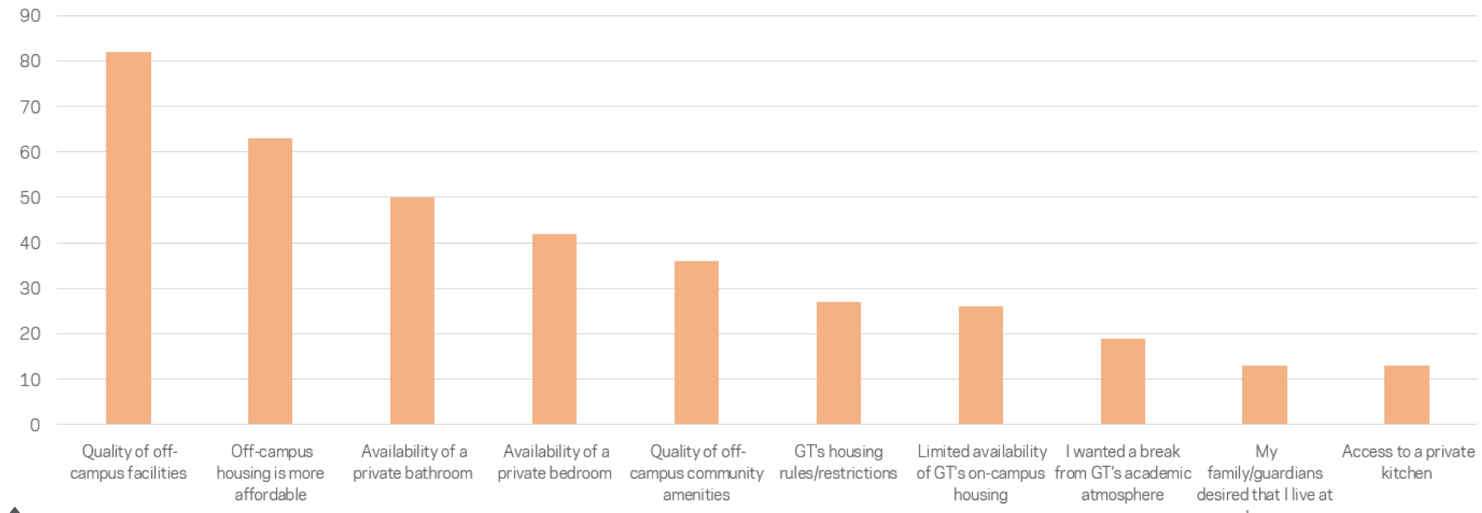
The CCP leverages this framework to guide housing recommendations within the context of expanded student enrollment.

As Georgia Tech's enrollment grows over the next decade and existing housing inventory continues to age, the Institute will need to deliver additional housing to accommodate student demand and maintain the on-campus experience that benefits many of its students. Georgia Tech must also consider the delivery of housing to serve as swing space while existing inventory undergoes renovation and redevelopment. Efforts to develop new housing are already underway in the northwest corner of campus, where the Institute is preparing for the construction of over 800 semi-suite beds of housing.

Although Georgia Tech does not impose a live-on policy for any of its students, occupancy rates within on-campus housing rival those seen at institutions with significant live-on requirements. The systemwide occupancy rate in 2021 was 99%, with all but three residence halls (Tenth and Home Building G, Woodruff North, and Woodruff South) exceeding 96% occupancy. Occupancy rates have exceeded 96% in each of the past 10 years except for 2020, a year in which the Covid-19



Survey results for: Why did undergraduate students choose to live on campus?



Survey results for: Why did undergraduate students choose to live off campus?

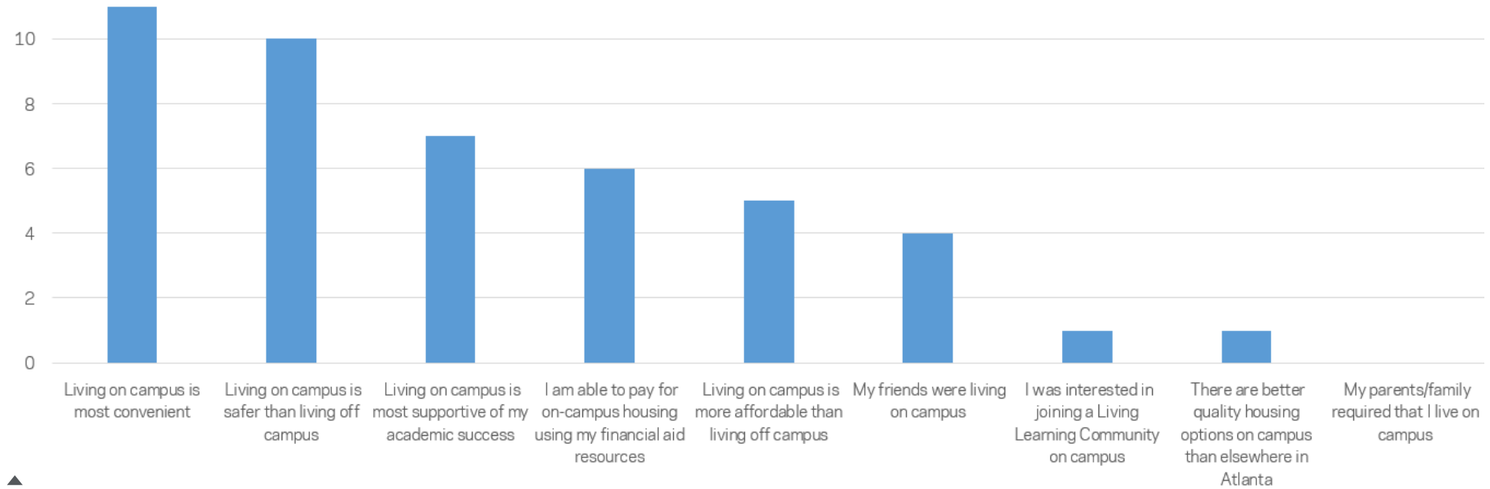
pandemic adversely affected housing occupancies and other functions across the Institute. The off-campus, student-purposed market maintains nearly 98% occupancy, reflecting strong demand for student housing proximate to Georgia Tech's campus. However, with nearly 3,000 student-purposed beds under construction within just 1.5 miles of Georgia Tech and in competition with Housing and Residence Life inventory, the Institute must be strategic when considering which types of housing to deliver on campus.

The CCP campus survey showed the different priorities driving students' decisions to live on or off campus. Generally, undergraduate students choose to live in on-campus housing because it provides the most convenience for their daily needs, being close to classes, labs, and other campus resources. On the other hand, students who eventually move off campus say they do so because facilities in the off-campus market are of better quality and offer more privacy. In many cases, undergraduate students are paying a premium to make this choice to live off campus, though there are off-campus options that are perceived as more affordable.

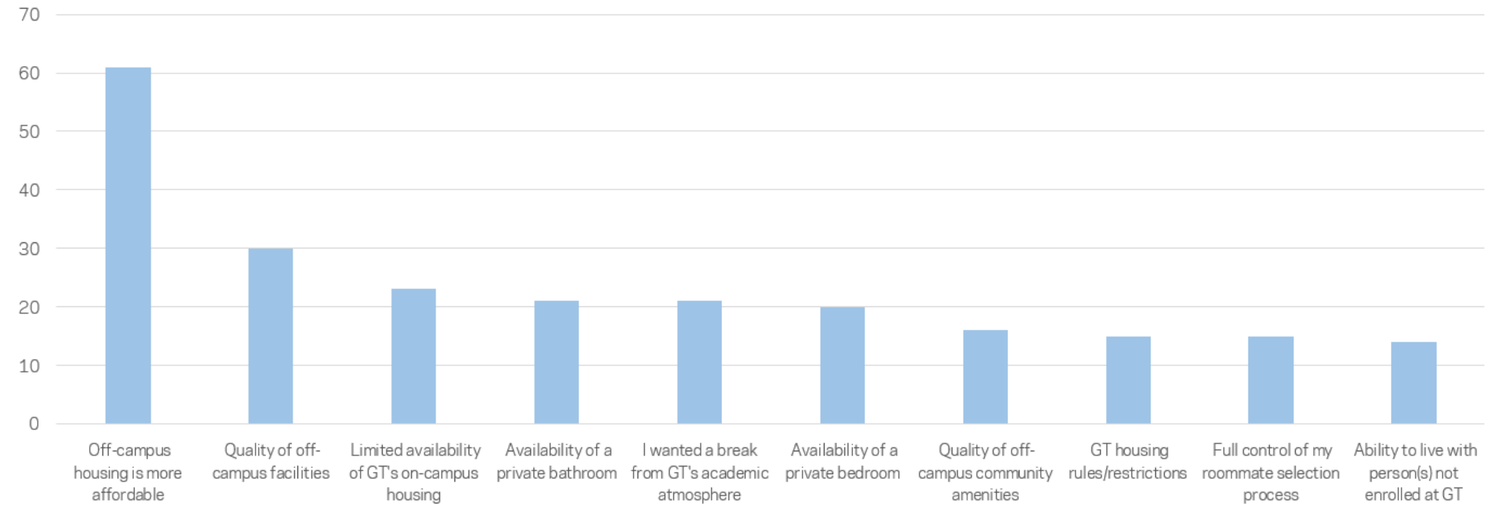
Graduate students provided similar feedback. Those who live on campus are seeking an ecosystem to bolster their experience at Georgia Tech – convenient, safe, and supportive of their academic success.

Off-campus graduate students are seeking affordability and are willing to live much farther from campus than undergraduates in order to find economical housing options. Additionally, grad students reported a need for different unit types than were available on campus, which would be supportive of students with partners or dependents, and which are in short supply in Georgia Tech's graduate housing inventory.

Based on conversations with students and survey data, on campus housing in particular achieves such high occupancies because it is 1) the culturally accepted course of action to live in Georgia Tech housing (i.e. there is a critical mass of usage) and 2) students find it to be the most convenient option for them. Dining and recreation should follow the same principles to create a critical mass of usage in the most convenient place possible.



Survey results for: Why did graduate students choose to live on campus?



Survey results for: Why did graduate students choose to live off campus?

Off-Campus Housing Market Analysis

The off-campus market surrounding Georgia Tech has continued to see substantial growth since the Housing Master Plan update in Spring 2021.

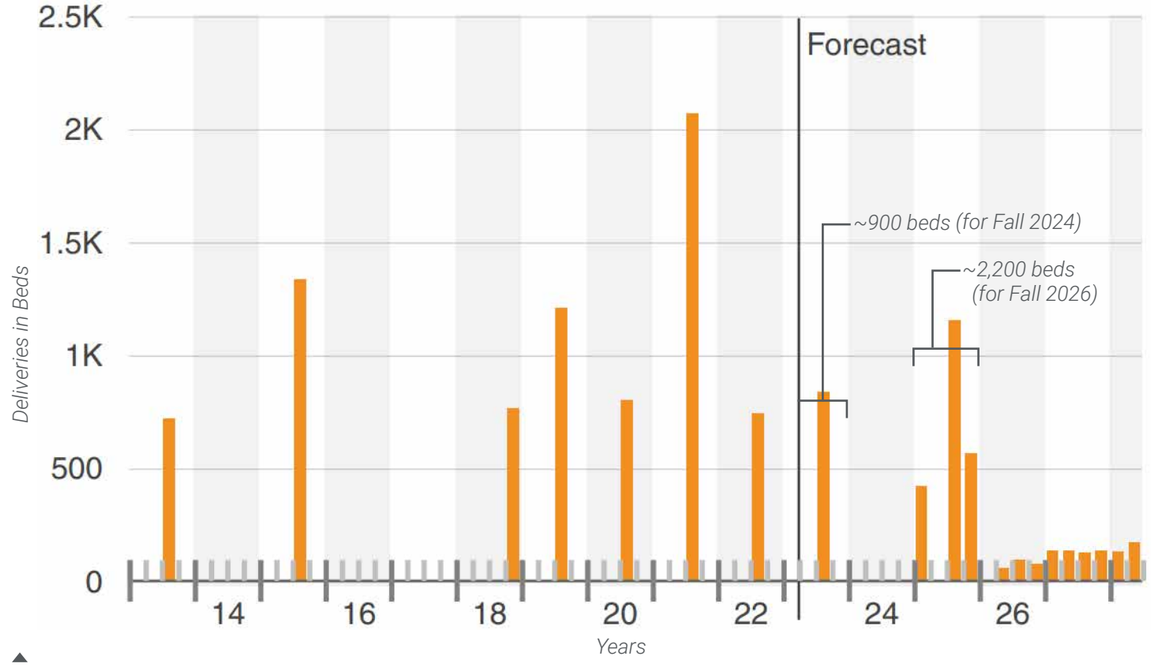
With 7,314 apartment-style student beds within 1.5 miles of Georgia Tech's main campus as of Spring 2023, off-campus housing inventory has grown 12% over two years.

Market indicators such as vacancy and rent growth suggest that the off-campus market immediately adjacent to campus continues to be highly competitive, with 98% occupancy and 7% rent growth from the preceding year. Georgia Tech's on-campus options provide significant economic value in addition to their convenient location, both in a lower overall monthly rate and the availability of academic year leases.

The inventory of premium apartment options will expand over the next few years. Market cap rates for student properties have steadily decreased to around 4.3% from the 10-year average, suggesting that is it still highly profitable for developers to continue to invest in student properties near Georgia Tech. The near-term pipeline bears this out, with approximately 900 beds to be delivered for Fall 2024, and approximately 2,200 beds to be delivered prior to Fall 2026.

Unit Type	Percent of Available Off-Campus Inventory	Avg. Monthly Asking Rent per Bed (12-month Lease)	Georgia Tech Monthly Rent per Bed 2023-24 (Academic Year Lease)
Studio/1-bedroom	6%	$1,912	$1,213 10th & Home (Bldg E)
2-bedroom	19%	$1,444	$1,100 Eighth Street East
3-bedroom	14%	$1,421	N/A
4+ bedroom	61%	$1,213	$1,100 North Avenue

Inventory of off-campus student housing and average monthly rents compared to monthly rent for on-campus housing



Near-term and forecasted pipeline of private sector student housing near Georgia Tech (measured by deliveries in beds).

Housing Demand Projections

Demand for on-campus housing at Georgia Tech substantially exceeds current supply. This dynamic will intensify as Georgia Tech's enrollment grows.

A substantial proportion of Georgia Tech's students already live in on-campus housing, with an overall capture rate of 44% according to the 2020 Housing Master Plan. As noted above, nearly all first-years live in Georgia Tech housing, but also more than half of sophomores and a large number of juniors as well. This is in large part due to Georgia Tech's substantial inventory of on-campus apartments, which are attractive to upper-division students. Of Georgia Tech's 8,957 total beds, 57% are apartment-style.

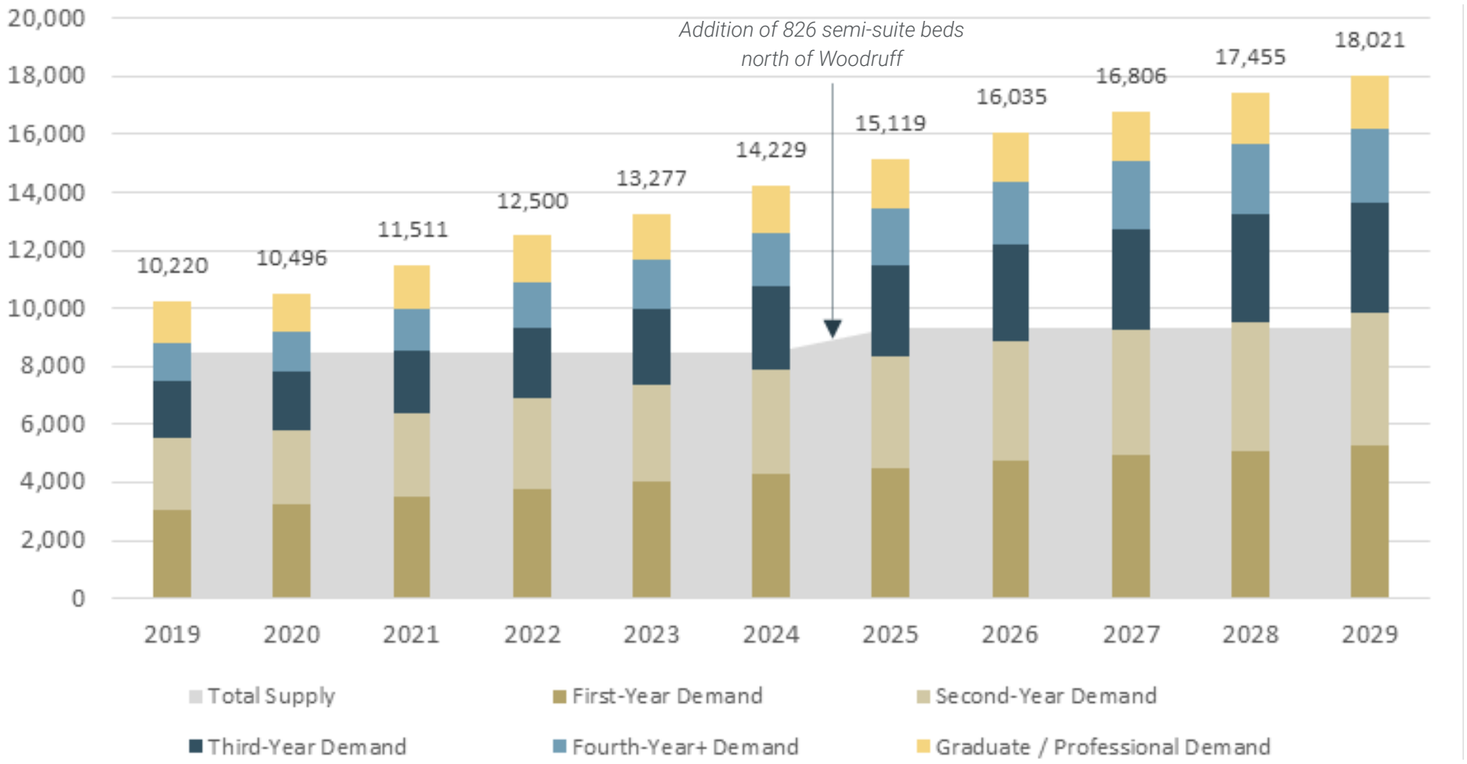
According to survey data, there is substantial unmet demand for on-campus housing. If Georgia Tech were to expand its inventory based on student preference, it could capture more than half of all students, or up to 56%. The breakdown of capture rates by classification is shown in the top right table.

Georgia Tech's increasing housing demand by classification is shown in the diagram on the right. By the end of the decade, beds demanded will more than double Georgia Tech's supply. This would allow for all first-years and nearly all sophomores to live on campus, but would force all upper-division undergraduates and graduate students into the off-campus market. Georgia Tech has a vested interest in providing sufficient capacity to serve strategic subpopulations that benefit most from the availability of upper-division and graduate housing, like international students, students who need to pay for housing with financial aid, or students in leadership positions.

Campus culture overall benefits from retaining older students in on-campus housing.

	Current On-Campus Housing Capture Rate	Potential On-Campus Housing Capture Rate
First-Year	97%	98%
Second-Year	55%	68%
Third-Year	43%	59%
Fourth-Year +	35%	48%
Graduate / Professional	11%	26%
Total	44%	56%

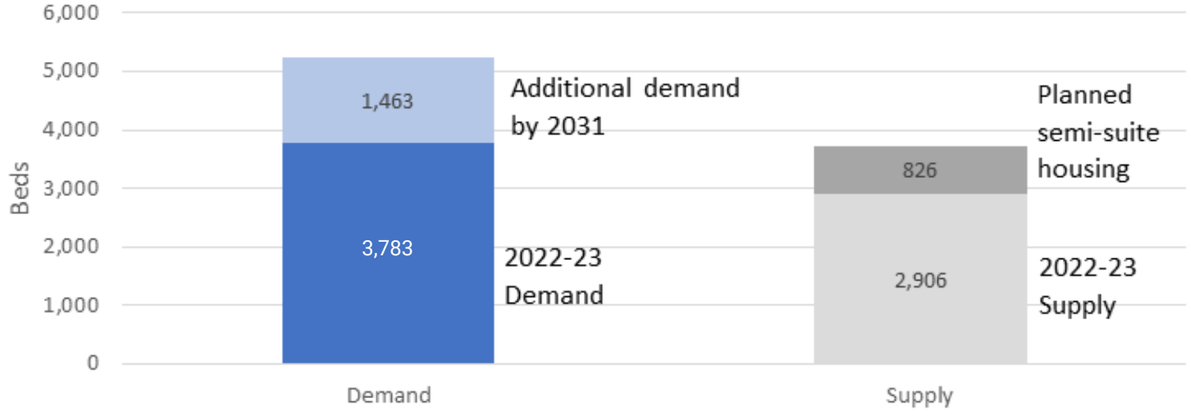
Breakdown of capture rates by classification.



On-campus housing demand by class level.

Additionally, Georgia Tech's strong first-year experience will be eroded by the need to house first-years in apartment unit types that are more appropriate for upper-division students. Georgia Tech's traditional-style and semi-suite units are the backbone of this first-year experience. As shown in the figure to the right, the first-year class is projected to exceed 5,000 students by 2031, while GT has only 2,906 traditional-style beds available. Delivery of an 862-bed project in 2024 will provide swing space to help maintain the status quo as GT embarks on a strategic renovation plan.

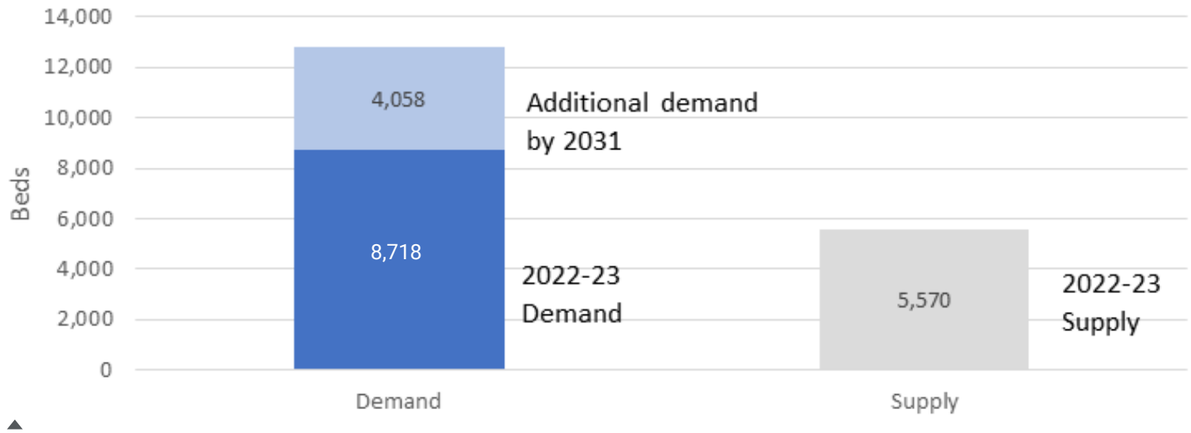
Georgia Tech must ultimately deliver approximately 1,500 additional first-year beds to maintain the integrity of the first-year experience over the long term.



First-year housing demand and supply.

Housing demand also exceeds supply for non-first-years, and will continue to do so for the foreseeable future. However, as noted above, the majority of this demand is for apartment-style units that compete with the off-campus market. GT should only deliver these unit types if it can do so at rental rates that are within a reasonable premium compared to off-campus options, accounting for increased convenience and other value-adds. Currently the only non-apartment housing for upper-division students is Woodruff Hall, which accommodates 591 students in semi-suite units. As shown in the 2020 Housing Master Plan, Woodruff is slated for demolition.

In order to preserve this non-apartment option for students who prefer it, Georgia Tech should deliver new semi-suite housing for non-first-years.



Non first-year housing demand and supply.

Dining Needs

Tech Dining must strategically expand its operation concurrent with enrollment growth and campus densification in order to maintain a high level of service for on-campus residents, students living off campus, employees, and campus visitors. In the same vein, any expansion must be strategically located in order both to provide convenient access to dining and to ensure the financial viability of a new operation in the context of the broader system.

Tech Dining operates 23 locations on campus, offering a variety of dining styles and cuisines and anchored by three all-you-care-to-eat (AYCTE) dining halls – Brittain Dining Hall and North Avenue Dining Hall serving the eastern precinct of campus, and the West Village Dining Commons serving the western precinct. The majority of Georgia Tech's dining outlets (17) are fast-food, coffee stand, or grab-and-go concepts but have minimal seating or shared food-court style seating, comprising only 31% of total dining square footage on campus. Of those, 12 concepts are concentrated in the John Lewis Student Center. Tech Dining also offers three fast-casual, sit-down concepts that roughly serve the southern and western borders of campus, near West Village, the John Lewis Student Center, and in the Bradley Building adjacent to Tech Tower.

All-You-Care-To-Eat (AYCTE) Dining

New on-campus residents will be the most direct driver of additional dining space on campus. Accordingly, the biggest changes in Tech Dining will likely come in its AYCTE operation. AYCTE dining focuses predominantly on serving the on-campus resident population, especially first-year students who live in units without kitchens and benefit the most from the communal dining experience. Moreover, first-year, on-campus residents constitute the only population at GT that is required to purchase a meal plan.

Building	Concept	Style	Assignable SF	Seating	Open	Close
Curran Street Parking Deck	Vacant	Fast Casual	1,417		N/A	N/A
Krone Engineered Biosystems Building	Gold & Bold Coffee Roasters	Grab-and-Go/ Coffee Shop	1,089		7 a.m.	6 p.m.
Clough Undergraduate Learning Commons	Kaldi's Coffee	Grab-and-Go/ Coffee Shop	1,950		7 a.m.	5 p.m.
Café Pavilion	Rising Roll Café	Fast Casual	2,049		7 a.m.	4 p.m.
Library	Sideways Café	Grab-and-Go	500		7 a.m.	10 p.m.
Campus Recreation Center	The Dive	Grab-and-Go	671		8 a.m.	2 p.m.
Bradley Building	Whistle Bistro	Fast Casual	3,832		7 a.m.	3 p.m.
Brittain	Brittain Dining Hall	AYCTE	11,674	320	7 a.m.	10 p.m.
North Avenue Apartments	North Avenue Dining Hall	AYCTE	16,406	325	7 a.m.	10 p.m.
West Village Residences	West Village Dining Commons	AYCTE	21,893	232	7 a.m.	10 p.m.
West Village Residences	Wreck Stop	Grab-and-Go			9 a.m.	9 p.m.
John Lewis Student Center	Test Kitchen	Grab-and-Go	10,758		11 a.m.	4 p.m.
John Lewis Student Center	Panda Express	Grab-and-Go			10:50 a.m.	9 p.m.
John Lewis Student Center	Twisted Taco	Grab-and-Go			10:50 a.m.	7 p.m.
John Lewis Student Center	5th District Deli	Grab-and-Go			10:50 a.m.	4 p.m.
John Lewis Student Center	Bento Bus	Grab-and-Go			10:50 a.m.	4 p.m.
John Lewis Student Center	Blue Donkey	Grab-and-Go			7 a.m.	10 p.m.
John Lewis Student Center	Brain Freeze	Grab-and-Go			10:50 a.m.	4 p.m.
John Lewis Student Center	Campus Crust	Grab-and-Go			10:50 a.m.	4 p.m.
John Lewis Student Center	Chick-fil-a	Grab-and-Go			7 a.m.	9 p.m.
John Lewis Student Center	Gyro Chef	Grab-and-Go			10:50 a.m.	4 p.m.
John Lewis Student Center	Tech It to Go	Grab-and-Go				
John Lewis Student Center	There Burger Bar	Grab-and-Go			10:50 a.m.	9 p.m.
Total AYCTE NASF			49,973			
Total Retail NASF			22,266			

Tech Dining space inventory.

Currently, Tech Dining has 877 seats of AYCTE dining capacity. Anecdotally, students and staff report that Brittain Dining Hall on East Campus is undersized (with significant operational difficulties due to the historic nature and layout of the facility) and West Village Dining Commons has limited capacity since its renovation. This suggests that Tech Dining's AYCTE capacity is mismatched with dining demand during the day. Tech Dining's AYCTE facilities align well with national benchmarks for overall assignable square footage, confirming feedback from GT staff that facility layout rather than available space accounts for operational difficulties.

Based on typical usage metrics for AYCTE dining, Tech Dining has a slight deficit in the seating capacity to service its current first-year population. In order to maintain its current level of service, GT must expand its AYCTE dining capacity with the growing numbers of first-year students in mind. As shown in the projections on the right, first-year demand alone will drive a need for another 685 seats of AYCTE capacity, or approximately 36,000 GSF of space, equivalent to another facility slightly larger than West Village Dining Commons.

	National Benchmark	Brittain	North Ave	West Village
AYCTE Dining Hall NASF	No Data	11,674	16,406	21,893
Seats	No Data	320	325	600
Seating Area per Seat	18	No Data	No Data	No Data
Servery Area per Seat	10	No Data	No Data	No Data
Back-of-House per Seat	11	No Data	No Data	No Data
NASF per Seat	39	36	50	36
GT AYCTE Average NASF/ Seat	No Data	40		

Tech Dining AYCTE comparison with the national benchmark for AYCTE dining.

	Key Metrics	2022	2023	2024	2025	2026	2027	2028	2029	2030
First-Year, On-Campus Residents		3,783	4,003	4,269	4,513	4,766	4,922	5,081	5,245	5,403
Capture of Residents During Peak Meal Hours	65%									
Peak Hours Duration per Meal Periods	2									
Peak Hourly Demand		1,229	1,301	1,387	1,467	1,549	1,600	1,651	1,705	1,756
Minimum Hourly Turnover During Mealtime	1.3									
Raw Seats Needed		946	1,001	1,067	1,128	1,192	1,230	1,270	1,311	1,351
Seating Occupancy	70%									
Occupancy-Adjusted Seats Needed		1,351	1,430	1,525	1,612	1,702	1,758	1,815	1,873	1,930
Existing AYCTE Seating Capacity		1,245	1,245	1,245	1,245	1,245	1,245	1,245	1,245	1,245
Net Seats Needed for First-Year Residents		**106**	**185**	**280**	**367**	**457**	**513**	**570**	**628**	**685**
Net ASF Per Seat	39									
NASF Needed		4,133	7,202	10,906	14,309	17,835	19,998	22,220	24,507	26,699
Building Efficiency	75%									
Gross Square Footage Needed for FY Residents		**5,510**	**9,602**	**14,541**	**19,078**	**23,779**	**26,665**	**29,627**	**32,676**	**35,599**

Tech Dining AYCTE square footage projections (2022 — 2030).

	2022	2023	2024	2025	2026	2027	2028	2029	2030
Projected GT Undergrad & Grad Population	25,320	25,731	26,540	27,239	27,958	28,696	29,453	30,233	31,032
Projected FY Residents	3,509	3,783	4,003	4,269	4,513	4,766	4,922	5,081	5,245
Total Population: Less First-Year Residents	21,811	21,948	22,537	22,970	23,445	23,930	24,532	25,151	25,786
Current Retail Dining NASF	22,266								
NASF per Non-First-Year	1.02								
Projected Retail Dining NASF		22,407	23,007	23,450	23,934	24,429	25,044	25,676	26,324
Net New NASF		141	741	1,184	1,668	2,163	2,778	3,410	4,058
Gross SF Needed (75% building efficiency)		**187**	**988**	**1,578**	**2,224**	**2,884**	**3,704**	**4,547**	**5,411**
Annual Increase in NASF			601	442	485	495	615	633	648

Tech Dining retail operation projections (2022 — 2030).

Retail Dining

Growth in Georgia Tech's non-residential populations and students living in on-campus apartments will predominantly drive expansion of Tech Dining's retail operation.

Currently, Tech Dining operates just over 1 net assignable square foot (NASF) of retail dining for every upper-division and graduate student. In order to maintain that ratio, Tech Dining would need to open approximately 5,400 GSF of retail dining over the next 10 years, which is equivalent to one new fast-casual eatery every two to three years. As noted earlier, Georgia Tech operates a robust slate of retail concepts, and new space can be integrated with new or renovated facilities gradually over time. Retail facilities should expand beyond the John Lewis Student Center, with a significant opportunity to increase service to the academic core of campus.

Future AYCTE dining capacity should be delivered to complement the new first-year housing being planned for the northwest and eastern precincts of campus. Given the institutional imperative to densify campus land use, Tech Dining should consider coordinating with Housing and Residential Life to integrate dining into the ground floor of new residential buildings.

Further study will be required to determine the optimal delivery windows for one or more new AYCTE dining facilities based on demand and financial feasibility. Likewise, space need projections should be refined to capture nuances in meal plan utilization and how different populations utilize dining dollar retail programs across campus more accurately. Evaluation of cross-utilization of retail and AYCTE concepts by patrons both with and without meal plans, combined with a detailed review of venue profitability, will yield important insights.

Programmatically, GT students had a number of points to consider in future dining concepts. Primarily, students expressed a desire for lower-cost options on campus. Second, extended hours of operation were considered highly attractive. And third, while not represented in survey data, many students expressed a desire for specialized food options on campus. Two variants of this request affect retail and AYCTE dining. In the first case, a significant number of students asked for more vegetarian options in Tech Dining's retail portfolio. In the second case, students noted the increasing prevalence of dietary restrictions on campus and proposed that Tech Dining establish a specialized food-safe or allergen-free kitchen to accommodate that subpopulation.

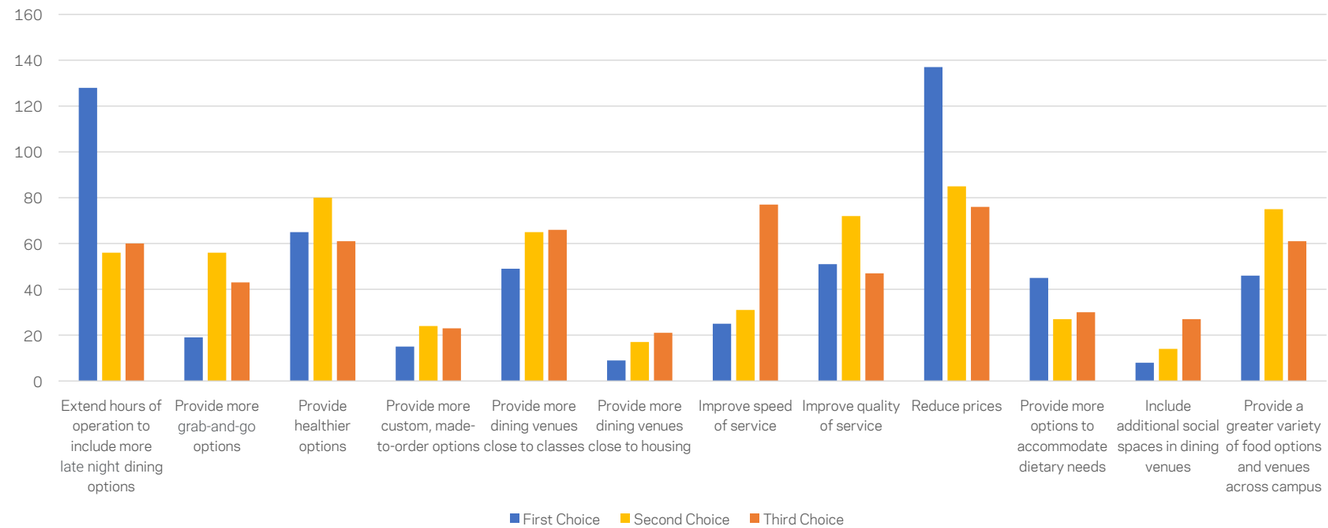


Chart above shows survey responses from students to top priorities that Georgia Tech should consider when making improvements to on-campus dining.

Recreation Needs

Georgia Tech's recreation facilities play a critical role in supporting student well-being outside of the classroom.

The Campus Recreation Center (CRC), which is nationally recognized for its functionality and design, anchors the recreation experience by offering 300,000 square feet of indoor court, track, group fitness, personal fitness, rock climbing, and equipment storage space for students, faculty, staff, and alumni recreational uses. The CRC is also home to the Coach Herb McAuley Aquatic Center, which was originally constructed for the 1996 Olympics and now hosts competitive swim events in addition to recreational events.

Other indoor physical recreation spaces on campus include the North Avenue Gym, which is located within the North Avenue residential complex, as well as the GT Connector, which is located between the Glenn and Towers residence halls on Georgia Tech's East Campus. These facilities accommodate additional recreational space needs for students living in Georgia Tech-sponsored housing but are not accessible to the broader Georgia Tech community.

Outdoor recreation space is available at multiple locations across Georgia Tech's campus. Stamps Field is adjacent to the CRC and can accommodate four flag football fields, two soccer fields, or two softball fields for pickup and intramural recreation uses. Nearby Alumni Park features two sand volleyball courts, and a third sand volleyball court is located at Curran Street Parking Deck.

Couch Park, which includes the Burger Bowl field as well as additional field space, is located directly north of Stamps Field. Couch Park is popular for soccer, rugby, baseball, Frisbee, and other informal field uses.

◀ *Campus map indicating existing recreation facilities.*

On the east side of campus, Peters Parking Deck features four tennis courts and two basketball courts within close proximity to Greek/affinity housing and Georgia Tech's East Campus residence halls.

The Ken Byers Tennis Complex, located at the intersection of 10th Street and Fowler Street, offers four additional outdoor tennis courts on a first-come, first-served basis. In addition, informal and passive recreation spaces are available throughout campus and include the EcoCommons, Tech Green, Tech Tower Lawn, and the Tyler Brown Pi Mile.

Qualitative and quantitative analysis indicates that, while Georgia Tech's recreation facilities are of high quality, they are oversubscribed to the point where many students feel they are too crowded to use. In on-campus intercept interviews, students of all classifications felt that the CRC served too large a population, leading to long wait times for basic activities like using weight training and cardio equipment. Reservable spaces were deemed accessible only to formal groups, and even groups suggested that times available for reserving spaces were inconvenient.

Likewise, multiple Georgia Tech employees indicated that the CRC was not a usable amenity for them given student overcrowding. Nearby public amenities like Piedmont Park and Westside Reservoir Park are not commonly seen as a viable option for pursuing recreational activities, as they are too far away from campus to conveniently fit into a student's day. Walking a mile off campus, or walking all the way across campus, or to wait 30 — 60 minutes for their desired equipment is not a viable option for this population. Georgia Tech students are busy and highly scheduled. For recreation facilities to be successful they must be readily accessible, close to other uses, and facilitate easy ad hoc use whenever a student can fit it into their schedule.

Georgia Tech's recreation facilities are not currently positioned to support the physical activity needs of its current campus community, including students, faculty, and staff. The gap in space needs is projected to grow through 2030 as the institution's campus scale continues to increase.

Indoor Recreation	Current Space	Units	2022-23 Needs	Difference (between current and future needs)	2030-31 Needs	Difference (between current and future needs)
Weight and Fitness	25,562	SF	43,052	17,490	53,001	27,439
Group Fitness	7,575	SF	16,250	8,675	20,005	12,430
Indoor Jogging	4	Lanes	9	5	11	7
Indoor Courts	6	Courts	8	2	10	4
Racquetball / Squash	4	Courts	12	8	15	11
Indoor Soccer	1	Court	3	2	3	2
Lap Swimming	6	Lanes	24	18	30	24
Rec. Swimming	7,947	SF	4,915	-3,032	6,050	-1,897
Rock Climbing	6	Anchors	19	13	23	17
Outdoor Recreation						
Turf Recreation Fields	6	Fields	8	2	10	4
Rec. Swimming	-	SF	4,650	4,650	5,724	5,724
Lap Swimming	-	Lanes	8	8	10	10
Basketball	2	Courts	3	1	4	2
Tennis	8	Courts	14	6	17	9
Sand Volleyball	3	Courts	3	0	3	0

▲ *Table above summarizes Georgia Tech's existing inventory of on-campus recreation facilities and demand based on current and future enrollment.*

As shown in the charts to the right, Georgia Tech students engage in a variety of recreation activities. Weightlifting and cardio are the most popular activities among undergrads, graduate students, faculty, and staff. However, they also value the opportunity to engage in informal sports – meaning there must be enough courts, fields, and other areas to allow for pickup games and feel welcoming to casual users. The overwhelming response from the campus community was that Georgia Tech's recreation offerings were of high quality, but were not located conveniently enough or were too oversubscribed to use effectively.

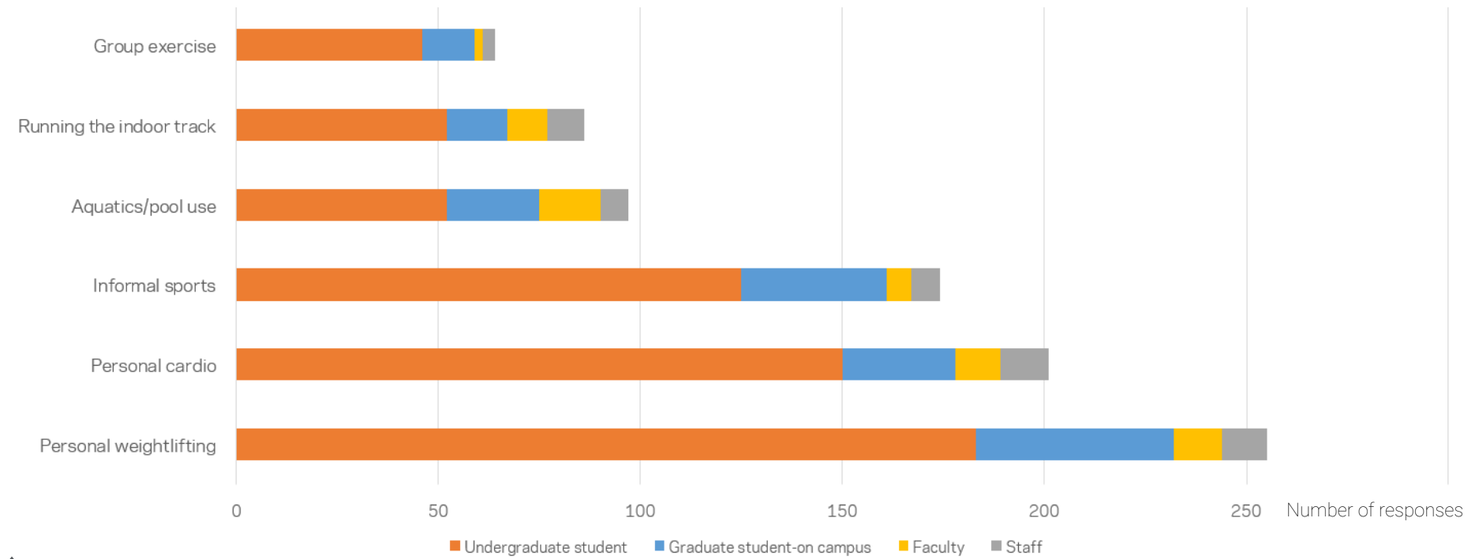
In addition to traditional physical recreation pursuits described above, students provided inspiration for additional activities Georgia Tech should consider in its future facilities programming.

Team Sports
- Disc golf
- Pickleball
- Paddle tennis
- Pickup soccer
- Badminton
- Faculty/staff recreation leagues

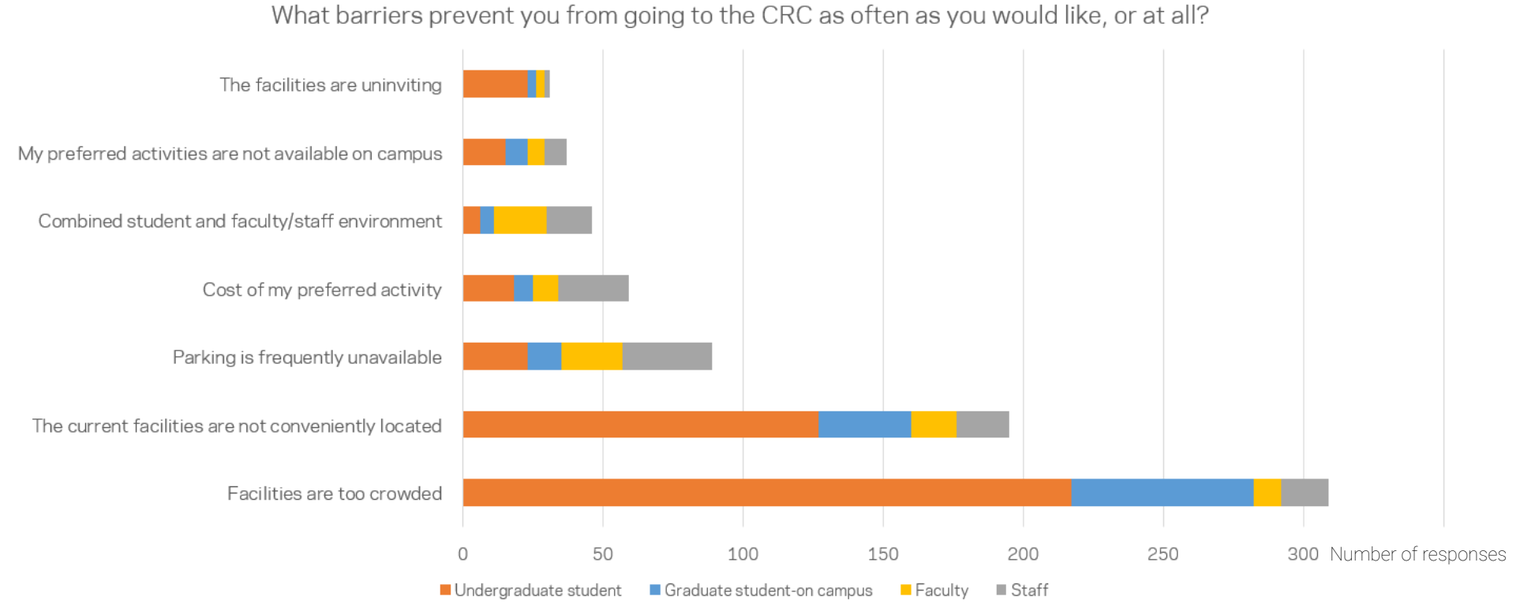
Additional Physical Recreation Opportunities
- Trampoline
- Boxing
- Outdoor workout areas
- Roller skating rink or skate park
- Archery Range
- Extended rock-climbing hours
- Extended bowling hours

Classes
- Cooking classes
- Self-defense classes
- Art and pottery classes
- Expanded group exercise classes
- Water aerobics classes

Other Types of "Play"
- VR / esports lounge
- Music venue
- Maker spaces
- More accessible board / card / video game areas



Survey responses for: What types of activities do you engage in at the CRC?



Survey responses for: What barriers prevent you from going to the CRC as often as you like, or at all?

3.8 Athletics Needs

"Georgia Tech Athletics is an integral part of Georgia Tech and aspires to be an example of progress and service to all. Athletic competition is intrinsically linked to well-being and excellence. Through that connectivity, Georgia Tech Athletics is intrinsically coupled to the fabric of the Institute. Consistent with its strategic plan, Georgia Tech Athletics will aspire over the next 10 years to create an innovative, inclusive, and world-class athletics program positioned to develop Everyday Champions who are leaders that advance technology and improve the human condition."

Georgia Tech Athletics Strategic Plan, 2021 — 2030

Noonan Golf Facility
Ken Byers Tennis Complex
McCamish Pavilion
Griffin Track
Zelnak Basketball Practice Facility
O'Keefe Gym
Mary R. and John F. Brock Football Practice Facility
Mewborn Field
Mac Nease Baseball Park at Russ Chandler Stadium
Alexander Rose Bowl Field
Bobby Dodd Stadium at Hyundai Field

14TH ST
10TH ST
5TH ST
STATE ST NW
ATLANTIC DRIVE NW
TECHWOOD DR NW
W PEACHTREE ST NW
SPRING ST NW
FERST DR
TECH PARKWAY
MARIETTA ST NW
NORTHSIDE DR NW
NORTH AVE
LUCKIE ST NW

Athletic Fields
Tennis Courts
Athletic Use Buildings
Athletics Zone

◀ *Campus map indicating all existing athletic facilities.*

With 400-plus student-athletes across 17 varsity sports, Georgia Tech competes at the highest level of intercollegiate athletics as a member of NCAA Division I and the Atlantic Coast Conference (ACC), while also developing young people who will change the world (source: ramblinwreck.com/georgia-tech-athletic-association/).

Athletics facilities needs for the future were determined based on priorities identified by the Georgia Tech Athletic Association's (GTAA) strategic programmatic priorities, the 2020 Bobby Dodd Stadium Master Plan, and in support of a growing student body. The following needs as identified by representatives of the GTAA have been included as part of the CCP recommendations:

- Opportunities for modernization and improvements of operations, enhanced student-athlete and fan experience while also extending the longevity of Bobby Dodd Stadium at Hyundai Field for future generations of Tech fans.
- Replacement of the Edge/Rice Complex (currently underway).
- Potential to expand athletic facilities while enhancing campus entry experience at North Avenue directly across from Bobby Dodd Stadium at Hyundai Field.
- Facilities in support of potential new programs for female athletes, such as field hockey and NCAA-sized soccer stadium.
- Support facilities — training room, locker rooms, storage and operational parking — in support of new and expanded programs.
- At the time of the CCP study, the GTAA was in the process of considering other new programs such as esports and perhaps an esports arena in support of it.

The GTAA's preference is for new facilities to be located as close as possible and/or collocated to allow for shared use of existing support facilities (locker room, training room, parking). However, limited land around existing athletic facilities may necessitate future land-intensive uses to be located farther out. Conducting a comprehensive multiyear facilities plan will further guide physical needs and priorities for Athletics.

Top to bottom:
Bobby Dodd Stadium at Hyundai Field, Griffin Track, and Mac Nease Baseball Park at Russ Chandler Stadium.
Photo credit: Georgia Institute of Technology

3.9 Campus Access and Mobility

Today's Campus Mobility System

Georgia Tech has close access to Atlanta's full range of travel options, though the major infrastructure surrounding the campus brings unique connectivity challenges.

Georgia Tech's main campus is located in Midtown Atlanta, extending from Atlanta's original street grid as it grew outward from the historic city center at Five Points and Alabama Street to the south. The street network covering today's Georgia Tech campus has evolved considerably since the university's establishment in the late 19th century; and today's streets reflect a combination of original street plans, newer streets added and reshaped later in the 20th century, and major thoroughfares bounding the campus – especially Northside Drive and the Downtown Connector freeway (Interstates 75 and 85). Most of the streets of the main campus support vehicle traffic as well as transit, walking, and bicycling. However, some streets, especially in the original historic heart of the campus, do not allow general-purpose vehicle travel due to constrained dimensions.

The vehicle-oriented street network is supported by a dense network of paths and walkways across campus, allowing more direct links between buildings and other campus facilities. These paths also allow people walking around the Georgia Tech campus to have a separate space, removed from vehicle streets. The overall campus is supported by a GT-owned and operated transit system; this links numerous destinations on campus to the MARTA public transit system serving a large portion of metropolitan Atlanta, in addition to off-campus destinations such as Atlantic Station and Emory University.

To be sure, this rich inventory of mobility assets gives Georgia Tech a distinct advantage as a higher education campus. It is tied into a multimodal transportation network with direct access to Atlanta's major economic assets, especially the region's major business districts and Hartsfield-Jackson Atlanta International Airport and its extensive offering of air connections.

However, Georgia Tech's central location in the Atlanta metropolitan area also places it in the middle of major physical barriers that limit access to the campus to a handful of entry points. The Downtown Connector presently has only three crossings directly connecting to the campus, and Northside Drive has only two. The combined Norfolk Southern/CSX railroad corridor to the west of the campus has limited crossings that allow more connections to Atlanta's west side. Even the campus edge street of North Avenue (featuring multiple entry points into the campus) is a state highway owned and maintained by the Georgia Department of Transportation, requiring more extensive coordination for any potential changes.

These opportunities and challenges are presented in more detail in the following pages, and they point to overall themes that form the basis for the Campus Comprehensive Plan's big ideas and recommendations around mobility.

Top to bottom:
The Stinger shuttle, Lime electronic scooters and bicycles, and designated scooter and bike parking area on campus.

Campus Street and Path Network

The Cornerstones for Campus Circulation

Georgia Tech's main campus is connected by a series of streets and pathways — whether these are sidewalks along existing streets or independent sidewalks and pathways between the campus's buildings and open spaces. The streets on campus are almost entirely public and under jurisdiction of the City of Atlanta, with whom Georgia Tech coordinates for maintenance, enhancements, and other capital projects. As a result, the campus network for walking and cycling is partly under Georgia Tech's direct control and partly under the city's.

While this network is extensive and provides connection to all buildings and facilities on campus, the physical footprint of the campus is still large when considered at a human, walking scale: Nearly 1 mile from I-75/85 to Northside Drive, and nearly three-quarters of a mile from North Avenue to 10th Street. In addition, the piedmont topography of the campus, discussed in this report's overview of stormwater and natural systems, features numerous locations of significant slopes that have required stairs or winding pathways to navigate. This means that walking around the campus can be time-consuming and potentially challenging for travelers of limited personal mobility. It also suggests a strong desire for walking travelers to take the most direct paths possible, some of which travel through parking lots, across streets and driveways, and other locations where pedestrians may be in conflict with vehicles.

The Georgia Tech campus network of streets, sidewalks, and paths, drawn from City of Atlanta inventories of streets and impervious surface data classified as sidewalks.

Transit Connections

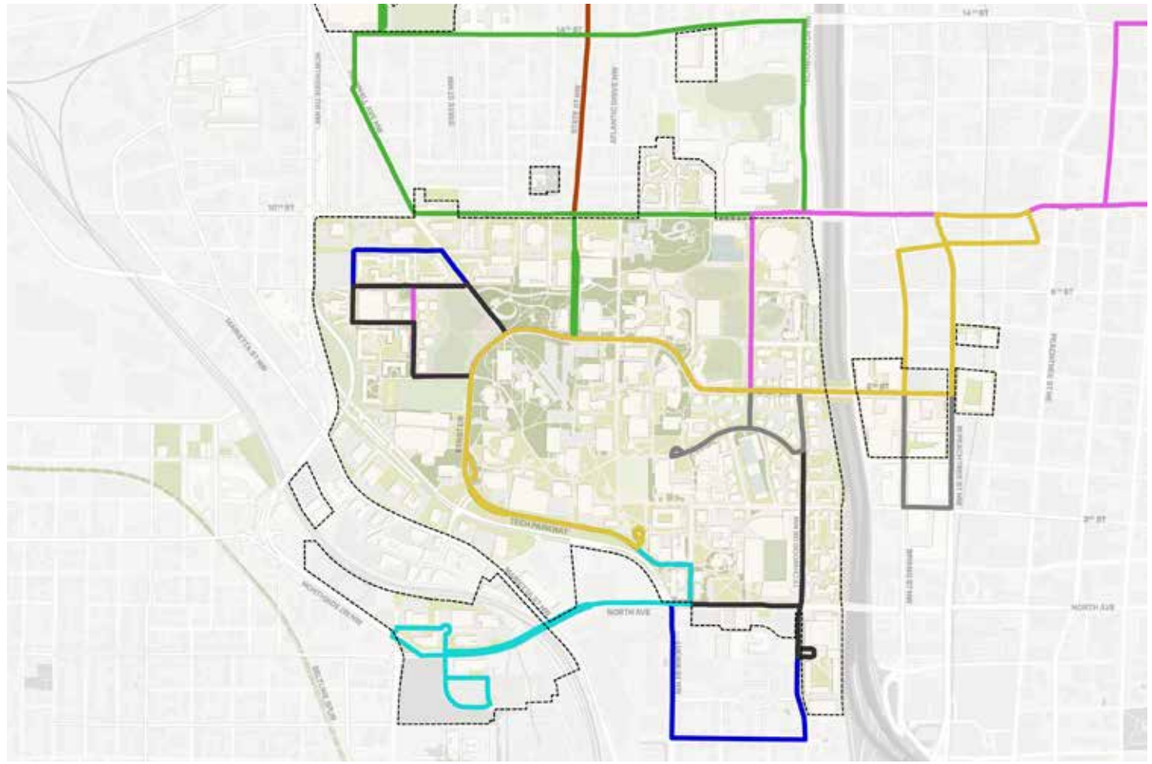
Connecting Around and Across Campus

Georgia Tech's Parking and Transportation Services' (PTS) auxiliary unit operates a series of bus transit services on and around the main campus, branded as the Stinger Shuttle network. The foundation of this transit service is the set of fixed routes connecting major destinations both on and off campus. Key destinations include the two Midtown Atlanta MARTA rail stations (Midtown and North Avenue), the major student housing concentrations around the campus, and the Home Park neighborhood and Atlantic Station mixed-use district, both to the north of campus. The transit system also includes an on-demand service (branded as the Stingerette) to provide late-night service and connections to locations not immediately served by a fixed route.

Overall, this service is geographically extensive and provides direct service to most major buildings and facilities on campus directly connected by Georgia Tech's street network. However, as with all transit systems planning, this has required a careful balance of using finite transit operating resources and means that service operates at different levels throughout the day or week (or period of the year).

While the service network includes a series of routes that extends beyond the main campus, most shuttle service connects to destinations in the main campus geography.

The Stinger shuttle.



The table (below) and map (left) illustrate Georgia Tech's transit system with its overall service frequencies.

	Headways by Time of Day and Day of Year			
Route	*Weekday Peak - Fall/Spring*	*Weekday Off-Peak - Fall/ Spring*	*Weekend - Fall Spring*	*Summer*
1 - Gold	*10*	*36*	*Service not operating*	*14*
2 - Red	*9*	*36*	*Service not operating*	*36*
3 - Blue	*9*	*36*	*Service not operating*	*36*
4 - Green	*20*	*40*	*Service not operating*	*20*
5 - GT/Emory	*75*	*Service not operating*	*Service not operating*	*75*
6 - Midnight Rambler	*Service not operating*	*20*	*20*	*Service not operating*
7 - NARA/Science Square	*18*	*Service not operating*	*Service not operating*	*18*
8 - Clough / Tech Square	*16*	*NA*	*16*	*Service not operating*
9 - Grocery	*Service not operating*	*NA*	*50*	*Service not operating*

While the core routes serving campus provide frequent service during peak times, they are limited in other periods.

Parking on Campus

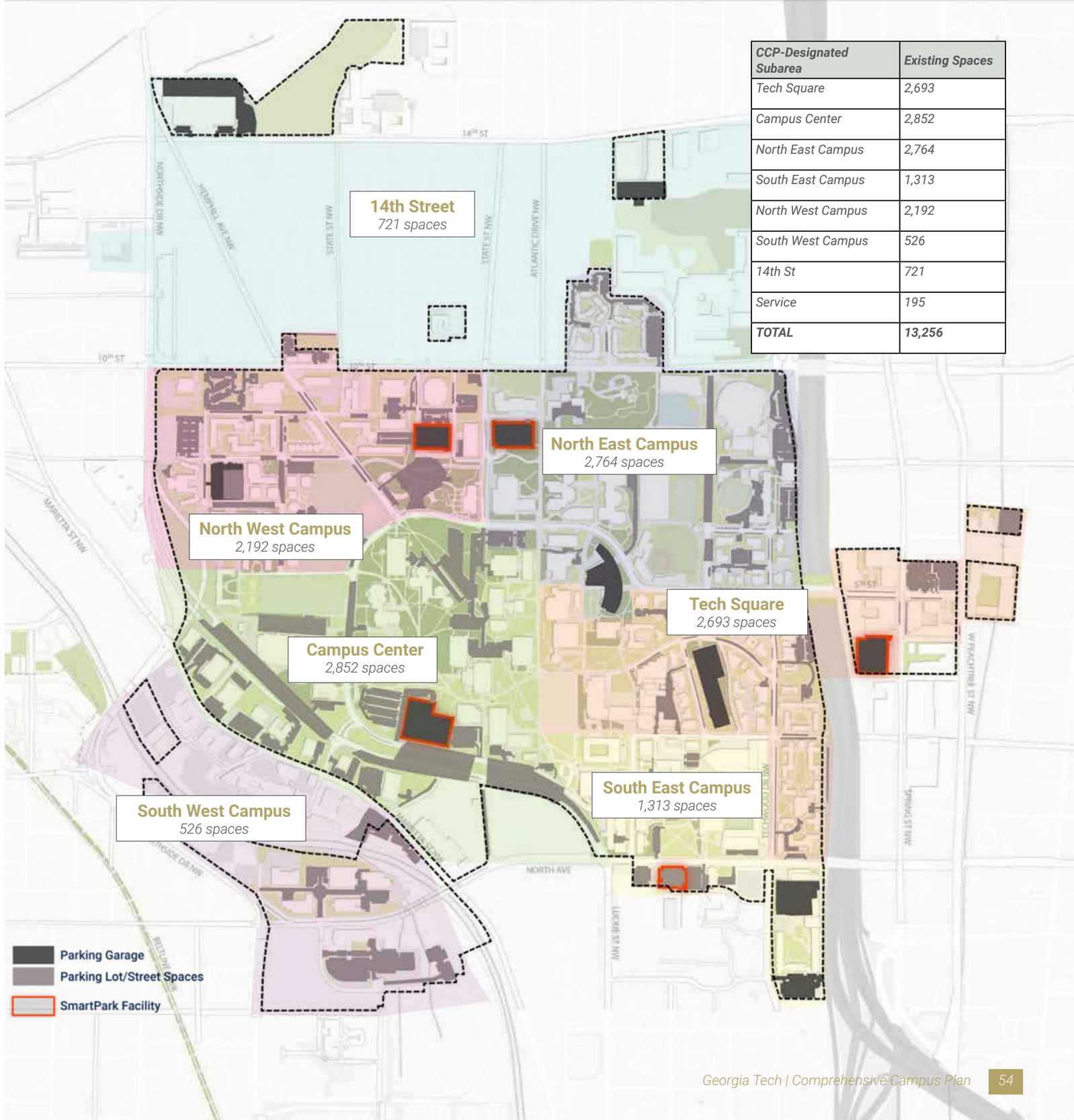
PTS's other primary function is the management and operation of Georgia Tech's parking system, which comprises over 13,000 spaces on the main campus in over 50 parking lots, garages, and numerous curbside parking spaces on campus streets. This parking is centrally managed as an overall system, with most parking customers on campus accessing it through permits allowing access to one or more designated facilities.

Georgia Tech offers several types of permits, and the vast majority of permits sold allow parking in a designated *zone* (typically a single parking lot or garage, and sometimes an adjacent cluster of small parking areas) for an entire academic year. Most zones are limited to holders of permits specific to those zones during regular weekday business hours. The overall parking system is less regulated outside of these times, with permit holders able to park in almost any non-residential, non-visitor parking around the campus. In addition, the parking system has moved in recent years toward a more flexible approach allowing pay-as-you-go parking across any of five designated parking facilities around campus. This system, branded as SmartPark, currently accounts for a small portion of users and transactions, though its current designations are at strategic locations around the campus (as illustrated in the adjacent map).

For the purpose of analysis, the CCP has studied and made recommendations on parking on the basis of a series of planning subareas. Two of these were established in Georgia Tech's 2019 Parking and Transportation Demand Management Immediacy Plan, with the remainder (exhaustively covering the campus geography) defined in the CCP's efforts. These are also shown on the map, with inventory summarized in the table (top right).

As illustrated in the map (right), most of the physical footprint of Georgia Tech's current parking supply is in surface lots.

CCP-Designated Subarea	*Existing Spaces*
Tech Square	*2,693*
Campus Center	*2,852*
North East Campus	*2,764*
South East Campus	*1,313*
North West Campus	*2,192*
South West Campus	*526*
14th St	*721*
Service	*195*
TOTAL	***13,256***



Larger Transportation Opportunities and Challenges

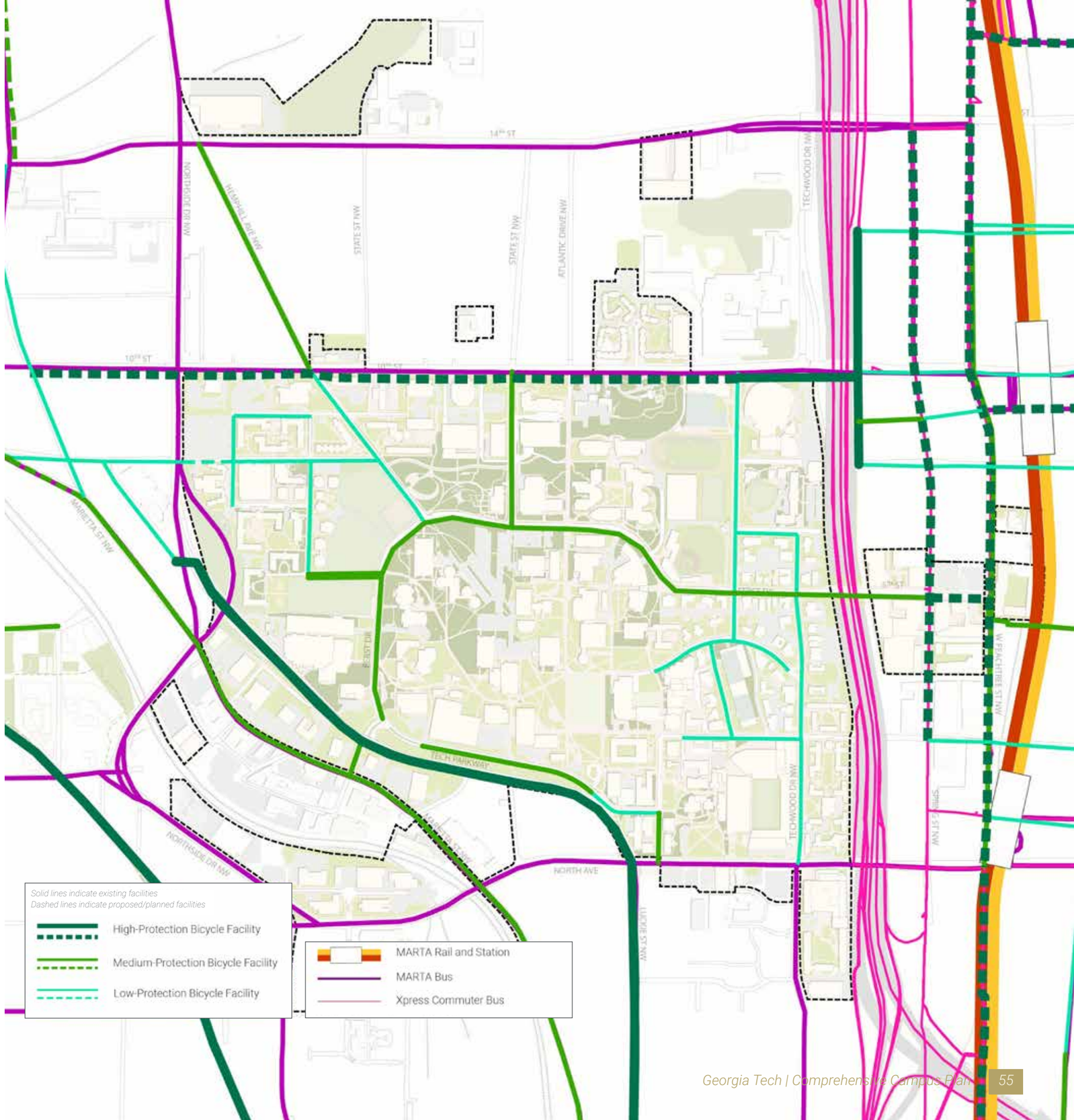
Connecting Atlanta's Heart to Its Western Neighborhoods

Georgia Tech's campus is within close proximity to major transportation assets such as the MARTA's Red and Gold lines (the north-south lines of the system), numerous MARTA local bus routes, the Interstate 75-85 Downtown Connector expressway, major thoroughfare streets such as North Avenue and Northside Drive, and several designated routes in Atlanta's growing bicycle network. When viewed from a regional context, Georgia Tech is effectively a Downtown-Midtown institution and part of the largest combined employment center in the Atlanta metropolitan area. Its physical footprint in such a central location makes the campus itself a major nexus in Atlanta's transportation network, with major streets surrounding it physically able to connect by way of the campus itself.

However, its location across the Downtown Connector from Atlanta's urban core, the Downtown-Midtown axis along Peachtree Street, means that access to many of these transportation links is only available at select points — especially the bridges over the Connector at North Avenue, Fifth Street, and 10th Street. MARTA rail and the Xpress commuter bus network, the campus's regional transit options, serve the Midtown core district and are connected to the campus by the Stinger shuttle network or by walking, but rely on these three bridges for those connections.

Georgia Tech's location relative to Downtown and Midtown Atlanta gives it the potential opportunity to take advantage of the amenities and services of the metropolitan core, but its location relative to major infrastructure corridors limits how easily some of these can be accessed.

Transit and bicycle links in and around the campus.



Organization of the System

How Georgia Tech Provides Transportation Services Today

As described previously, Georgia Tech's Parking and Transportation Services' auxiliary unit is the primary provider and manager of transportation services, operating and maintaining the campus's parking and transit circulator systems. In operating these services, it also oversees emerging technologies and transportation opportunities, such as electric vehicle charging infrastructure, and manages parking and transportation functions for special events held on the Georgia Tech campus. PTS also provides transportation demand management services that encourage and incentivize commuting patterns other than driving alone, with offerings such as rideshare matching and a discounted MARTA pass program for the Georgia Tech community.

As an auxiliary service of the campus, PTS' operations are largely self-sustaining, meaning they are funded almost entirely through user fees. In the case of parking, these are the sales of permits and collection of parking charges from visitors, SmartPark permit holders and their use of the system, special event parking, and citations for violating parking regulations. In the case of transportation services, this is primarily through student fees and allocations directly from the Institute and other partner institutions with connecting transportation service to Georgia Tech (currently this is only Emory University, helping to fund a connecting shuttle service between Georgia Tech and Emory's Druid Hills main campus). This has meant that PTS budgeting and financial planning is largely tied to available revenue, with major expenditures (such as construction of new parking or major maintenance or upgrade projects) being financed and related debt service factored into annual budgets.

Other functions of the campus pertaining to transportation, such as construction and maintenance of streets and paths or storage for bicycles, are shared among other departments and organizations, the most significant responsibilities lie with Georgia Tech's I&S department. Nearly all streets on and around the Georgia Tech campus are public streets, with most maintained by the City of Atlanta. North Avenue, Northside Drive, and 14th Street due north of the campus are part of the state highway system owned and maintained by the GDOT, as is the I-75/85 freeway. Georgia Tech regularly coordinates with these organizations on planning, design, and implementation of capital projects such as the installation of bicycle lanes and facilities on campus streets. It also coordinates with private nonprofit organizations engaged in transportation projects, such as the PATH Foundation, Atlanta BeltLine Inc., and Midtown Alliance.

Funding and Resources

When factoring in permit sales, events, citations, and other parking revenue streams, the services operated by Georgia Tech's PTS generated approximately $16,873,000 in fiscal year 2018, prior to the Covid-19 pandemic. Funding to support transportation operations, primarily the Stinger shuttle system and its paratransit and on-demand services, is generated and reported separately and is primarily funded through student transportation fees. In fiscal year 2018, Transportation Services generated approximately $5,261,000 in revenue. Revenue generated by PTS is solely devoted to providing services that directly benefit customers, and by and large the services operate with small margins.

Although this service was generally scaled back during the Covid-19 pandemic and subsequent recovery has brought parking and transit use to levels similar to 2018 and 2019, some of the pandemic's larger effects, especially on hybrid work, have continued to be felt.

Implications of the Current Structure

As suggested, this administrative and financial structure means that parking and transportation services are largely tied to available revenue and resources, and must be managed carefully to allow PTS to balance budgets while meeting critical campus transportation needs. However, these services are asked to respond to and serve numerous and campus activities, initiatives, and priorities, and must essentially work with existing financial resources to satisfy these requests. Most notably, the campus transit system is expansive in its geographic reach and provides direct service to many GT-affiliated buildings and destinations outside of the main campus, even to the retail district in Atlantic Station.

In recent years, especially after the Covid-19 pandemic, the campus community has expressed interest in more flexible approaches to parking and to supporting lower-salaried GT employees with lower levels of parking pricing. PTS has also been asked to accommodate a rapidly growing program of special events on campus, ranging from large sports and conference events to smaller-scale conferences, meetings, and other similar events. These have required an increasingly creative and nimble approach to managing parking supply, although they have generally been able to take advantage of the parking supply that is regularly underutilized on campus.

This is an important concept that frames the way parking recommendations should be implemented, and the major themes and ideas presented in this plan are followed by a series of decision-making considerations that Georgia Tech must consider in moving forward with this plan.

3.10 Campus Utilities

Campus Scale and Building Performance

A holistic and forward-looking approach to utilities infrastructure will allow Georgia Tech to steward Institute and environmental resources, while adapting to new needs and campus growth.

A robust utilities infrastructure is a critical element to serving Georgia Tech's current and future needs, and addressing sustainability goals. By investing in existing facilities through preventive maintenance programs, deferred maintenance projects, building renovations, and energy upgrades, the demands on the utilities infrastructure can be reduced. Improvements in building performance can result in lower operational costs and carbon emissions, decreased load on existing and future utility infrastructure, and increased resiliency. However, investment in utilities infrastructure – especially district thermal systems – will be required to serve both existing facilities and anticipated campus growth.

Georgia Tech's Sustainability Next Plan has set several operational objectives related to campus utilities. This includes a goal of carbon neutrality by 2050, a milestone reduction of 50% reduction for Scope 1, 2, and 3 emissions by 2030, and a reduction in energy use per square foot by 40% (from a 2010 baseline). To achieve these objectives, Georgia Tech must infuse energy efficiency and other decarbonization strategies (such as electrification) within the planning, design, and operation of utilities infrastructure, existing buildings, and new buildings.

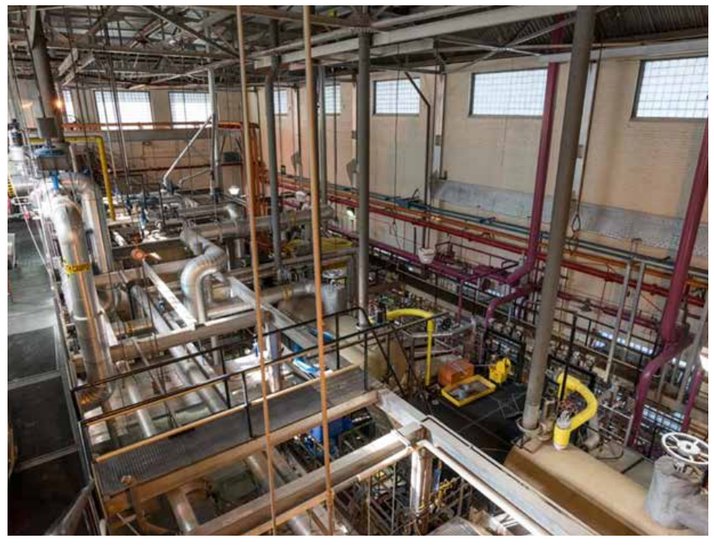
Better stewardship of Institute financial and staff resources by reducing the need for independent energy projects can be attained by maximizing implementation of efficiency and electrification opportunities within each project.

While incorporating decarbonization and other sustainability measures into a new building or major renovation may increase the capital cost of that specific project, Georgia Tech must develop a holistic framing approach around these design decisions to be a responsible steward of campus resources.

Due to the Institute's ambitious carbon neutrality and broader sustainability goals, eliminating sustainability measures from an individual project due to immediate budget concerns will either increase the cost to implement these same measures in the future (as a retrofit) or require the Institute to invest in other, potentially costlier projects to achieve the same reductions. Georgia Tech should develop a funding model that facilitates the incorporation of carbon reduction and sustainability measures into individual building projects, acknowledging that this is the most opportune time to include these elements. Georgia Tech's Climate Action Plan will provide additional direction for the Institute's pathway to carbon neutrality.

There are a variety of thermal systems that support Georgia Tech's facilities. While many campus buildings and areas, including Tech Square, are served by standalone systems, a significant amount of campus heating and cooling needs are met by district thermal systems. Chilled water is provided through two separate plants (10th Street and Holland) and an interconnected distribution system, which had operated independently until recently. Based on previous studies (including the 2016 Thermal Energy Study), there is limited ability for either plant to take on additional load beyond what is already planned. An expansion of the 10th Street Chiller Plant is planned to address new load in the Engineering Biosciences and Research District, with consideration for growth in the Northwest Residential District. However, funding has not yet been committed.

Existing Holland Plant. (Photo credit: Rob Felt; Source: Georgia Tech News)



Existing Holland Plant. (Photo credit: Rob Felt; Source: Georgia Tech News)

Approximately half of the heating on campus is provided by the Holland Plant, with natural gas fired boilers (and backup electrode boiler) generating steam that is distributed throughout campus. The remaining buildings are predominately served by standalone natural gas boilers, with a small group of buildings served by electric resistance and heat pump systems. The steam distribution system requires a significant amount of maintenance and limits the ability for Georgia Tech to authentically achieve carbon neutrality.

Natural gas combustion for space heating and domestic hot water from the Holland Plant and standalone boilers is the largest contributor to Scope 1 greenhouse gas emissions.

While the Holland Plant does have thermal capacity to support additional buildings, expanding the steam distribution system will likely result in future stranded assets as the campus identifies and implements a district thermal decarbonization strategy.

Several recent studies have been conducted that provide analysis and recommendations for specific sectors (including SxSW, West Campus Housing, and Tech Square III). These studies have uncovered opportunities and concepts that provide insights into each sector. This includes the ability to leverage simultaneous heating and cooling demand to efficiently provide heating to residential facilities within the Northwest Residential District with water-to-water heat pumps. Ambient loops have also been suggested for SxSW and Tech Square III, allowing spaces with that need to be cooled to move heat to spaces that need heating (along with equipment to address thermal imbalance, such as sewer heat exchange or ground-source heat pumps).

As part of a Utility Master Plan, Georgia Tech needs to develop a cohesive and phased approach to serve the thermal needs of existing buildings and new growth while also facilitating a pathway to carbon neutrality.

This should include the conversion of both the Holland and 10th Street Plants to Combined Heating and Cooling plants that leverage district scale heat pumps, along with a new Southwest Plant.

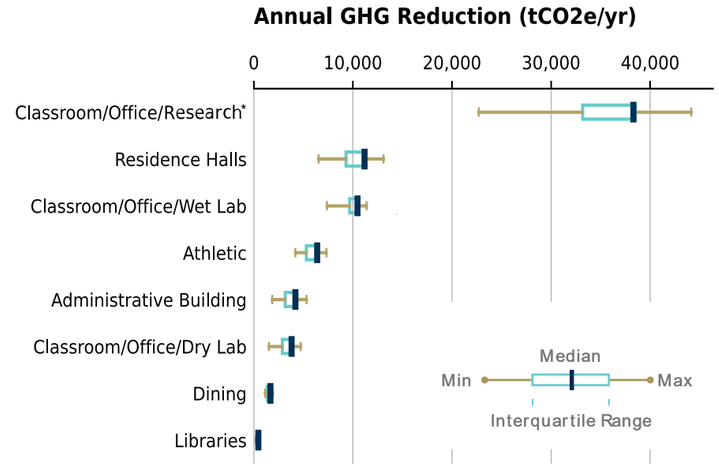
Building Portfolio Assessment

A building portfolio assessment was performed to identify the relative opportunity to reduce energy consumption and associated carbon emissions within 140 existing buildings. The results of this analysis validated that there are a significant amount of emissions reduction opportunities available through energy efficiency measures across Georgia Tech's building portfolio, and provided a range of potential savings at the building and intervention level. This also suggests the potential to reduce thermal loads through efficiency measures. The full building performance assessment is available in a companion document.

Both envelope and non-envelope interventions were assessed. The most significant areas of opportunity (based on anticipated range of carbon emissions reductions) are in Tech research buildings, with notable opportunity in wet labs, Residence Halls, and Athletic buildings. The range of savings reflects the uncertainty in building characteristics and measure feasibility.

Across the building portfolio, the analysis indicates the most significant opportunity to reduce energy use and associated carbon emissions is through a suite of HVAC controls measures.

Annual GHG reductions by building type

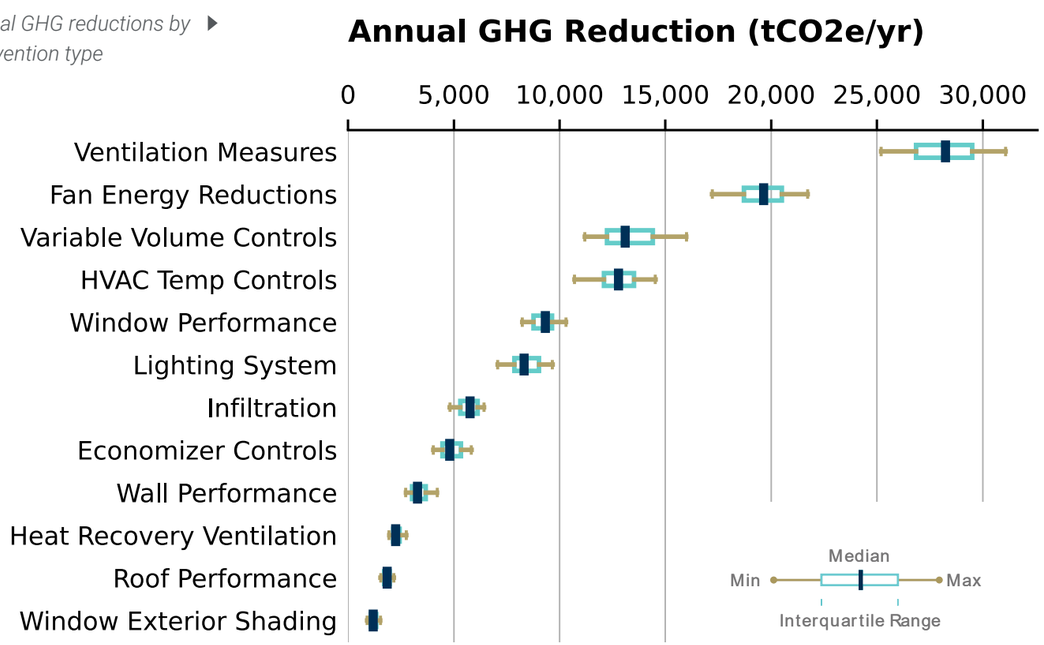


Implementation of these measures, along with other identified opportunities such as window performance and lighting system upgrades, can also reduce load on chilled water plants and distribution systems. The magnitude of savings from these measures also reinforce sthe need for a strong commissioning program to reduce energy use and optimize building operations.

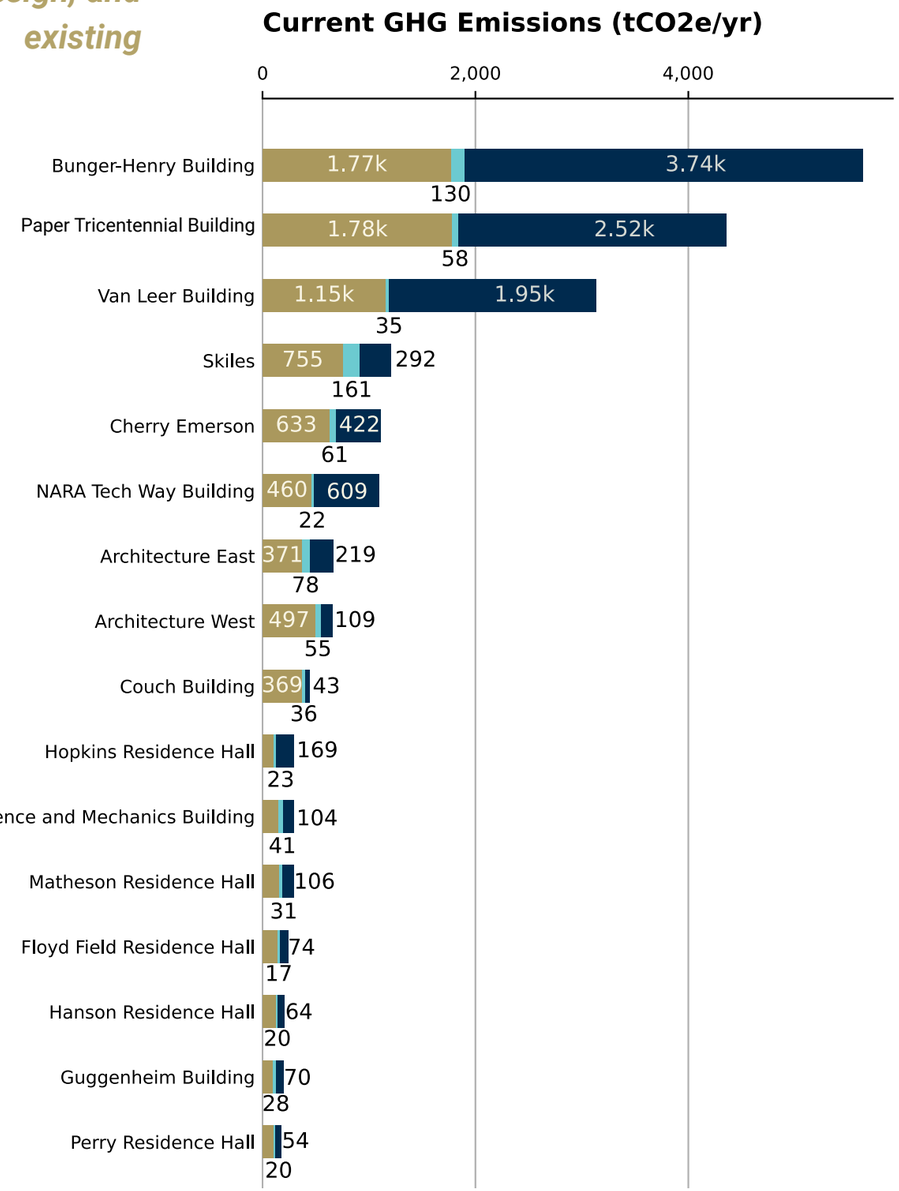
Building renovations are an opportune time to implement these and other identified measures. There is a tremendous opportunity to align deferred maintenance projects with efforts to reduce energy consumption and facilitate a campus transition to a low temperature hot water distribution system. Among the buildings selected for renovation or repurposing, an 8% reduction in campuswide building-related emissions was identified (using median savings). While planning for these renovations, building performance results can guide emissions reduction targets and inform prioritization of building system improvements.

Georgia Tech must infuse energy efficiency and other decarbonization strategies (such as electrification) within the planning, design, and operation of utilities infrastructure, existing buildings, and new buildings.

Annual GHG reductions by intervention type



GHG emissions reduction potential identified in buildings selected for renovation/ repurposing



3.11 Summary of Campus Needs

The Comprehensive Campus Plan recommendations have been developed in response to the aspirations and needs identified by the campus and community members. Future comprehensive space needs have been identified based on the campuswide analysis of the current campus systems and in response to the projected student growth at the Atlanta campus over the next decade. Needs generated from other relevant past and recent studies related to instructional space, student well-being spaces, district programming, and others are also included in the future needs. While it is assumed that these needs will evolve over time, they form the basis of the campus's future framework for growth and land use decisions.

The following summarizes the primary campuswide goals and space needs driving the CCP:

- Additional 2.23 million gross square feet to meet instructional, research, and workplace space needs.
- Additional 2,000 new beds (including ~1,500 new beds targeting first-year students and another ~500 semi-suite beds serving as swing space for renovations. This need does not include the new 800+ beds facility currently in design.).
- Expand all-you-care-to-eat dining capacity; first-year demand alone will drive a need for another 685+ seats of AYCTE capacity, or approximately 36,000 gross square feet of space.
- Approximately 5,400 gross square feet of retail dining.
- Additional indoor recreational spaces: 27,400 net assignable square feet (ASF) for weight and fitness, 12,430 ASF for group fitness activities, seven additional indoor jogging lanes, and four additional indoor courts (basketball, racquetball, volleyball, and roller hockey).
- Additional outdoor recreational spaces: two basketball courts and four fields.
- Replacement of four tennis and two basketball recreational courts that are currently on Peters Parking Deck.
- One NCAA-sized soccer field and one hockey field.
- A potential esports arena.
- A one-stop-shop health services building.
- No net new parking.
- Increased alternative mobility options and reliable transit services.
- A car-free campus core; and pedestrian- and bike-friendly campus.
- Embodiment of ecological stormwater design principles and stormwater runoff reduction to pre-development conditions.
- Additional 20% of campus land dedicated to ecological performance, and an increase in campus tree canopy.
- A new energy plant to support the added development on campus and ongoing maintenance of existing utilities infrastructure.

In conversations with the campus and community stakeholders, these additional needs and aspirations were expressed. While some of these are addressed in the CCP, others should be addressed as Georgia Tech conducts detailed district plans, programming, renovations, and additional enhancements to campus facilities and grounds:

- Campus welcome center/visitor center.
- Outreach spaces dispersed throughout the campus to host well-being-related activities.
- .A kitchen to teach healthy cooking habits.
- Indoor and outdoor spaces throughout the campus to serve as a space for students to connect to each other via interactive activities (eg. Lego building, musician's network performance space and lounge.).
- Outdoor spaces across campus to gather, play, support wellness.
- Four to six new affinity group houses.
- Spaces to support new startsups and business incubation.
- A facility that is open and welcoming to the community with community-facing programs.
- Swing spaces to facilitate renovations.
- Spaces to accommodate a breadth of physical and mental wellness activities: dance, yoga, tai chi, cricket, bocce, etc.
- Inclusive spaces campuswide: gender neutral restrooms, wellness rooms, mothers' rooms, prayer rooms, etc.

These programmatic and facilities needs further inform investments needed in campus infrastructure and grounds to create welcoming, safe, and synergistic campus experiences.

4

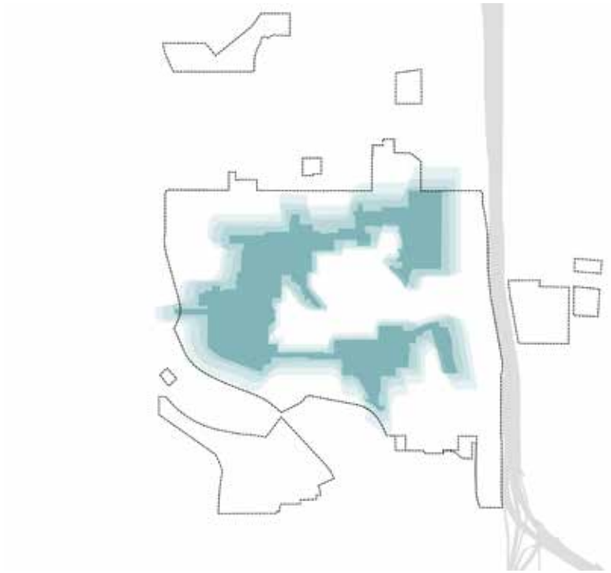
Comprehensive Campus Plan Recommendations

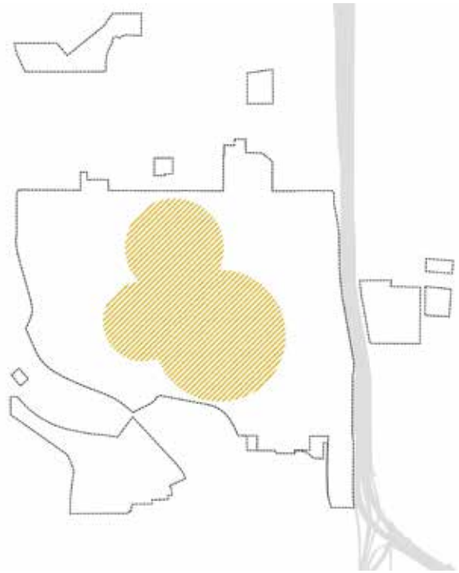
Chapter 4 describes the big ideas and recommendations of the Comprehensive Campus Plan, as well as key next steps to be undertaken to identify priorities for projects that will guide near- and long-term capital investments.

◀ *Top to bottom:*
Artist renderings capturing CCP recommended concept for Peters Park, Hemphill Woods Walk, and Marietta Street.

4.1 Big Ideas

Five big ideas define the core concepts of the Comprehensive Campus Plan





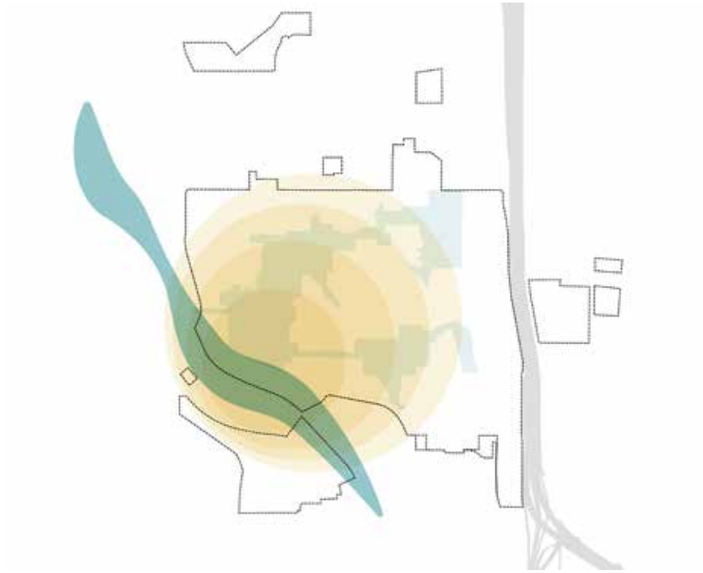
1. Harmonize With and Expand EcoCommons

The 2011 Landscape Master Plan put forth the "idea that the landscape could perform valuable ecological work for the Institute, and established the EcoCommons as a permanent open space in the heart of campus for stormwater management and outdoor recreation." Over the last decade, the EcoCommons has profoundly shaped the campus and the CCP recommends that it should continue to do so. The EcoCommons concept is carried forth into the CCP as a key driver shaping the core campus and provides a framework for development of the open spaces and built environment in and around it.

2. Densify the Core

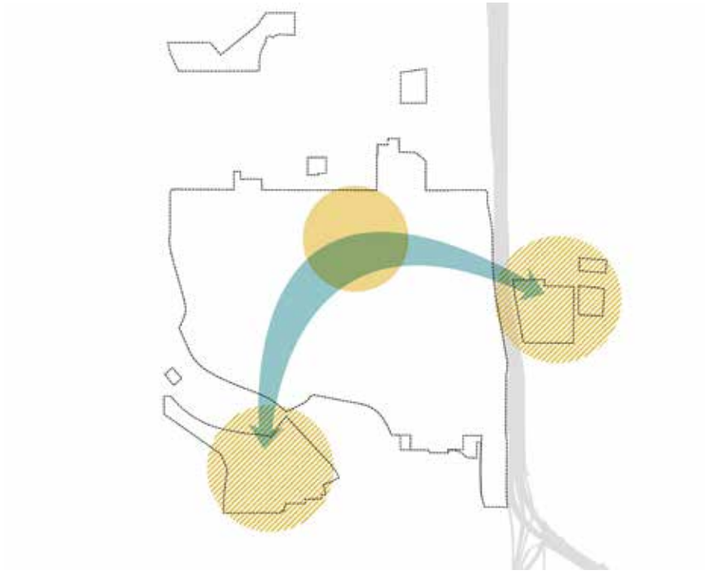
With the implementation of the EcoCommons on the Georgia Tech campus, a significant green space has been established that provides a counter to the built environment. While the Institute has eliminated several surface parking lots from the core campus, a few that still remain offer the opportunity to be used as development sites. These lots should be the primary locations for the next wave of development on the campus and should consider vertical density beyond five stories, potentially eight to 12, thus reinforcing the goal of a compact, walkable campus environment. The design of the sites and proposed open space around these new facilities should follow Ecological Performance principles recommended in the 2011 Landscape Master Plan.

◀ *Aerial view of the Campanile Fountain Plaza, in front of the John Lewis Student Center and Stamps Commons.*



3. Heal the Ridge

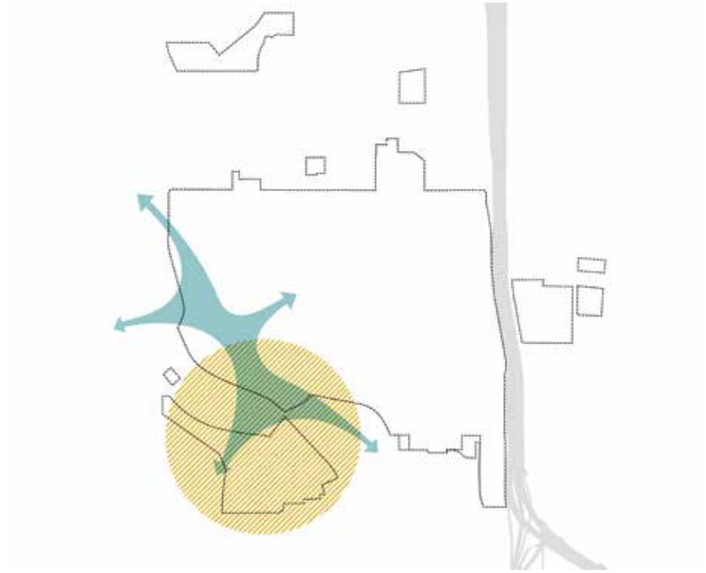
The topographic ridge on the west side of campus, roughly following Marietta Street, is the divide of the watershed that covers most of the Georgia Tech campus. Much of the development of the EcoCommons system has been in response to the watershed and the increasing levels of surface water runoff from a growing campus. This ridge is an important element of the watershed and should become a key component of the campus hydrological system. Surface runoff at a ridge point should be handled onsite and not transmitted downstream, north or south, in order to conserve watershed capacity for rainfall events. The goal of the CCP is to transform much of the ridge into a series of active and passive open spaces, integrating athletics and recreation programmatic needs, and limiting new development. In addition, the ridge historically has been a social, racial, and cultural divide in the Atlanta community. By rethinking the role of the ridge as an ecological resource and social seam between campus and community, the CCP seeks to break down historic barriers and stitch together the geographic considerations that divide them.



4. Connect Science Square, Biosciences, and Tech Square

Georgia Tech has invested in establishing a strong biosciences district in the campus that supports its mission and vision. The Institute's desire to partner with the Atlanta business community led to the investment in creating Tech Square, in Midtown, bridging the I-75/85 divide. The most recent investment in Science Square (led by Trammell Crow, in collaboration with Georgia Tech), establishes another life sciences research center on the southwest side of campus.

While these are three distinct areas of innovation on campus, they share faculty, students, and researchers as a collaborative enterprise that requires personnel interaction and interdisciplinary collaboration. The CCP seeks ways to better connect these three distinct areas through physical infrastructure and enhanced mobility. Creating better access among these neighborhoods makes it easier to share resources, and will amplify the research impact across the Institute.



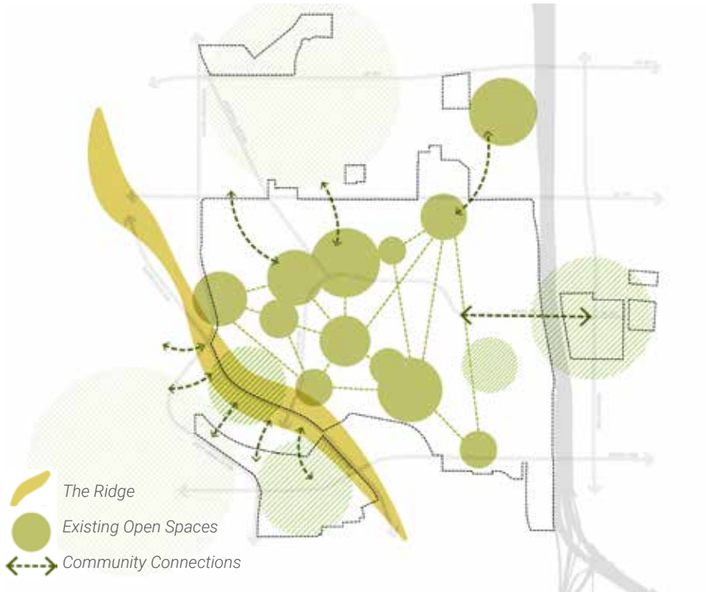
5. "Anchor" Southwest Community Edge

Much of the growth on the GT campus has taken place to the north, east, and south. The west edge of campus has largely been a repository for Institute uses that were deemed inappropriate for the core campus. As the campus has continued to infill and densify, land has become a precious resource. As a result, growth to the west has been the focus of current campus development and will continue to be, especially with the new thinking about the ridge. In addition, growth and development around the campus have been increasing, especially on the west side, replacing the large, low-scale industrial rail-oriented development that has occurred in recent years.

The southwest side of the campus now has the ability, through thoughtful planned growth, to establish an anchor between campus and community, providing uses that are inviting and supportive of the adjoining historic neighborhoods, the new contemporary mixed-use neighborhoods, and in support of the programmatic needs and activities of a growing institution.

4.2 Campus Plan Framework

Landscape Open Space

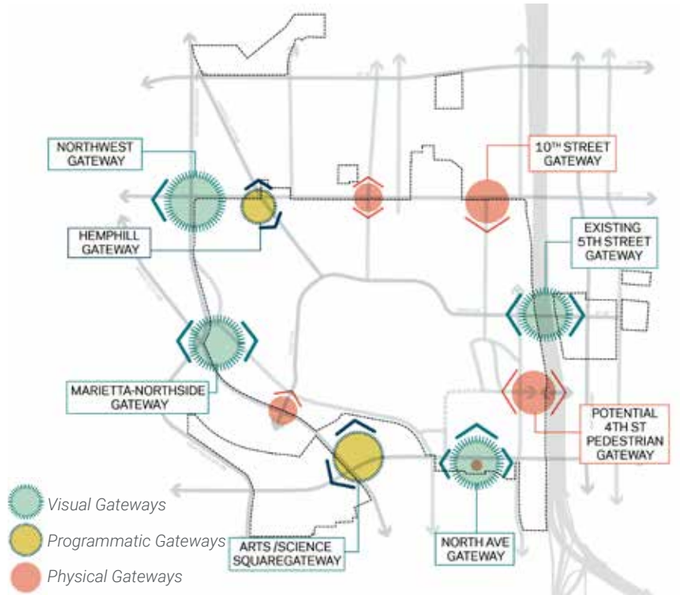


Since the 2004 Campus Plan and 2011 Landscape Master Plan, Georgia Tech has developed an attractive, ecologically responsive, and sustainable open space system — the EcoCommons. Georgia Tech's open space system, while comprehensive in scope, is composed of a series of distinct spaces and campus experiences. The CCP seeks to ***expand on the existing ecological landscape spaces and incorporate new programmatic open spaces designed to support the future growth and needs of the campus.*** Key new open spaces include the Ridge District, the Hemphill/Ferst Woods, the President's House wooded wetlands, Instructional Center Lawn (IC Lawn) expansion, restoring Peters Park, and a new urban space in Tech Square. The CCP also considers emerging and potential open space connections between the campus and its surrounding neighborhoods.

Stormwater

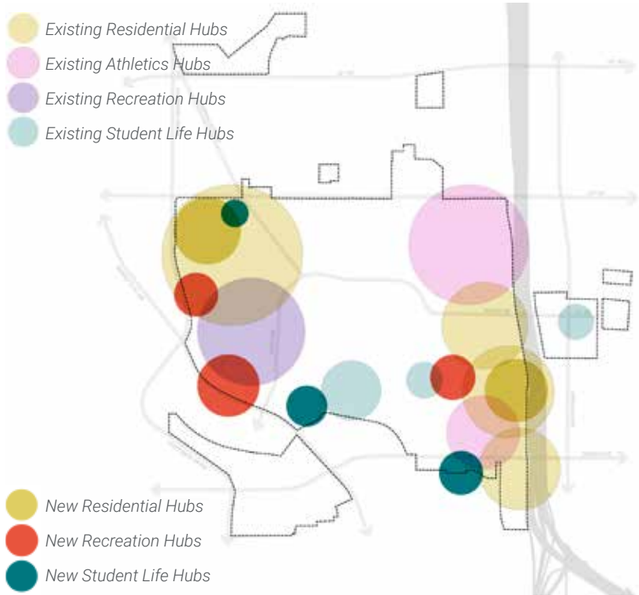
The CCP seeks to ***expand campus stormwater management and ecological performance infrastructure.*** Building on this framework, the CCP focuses on the topographic ridge on the west side of the campus, which establishes the upper reaches of the campus watershed. This ridge is currently developed and primarily covered with impervious surfaces. The CCP proposes that the ridge be redeveloped to incorporate more open spaces, an increase in pervious surfaces, integration of athletic and recreation programs that support the needs of the campus, and strategic town/gown development that supports the needs of the campus and community. In addition, the eastern campus watershed that runs from Bobby Dodd Stadium to 10th Street is another focus of the CCP that includes restoring Peters Park back to an attractive and ecologically productive open space, incorporating stormwater retention and potential to harvest blackwater heat recovery from the City of Atlanta sanitary system, which runs through this area.

Campus Gateways



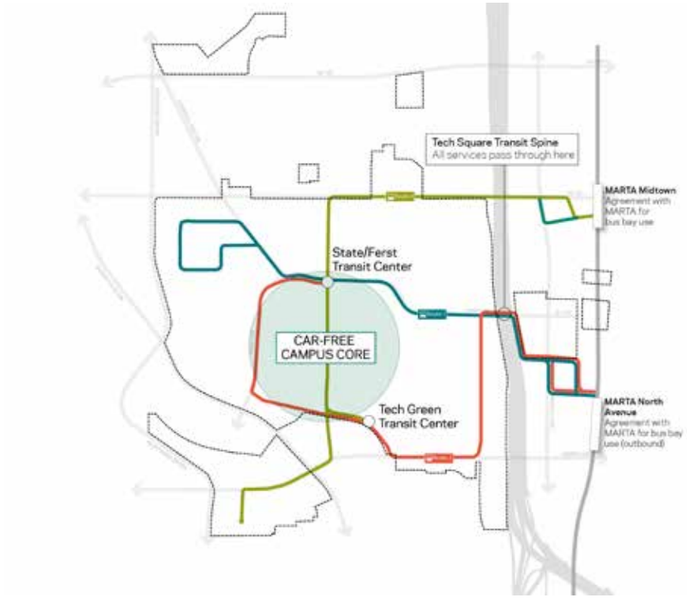
A gateway signifies a landmark, a special point of entry into any space that can be physical, programmatic, or visual in nature. Gateway experiences into the campus (such as Fifth Street and North Avenue entrances) are lacking on the north and west campus edges. Community members ***expressed the need for more pronounced entry experiences to make the campus welcoming, both physically and programmatically.*** With this feedback, the CCP seeks to enhance existing gateways and establish new ones that invite the community and students onto the campus. These include the North Avenue Gateway, the Bankhead Bridge and Westside Community Bridge connections, the Third Street tunnel and pedestrian bridge on Fourth Street, as well as the new community hub at the renewed Paper Tricentennial Building on Hemphill Avenue.

Student Life



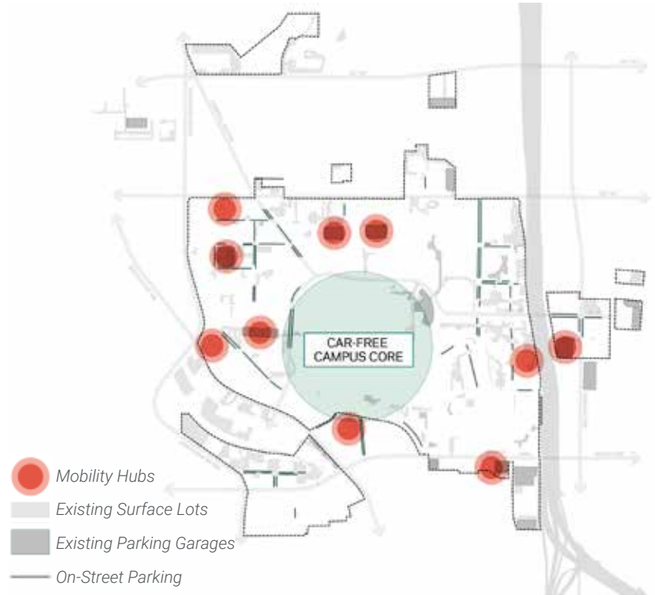
Student life experiences occur across the Georgia Tech campus and especially in student residential areas, recreation and athletic facilities, and in student-centered facilities, such as the Campus Recreation Center, John Lewis Student Center, and Price Gilbert Memorial Library. It also occurs in the many programmed open spaces, such as Tech Green, Stamps Filed, and Couch Park/Burger Bowl. The CCP seeks to ***expand and reinforce student life activities in existing facilities and create new focus for student activities*** along the Ridge District, in the restored Peters Park, in the expansion of the Instructional Center Lawn, and in the new North Avenue gateway.

Mobility | Transit



Tha campus currently offers mobility services, including but not limited to buses and shuttles, however, the existing model exhibits redundancies that hamper the full and efficient use of these services. The CCP emphasizes the need for Georgia Tech to continue its progress toward being a more multimodal campus centered on a car-free core where pedestrians have priority. Two key concepts to achieve this goal are: ***shifting campus transportation services to a more streamlined operational plan*** that offers greater levels of transit service frequency in locations with a high density of on-campus travel demand; and ***emphasizing other forms of transportation,*** especially micromobility and cycling, to continue to meet the expected growth in travel demand.

Mobility | Parking



Supporting a growing Georgia Tech community population within the existing physical campus footprint requires new approaches to mobility and parking by ***rethinking the campus's parking facilities to concentrate supply to a smaller number of structured parking garages and gradually replacing surface lots and land-inefficient parking structures with higher-density garages.*** Several of these garages are envisioned as mobility hubs to take on more integrated multimodal functionsality to provide space for bicycles, micromobility devices, transit vehicles, and other services like shared-ride transportation, while supporting campus parking needs.

4.3 Overarching Plan Recommendations

The Comprehensive Campus Plan provides the framework for successful execution of the Institute's 10-year strategic plan and campus needs in response to a growing campus population while respecting campus-community aspirations.

The recommendations described herein are not intended to be prescriptive, but rather flexible, goal-based criteria that serve as a decision-making framework — decisions such as where best to locate specific emerging program needs or what investments in campus infrastructure and grounds will create a welcoming, safe, and synergistic campus experience. Ultimately, the CCP recommendations offer a campuswide frame of reference to guide the Institute's capital plan.

◀ *The campus over the next decade and beyond, as envisioned by the Comprehensive Campus Plan.*

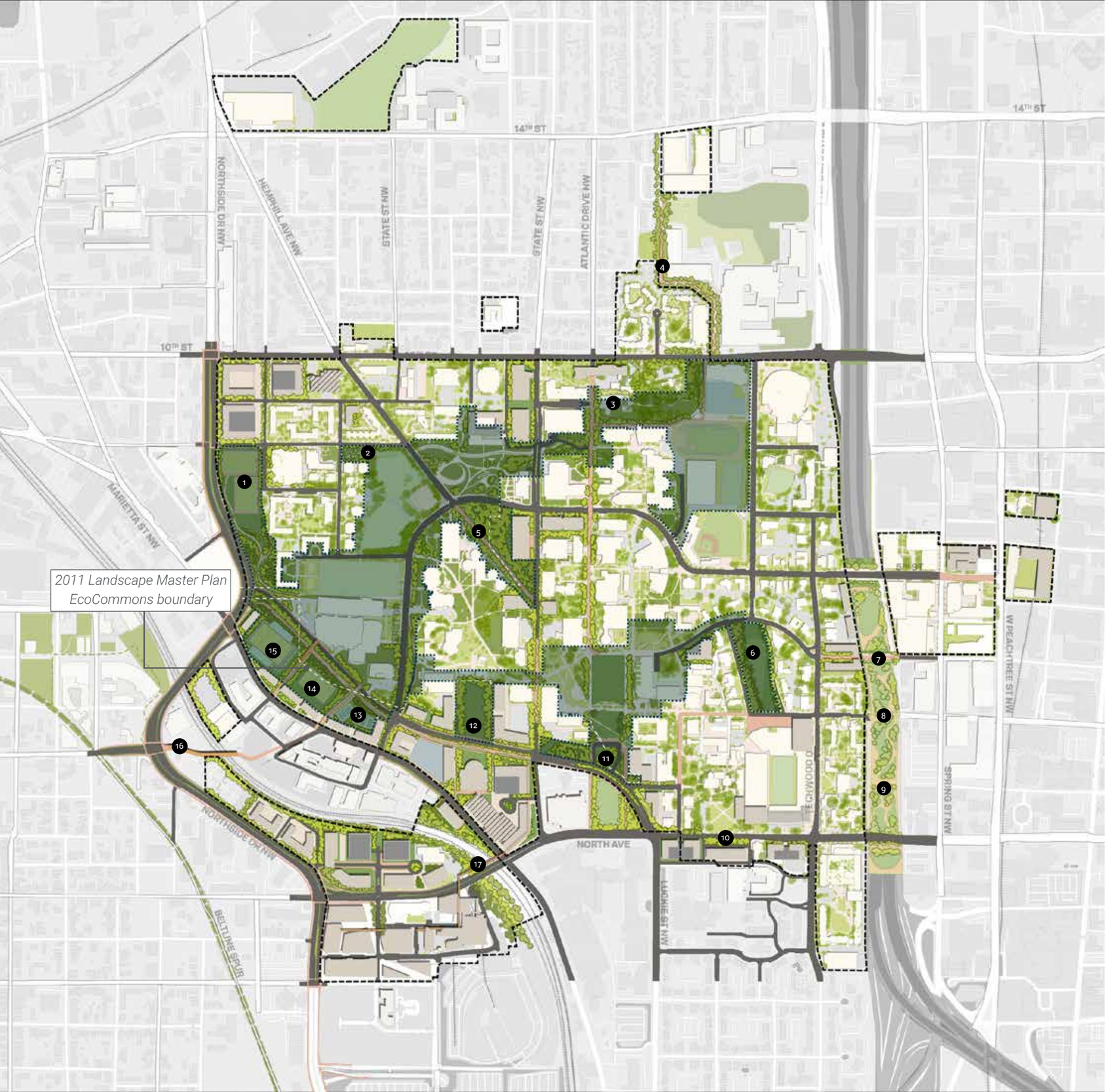
Overarching Recommendations: Campus Buildings

Legend

1. *Expanded student housing in the northwest campus quadrant.*
2. *Community hub in the renovated Paper Tricentennial Building.*
3. *Programmable office/admin space over Dalney Street Parking Deck.*
4. *Research infill buildings.*
5. *Planned EBB II facility.*
6. *Academic/research infill buildings in car-free campus core.*
7. *Academic/research infill building.*
8. *East Campus student housing redevelopment with underground parking.*
9. *Planned Tech Square development.*
10. *Biltmore expansion/Academy of Medicine parking lot redevelopment.*
11. *Planned Student Athlete Performance Center.*
12. *Proposed GTAA infill development at Bobby Dodd Stadium.*
13. *North Avenue Gateway development and Welcome Center.*
14. *Arts Square.*
15. *New Performing Arts Center.*
16. *Proposed energy plant.*
17. *New infill development.*
18. *NARA expansion.*
19. *Planned Science Square development.*
20. *New infill development.*
21. *Marietta Street town/gown development.*
22. *NCAA stadium with structured parking underneath.*

- *Academic, research, and workplace spaces.*
- *Other campus needs(student services, campus support, non-first year housing, admin, Arts Square).*
- *First-year student housing.*
- *Parking.*

◀ *Illustrative campus plan annotating key campus building recommendations.*



Overarching Recommendations: Campus Landscape Open Spaces

Legend

1. *Multipurpose fields.*
2. *Expanded EcoCommons boundary.*
3. *President's house wooded wetlands.*
4. *Campus trail connection to 14th Street.*
5. *Hemphill Ave redesigned as a pedestrian street b/w Ferst Dr and State St.*
6. *Peters Park as a community open space with performative landscape.*
7. *4th Street pedestrian bridge connection to Midtown.*
8. *Renewed 3rd Street tunnel connection to Midtown.*
9. *Partial Midtown Connector Plan.*
10. *Tech Tower Lawn extension to new Welcome Center.*
11. *Tech Green extension with a new mobility hub on Tech Parkway.*
12. *IC Lawn extension over the Student Center garage site.*
13. *Basketball and tennis courts.*
14. *Multipurpose field.*
15. *NCAA women's field hockey or soccer field.*
16. *Bankhead Bridge connection.*
17. *Westside Community Bridge connection.*

New EcoCommons boundary.

Illustrative campus plan annotating key campus landscape open space recommendations.

4.4 Campus Zones, Land Use Guidelines, and Key Recommendations

The CCP delineates the campus into a series of zones in support of strategic, programmatic, and campus needs and provides land use recommendations and development guidelines to ensure alignment with the CCP vision.

The campus zones acknowledge the well-established campus precincts that have developed over time. These zones are:

- Historic Core.
- Academic Core.
- Affinity Group Housing and East Residential Area.
- Northwest Residential District.
- West Campus Recreation District.
- Engineering Biosciences and Research District.
- North Campus Athletics.
- Bobby Dodd Stadium.
- NARA.
- 10th Street Residential.
- 14th Street Corridor.

The CCP identifies four emerging new districts as critical campus growth areas. These zones are:

- North Avenue District.
- Arts Square.
- Science Square.
- The Marietta Ridge District.

CCP-recommended campus zoning map.

Key recommendations for each zone are summarized on the following pages. However, two overarching criteria apply to all areas of the campus:

1. The campus facilities represent a forward-pacing Institute with nearly 140 years of experience developing a living museum of current best practices and construction technology, rooted in time and place. All future buildings, across all the zones, and their accompanying architecture types will continue to represent this proven architectural strategy.
2. The design of the sites and proposed open space around these new facilities should follow the Ecological Performance principles recommended in the 2011 Landscape Master Plan.

Academic Core

Land Use Characteristics and Development Guidelines

The academic core provides a collection of diverse learning environments and buildings that reflect architectural styles of their times in an attractive, welcoming, and varied campus landscape. While much of the academic core is built, there are opportunities for growth on existing surface parking lots, through redevelopment of several buildings that no longer serve their academic purpose and through light and heavy renovation.

New buildings should incorporate a high level of permeability at the ground level for activation and transparency at the upper levels overlooking the open space. The design of the sites and proposed open space around these new facilities should further the EcoCommons concept.

Densification

The Comprehensive Campus Plan recommends densification of the Academic Core and taking advantage of and expanding the investment in the EcoCommons. Several building sites are also available in the Academic Core to accommodate new research/academic facilities.

Illustrative Academic Core precinct plan. ▶

These sites are currently occupied by surface parking along Hemphill Avenue and Ferst Drive, and with the goal of eliminating parking from the campus core, they are logical candidates for growth. Being adjacent to significant open spaces makes these sites prime candidates for building heights greater than five stories. The existing woodlands at the intersection of Ferst Drive and Hemphill Avenue should continue to be preserved even as the site around it develops.

Pedestrian and Bike-Friendly Core

Hemphill Avenue from Ferst Drive to Tech Lawn should be redesigned as a primarily pedestrian/bike route, while still accommodating limited service vehicle/ADA access to the adjoining buildings. Similarly, State Street should be redesigned to serve as a campus connector for pedestrian/bike/service/transit vehicle access from Tenth Street to North Avenue. Creating a new performing arts space as part of Arts Square allows for the redevelopment of the Ferst Center for the Arts, which will further facilitate the completion of State Street as a primary north/south connecting route through campus.

IC Lawn Expansion and Student-Centric Facilities

The removal of the Student Center Parking Deck allows for the IC Lawn and campus open space to expand to the south across Tech Parkway to Arts Square.

This new open space along with the removal of Ferst Drive provides the opportunity for new buildings that frame the open space and front onto Tech Parkway, reinforcing and activating the street. It will also provide an important open space anchor to the feature building (potentially a performing arts center) proposed in the Arts Square zone. The buildings framing the expanded IC Lawn should focus on student-centric programs and activities due to their proximity to the Joh Lewis Student Center, Student Services, and the Exhibition Hall.

View over IC Lawn and Expansion, looking south at Arts Square and Science Square/NARA. ▶

View along Hemphill Walk, looking northwest toward Hemphill Woods.

Engineering Biosciences and Research District

Land Use Characteristics and Development Guidelines

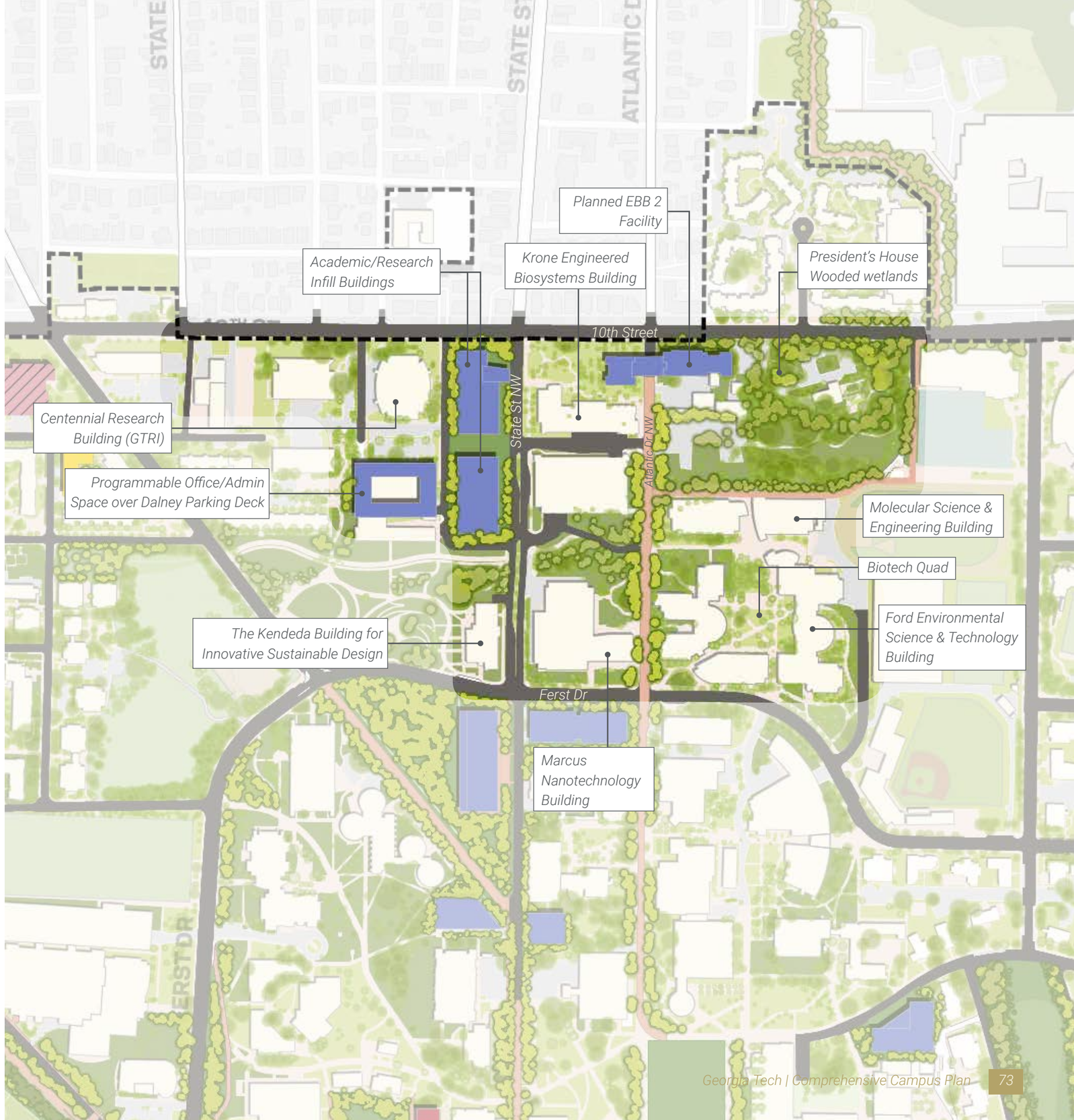
This district represents some of the newer and more advanced science and research buildings on campus. There are still several surface parking lots in this area that provide growth opportunities, especially around engineering and the biosciences. EBB2 is the next building investment in this area and is already in planning and pre-design. Additional building sites that are currently vacant or surface parking are available for future EBB-type buildings.

Science and research focused buildings should have a high degree of permeability at the ground level for activation and transparency at the upper levels to take advantage of views overlooking the adjoining streets and open spaces. These new buildings are ideally suited for heights over five stories.

The design of the sites and proposed open space around these new facilities should further enhance the EcoCommons concepts.

Densification

The Comprehensive Campus Plan recommends densification of the Engineering Biosciences and Research District, taking advantage of the investment in the EcoCommons and its expansion to the northeast/ President's House. There are viable plots well-suited for future EBB-type buildings where current available land or surface parking lots exist. The CCP also recommends building on top of the Dalney Parking Deck, which has been constructed to accommodate additional floors of programmable space.



Illustrative Engineering Biosciences and Research District precinct plan.

Affinity Group Housing and East Campus Residential

Land Use Characteristics and Development Opportunities

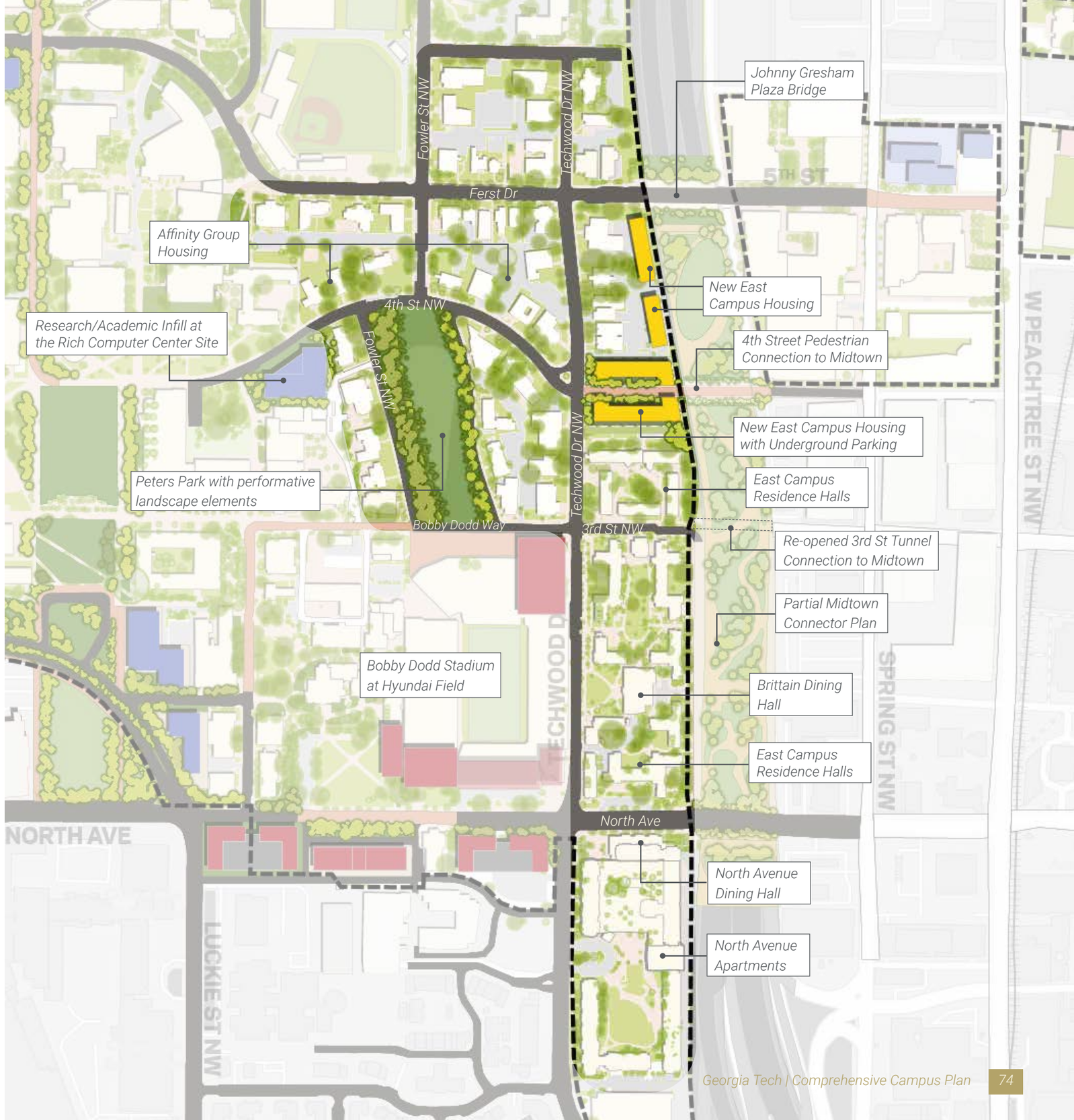
The East Campus residential area along I-75/85 is mostly built out and includes affinity group housing, new and recently renovated student housing, and Peters Parking Deck. There is limited availability for further redevelopment. The affinity group housing area that includes Greek Life and faith-based accommodations is likely to remain intact, although there continues to be the need for affinity group housing.

New Student Housing

The CCP also recommends new student housing to replace the existing Fourth Street Apartments; Golden House, Stein House, Gray House, and Hayes House in the event that the Midtown Connector Project moves forward (see below). This new student housing replaces existing housing, but could be built taller to alleviate future student housing inventory needs while helping to mitigate terminal viewsheds created by the new cap. The new housing could incorporate a new pedestrian bridge at 4th Street, providing vertical circulation, elevator and stairs, to transition from the Midtown elevation down to the Techwood Drive elevation.

Midtown Connections and Partial Midtown Connector Project (MCP)

Increased connectivity between the campus and Midtown is another goal of the CCP. In addition to the existing 5th Street connection, the plan recommends reopening the 3rd Street tunnel and creating a 4th Street pedestrian bridge (mentioned above) over I-75/85 connecting from the Tech Square parking garage into campus. The pedestrian bridge would connect into and through new student housing that would replace the existing Fourth Street Apartments; Golden House, Stein House and Hayes House.

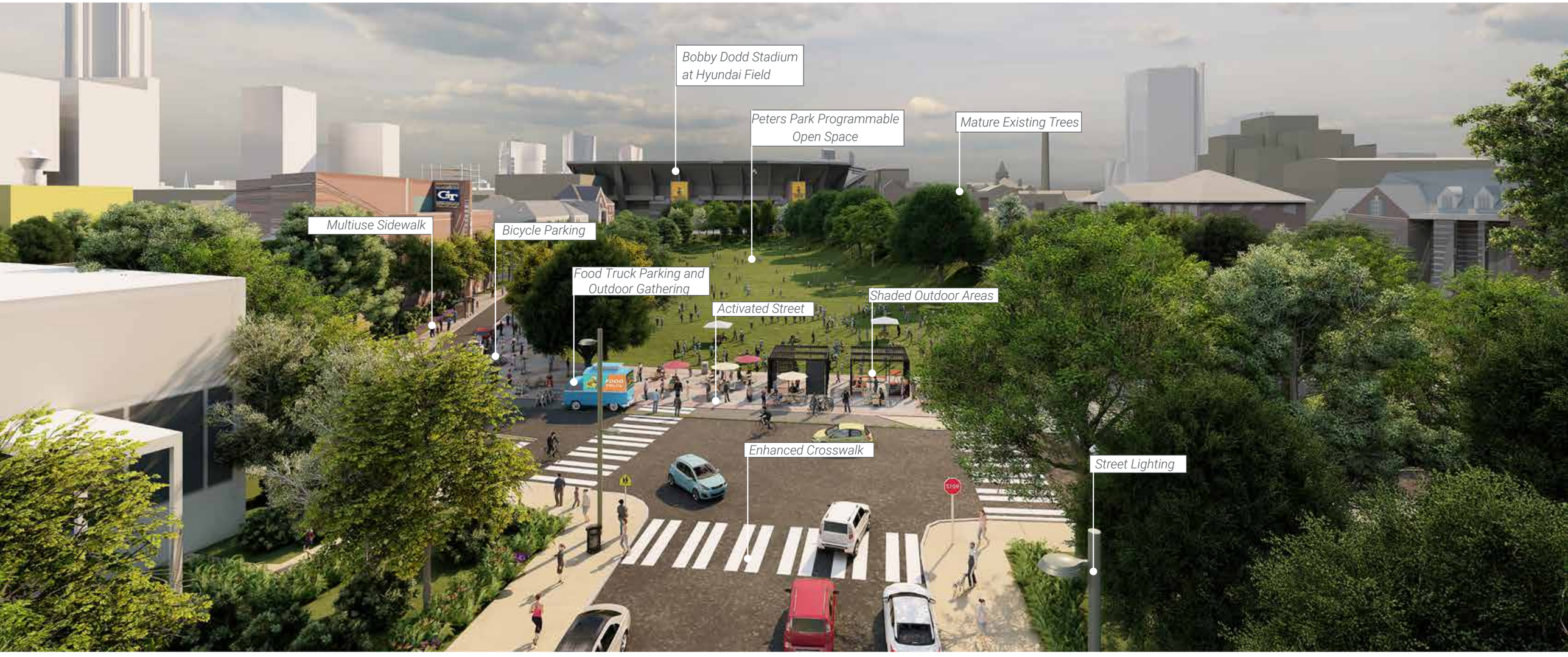


Illustrative Affinity Group Housing and East Campus Residential precinct plan.

The plan also takes into account that the proposed partial MCP, from Fifth Street to North Avenue, could possibly be implemented as a future public infrastructure project. There are significant grade change (20' +/-) issues between the proposed MCP and the campus that would need to be mitigated. Infill student housing and parking should be used to transition the grade, where possible, and a landscape buffer strategy where infill development is not possible.

Peters Park

The CCP recommends demolishing and redeveloping Peters Parking Deck as Peters Park — an active and ecologically performative landscape. By doing so, an important open space resource is created to support the undergraduate and affinity group housing that surrounds it and an overall recreation resource for the campus. In the redesign of Peters Park, care should be taken to integrate stormwater management infrastructure to support reduced runoff. Another consideration is the opportunity to tap into blackwater/greywater thermal heat recovery from the City of Atlanta sanitary sewer main that runs along the east edge of the park to serve campus heating needs through the Holland Plant. Infrastructure projects like this also provide an excellent opportunity to support Georgia Tech's "Living-Learning Laboratory" concept.



Artist renderings capturing CCP-recommended concept for Peters Park, looking south at Bobby Dodd Stadium.

Athletics: Bobby Dodd Stadium

Georgia Tech Athletic Association has plans for additional infill around the stadium perimeter to better serve their programmatic needs. The first step in this process is the ongoing planning and pre-design for the Student Athlete Performance Center in the northeast corner of the stadium at the intersection of Bobby Dodd Way and Techwood Drive. The CCP incorporates these known and anticipated projects as part of the future campus vision. Additional changes to this zone of the campus will be guided by a future Athletic Facilities Planning Study.

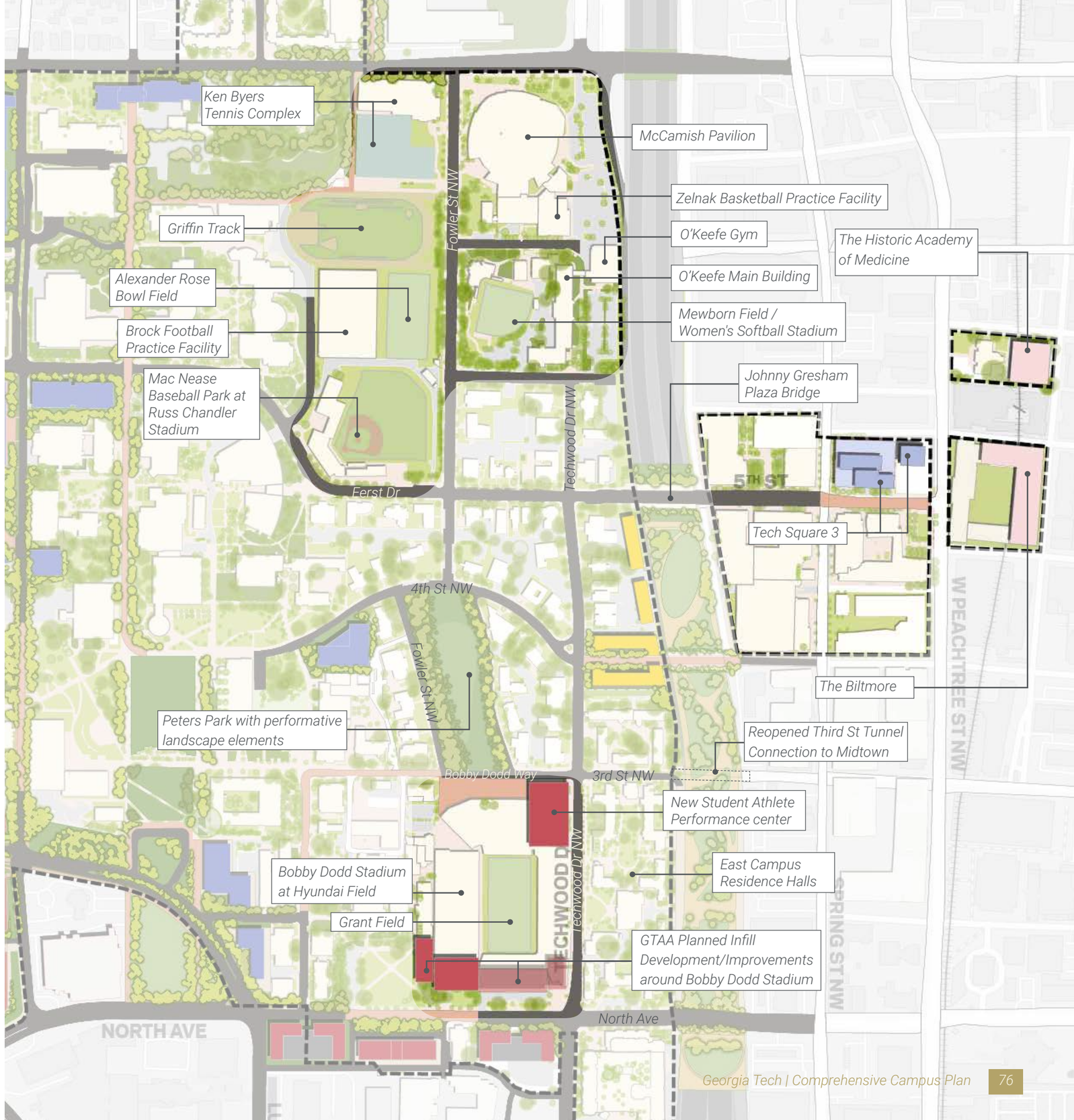
North Campus Athletics District

The North Campus Athletics District is largely built out and cannot accommodate additional programming without the redevelopment of existing facilities. However, renovation of existing athletic facilities is likely. Any changes to the facilities in this zone of the campus will be guided by a future Athletic Facilities Planning Study

Tech Square

Tech Square has provided a wonderful partnership between Georgia Tech and the Atlanta region. The Midtown setting has allowed for increased density and height, yielding a much more urban campus setting. Tech Square 3, now in construction, will be the next new building investment in this area. Future growth opportunities for mixed-use development in this area exist on currently empty and underutilized lots adjacent to the Biltmore and the Academy of Medicine sites. Ground level permeability and active uses will help to reinforce placemaking in this urban, walkable district. Upper-level building transparency will also continue to be important to the skyline of Midtown Atlanta.

Illustrative Athletics-Bobby Dodd, North Campus Athletics District, and Tech Square precinct plan. ▶



North Avenue Gateway District

Overall Characteristics and Development Guidelines

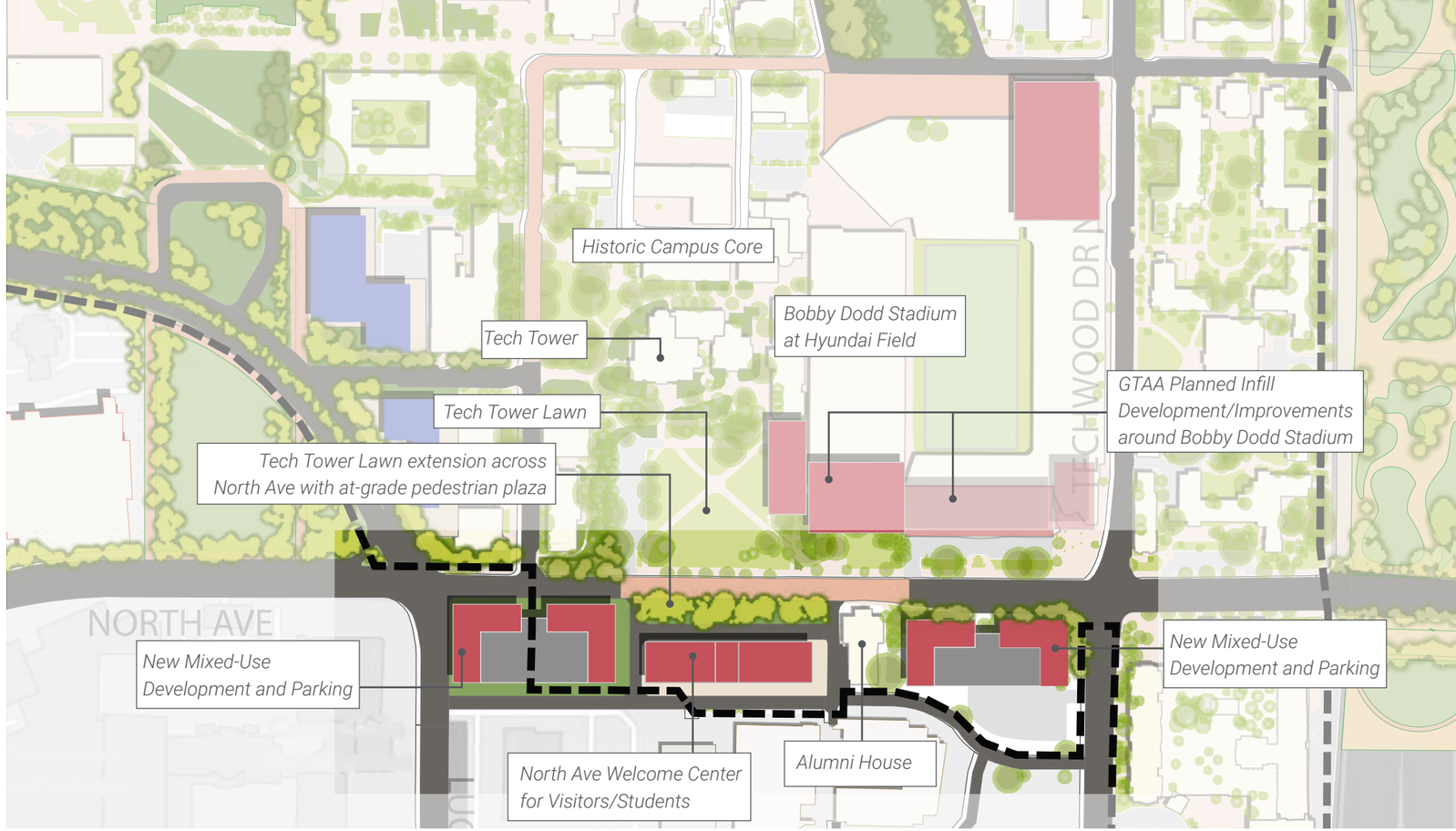
North Avenue was once a major campus gateway. New development, in support of the campus and community, could reestablish its prominence. This restored gateway would incorporate the existing Alumni House, a new welcome center, new mixed-use residential development, and parking.

New buildings should front onto North Avenue with a permeable ground level that promotes placemaking. The Tech Tower Lawn green space should be reflected on the south side of the street as an open space amenity. Building heights could be taller than five stories to reflect the scale of Bobby Dodd Stadium, Tech Tower, and the new residential development to the south of the district.

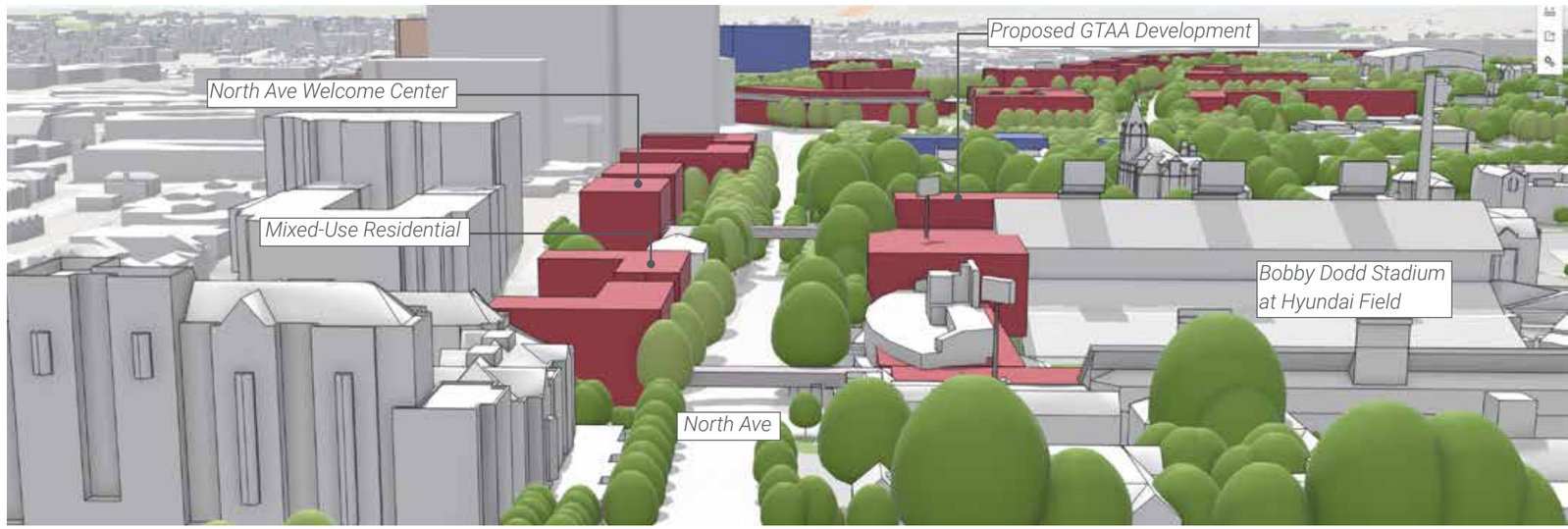
Campus Growth and Reestablished Gateway

The campus land to the south of North Avenue, on each side of the Alumni House, is occupied by the Burge Parking Deck and surface parking lots that are ripe for development. The plan recommends that the surface parking lots be redeveloped with a mix of uses that supports alumni and faculty activities, a visitor welcome center, and student housing.

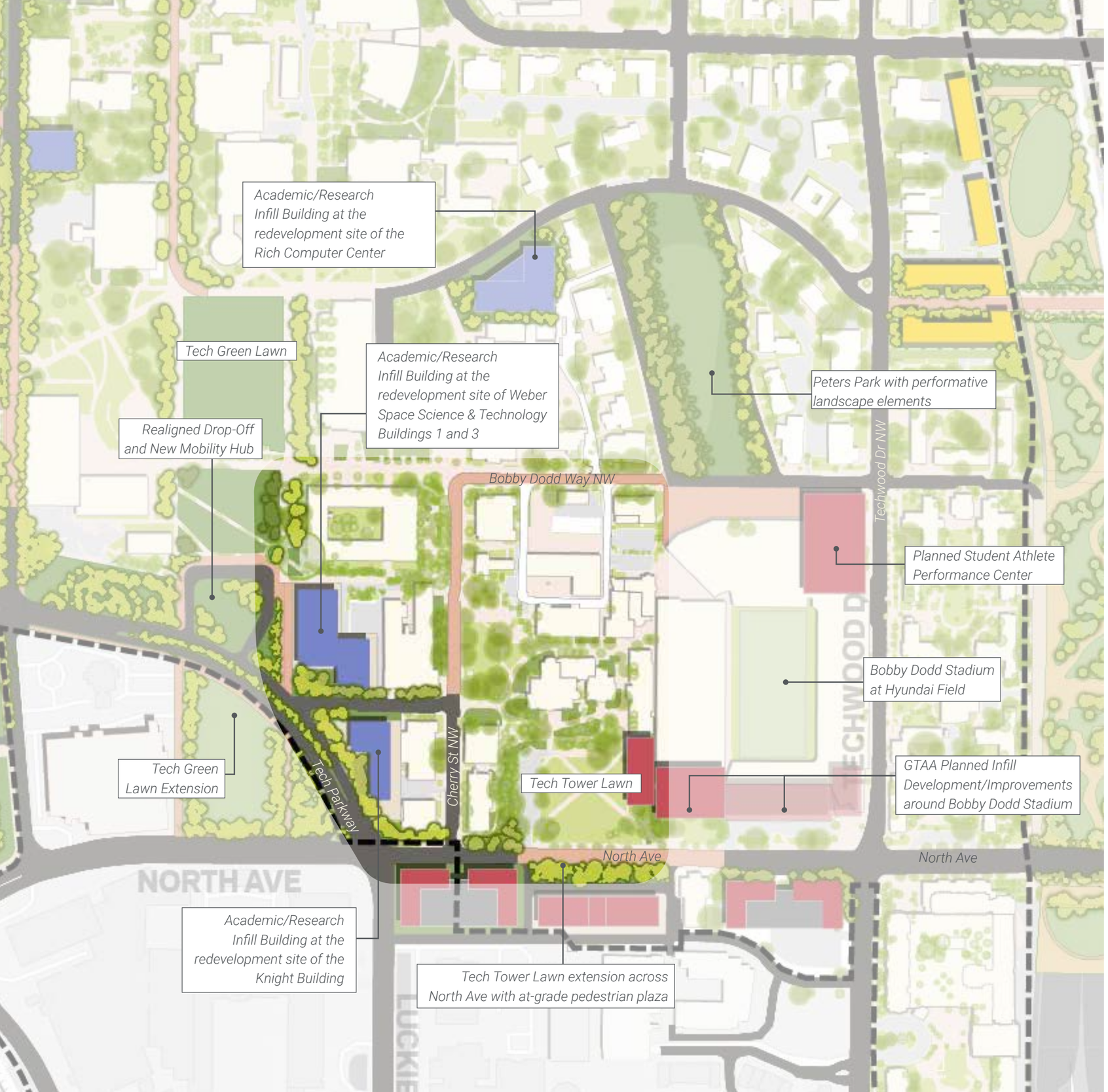
The CCP recommends restoring this area as a gateway into the campus. During game days, traffic could be managed on North Avenue and the gateway experience could be enhanced to be more attractive and safe. Enhancement of streetscape, at-grade pedestrian crossings and plazas on North Avenue, and Tech Tower Lawn landscape should be important considerations for this area.



Illustrative North Avenue Gateway precinct plan.



View along North Avenue, looking east.



Historic Core

Overall Characteristics and Development Guidelines

The historic core is a celebration of Georgia Tech's beginnings and is marked by beautiful architecture and mature open spaces that provide a unique and memorable campus experience. While some buildings in this area have outlived their usefulness and need to be replaced, the CCP anticipates most of this area will remain as is.

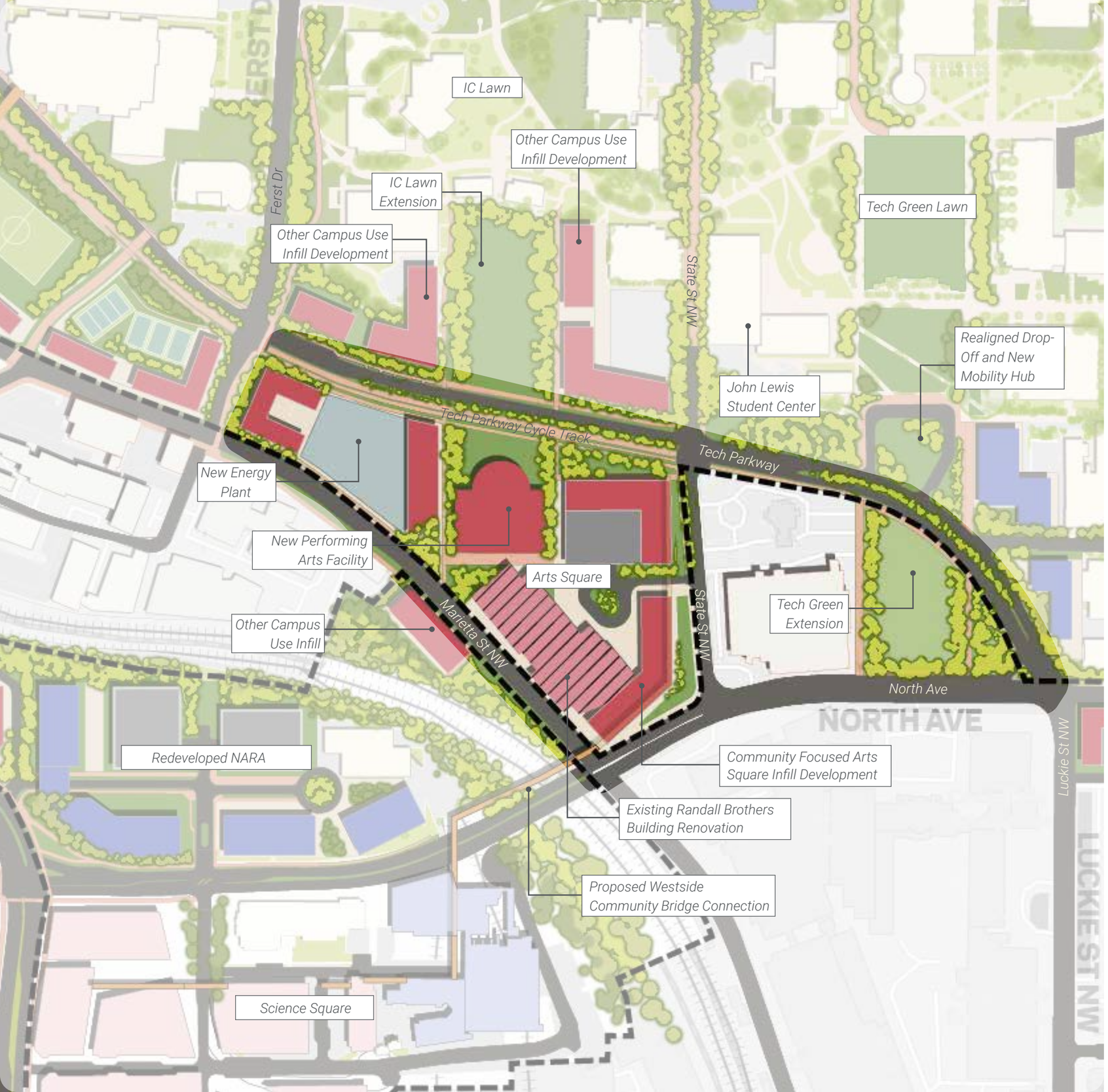
Academic Infill Opportunities

The academic buildings recommended for redevelopment include; the Rich Computer Center, Weber Science and Technology Buildings 1 and 3, and the Knight Building. New infill buildings would likely occupy similar footprints as the existing buildings, and their heights should be sensitive to the historic core. These new buildings relate strongly to the north/south open space that includes Tech Green and stretches south to the Coca-Cola campus. The west facades of these buildings should incorporate a high level of transparency and ground level permeability to activate the open space.

Reducing Vehicular Traffic and Enhancing Transit

Mobility changes in this area include closing Bobby Dodd Way from Fowler Street to Cherry Street and Cherry Street to Ferst Drive to through traffic. Reconfiguring the transit hub at Tech Green will accommodate increased transit activity.

◀ *Illustrative Historic Core precinct plan.*



Arts Square

Characteristics and Development Guidelines

Arts Square is the focus of the Randall Brothers redevelopment and will create a new campus/community interface around the arts, including academic and community programming. While initially proposed in the SxSW Plan, the CCP expands the site area to include all the land between Tech Parkway and Marietta Street to the realigned Ferst Drive.

A separate programming effort for this district will better define the reuse of the existing Randall Brothers buildings, but there is interest in retaining a portion of the existing facilities. The programming study will also define other uses that will be incorporated in this zone. The CCP recommends that building heights beyond five stories be encouraged in this district.

New Performing Arts Facility

A replacement facility for the Ferst Center and integration of a new performing arts facility in this zone is a key recommendation of the CCP. The CCP also recommends that this be a feature building on the campus that anchors Arts Square along with the expansion of the IC Lawn to its north.

Mobility Hub and Campus Gateway

A new parking structure is recommended to support Arts Square. This parking structure should be designed as a mobility hub, incorporating other mobility services and transit connectivity. Arts Square will also be a community-focused facility and gateway onto the campus. Access, public parking, amenities and services, and clear wayfinding should be integrated into the design of the facility.

New Thermal Plant

A new thermal plant is proposed within this district between Tech Parkway and Marietta Street. The energy center needs to be screened through the location of new academic buildings, perimeter walls, and landscape.

Illustrative Arts Square precinct plan.

NARA (North Avenue Research Area)

NARA has been the edge campus location to accommodate "messy" research programs that were deemed inappropriate for the core campus. With the development of Science Square, NARA will no longer be the edge of campus and its low-scale buildings are not commensurate with the land value that they occupy. As Science Square matures and is occupied, NARA should be considered for longer-term growth and redevelopment, complementing Science Square. New buildings in this zone should reflect a similar character, design, height, massing, and program as Science Square.

Several smaller sites are available for development between NARA and the GT Electrical Substation, along Northside Drive and the rail line. These buildings are more limited in size and are more suited to research support space.

Science Square

Science Square is a living-learning, mixed-use academic and research environment on 18 acres at the intersection of North Avenue and Northside Drive. Phase 1 is under construction and, with later phases, comprises 1.8 million square feet of lab/office space, 500 residential units, and 25,000 square feet of retail and parking. The development incorporates the Westside Community Bridge, connecting the Georgia Tech campus with the Vine City/English Avenue neighborhoods.

Science Square will continue to provide growth for science and research programs. The developer, in collaboration with GT, is responsible for planning, programming, and design of this mixed-use, research, commercial, and residential district.

◀ *Illustrative Science Square and NARA precinct plan.*

The Marietta Ridge District

Land Use Characteristics and Development Guidelines

The ridge along Marietta Street represents a significant growth and redevelopment opportunity for the campus with a focus on establishing more open space, serving the needs of athletics and recreation, and town/gown opportunities, uniting the campus and community.

The mixed-use, town/gown buildings along Marietta Street should reflect the scale and character of the newer buildings in the Means Street Historic District. The buildings should have a highly permeable ground plane, with active uses that create placemaking and walkability. Above ground uses should be a mix of housing typologies that serve student, faculty, and staff needs.

Expanding Ecological and Programmatic Open Spaces

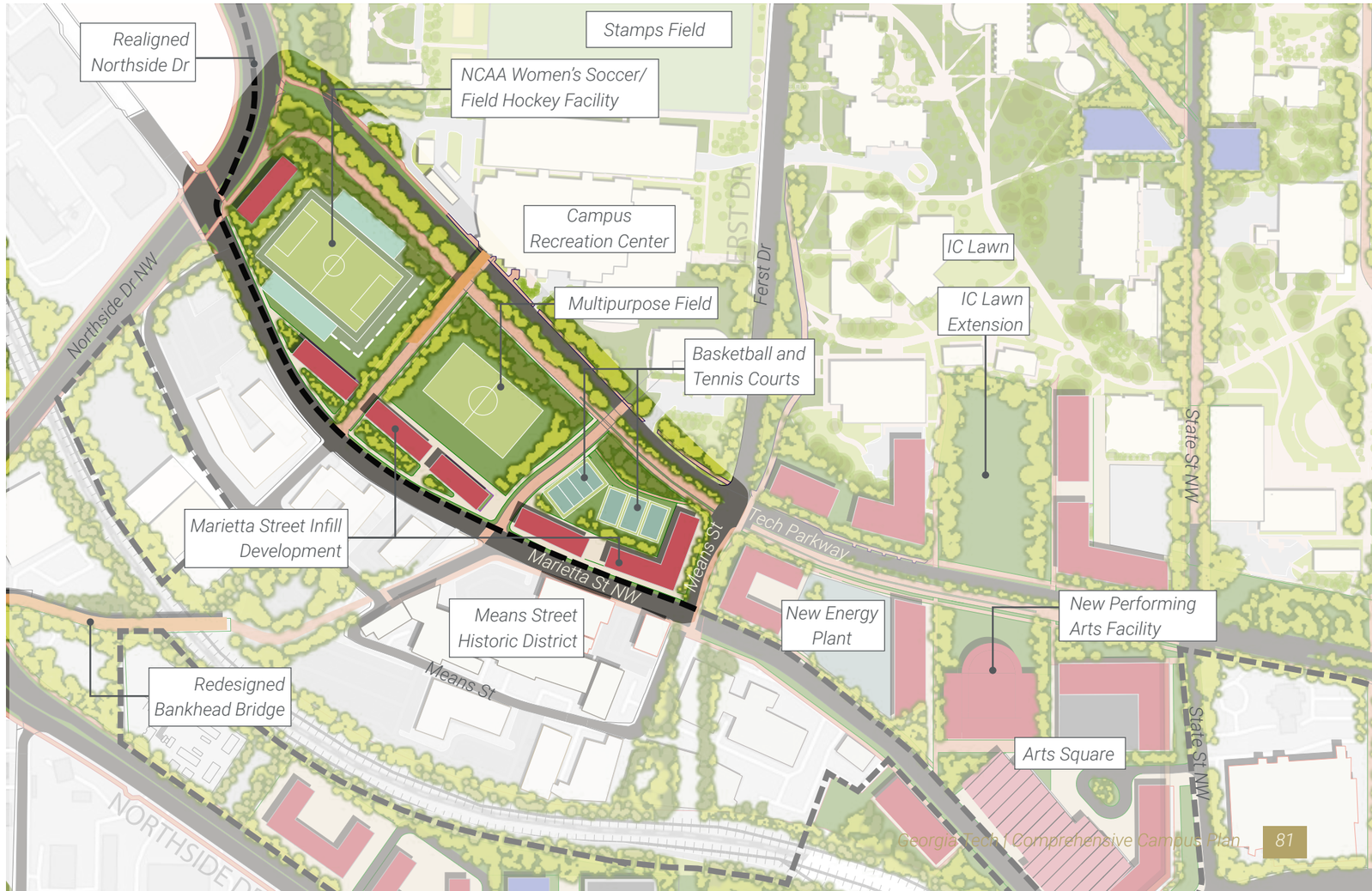
The Marietta Ridge, between Ferst Drive and Northside Drive, provides the opportunity to contribute additional green space to the campus, providing for greater stormwater absorption and programmable athletic and recreation space. The site's proximity to the Campus Recreation Center (CRC) and its existing facilities makes it ideal for expansion of athletics and recreation. While the CCP recommendations for this area are broadly focused on athletics and recreation, there has been an identified need for NCAA women's soccer and/or field hockey facilities. Due to grade changes along the ridge, the plan recommends that parking be located under the soccer facility to mitigate the grade and provide additional parking resources for the area. The parking structure is to be established as a mobility hub with easy access to Tech Parkway and Northside Drive. The soccer facility would also incorporate home and visitor seating and locker rooms. Tennis and volleyball recreation facilities have also been incorporated into this open space area.

Mixed-Use Town/Gown Development

In addition to the athletic and recreation facilities, the CCP recommends that Marietta Street integrates a mixed-use, "town/gown" development, complementing the investment in the Means Street Historic District across Marietta Street and activating the open space around the athletics and recreation field and courts. The mixed-use buildings should incorporate retail, food and beverage, and student-focused services. Residential development would occur on the upper floors with a mix of residential unit styles that could cater to faculty, staff, graduate students, etc.

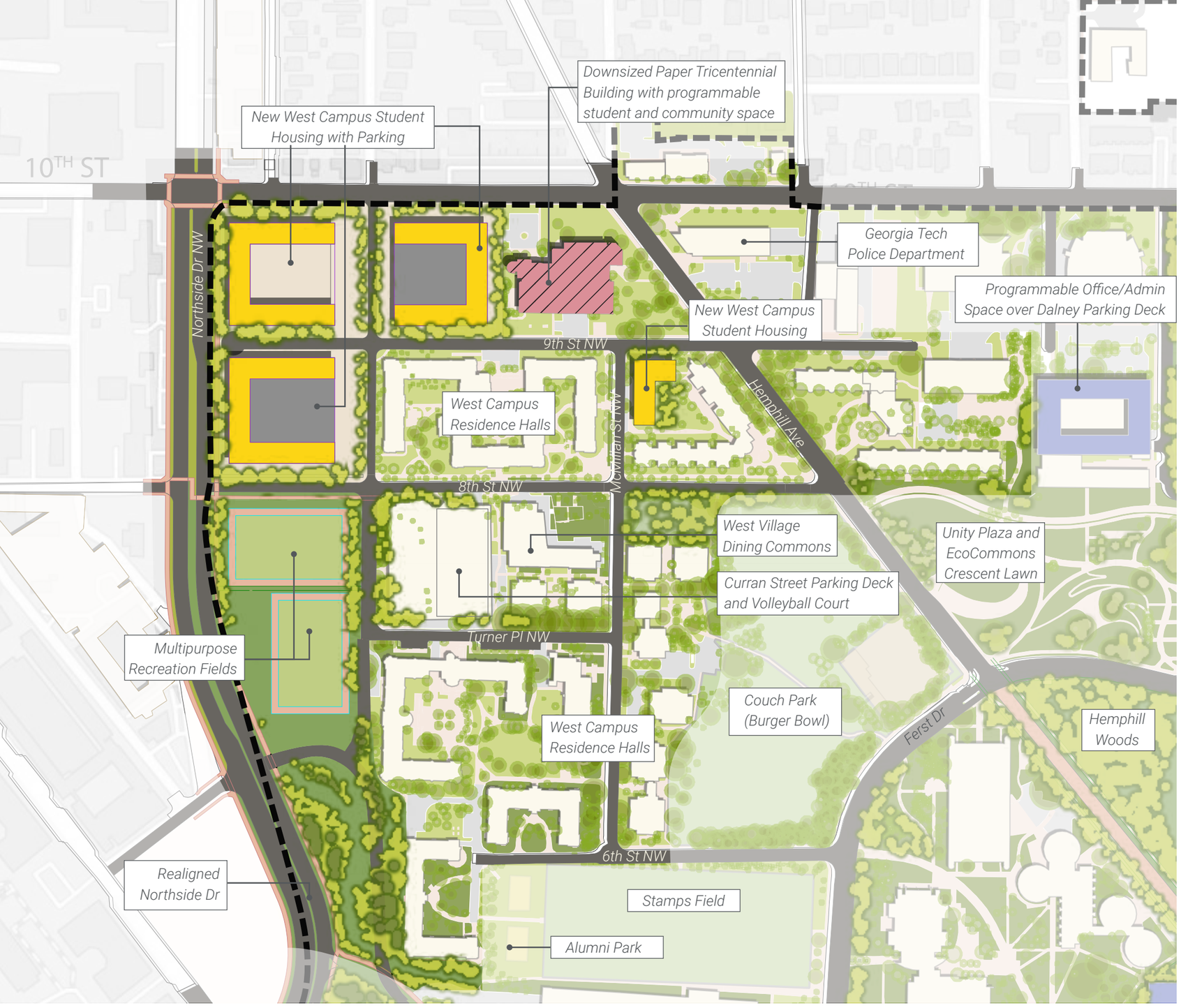
Enhanced Campus-Community Connectivity

The Bankhead Bridge connection across the rail corridor and through the historic district would continue through the Marietta Ridge open space and connect into the campus core between the CRC and the Stamps Health Services Building, providing the much needed pedestrian access from the west side of campus and connecting to the cycle track at Means Street. A pedestrian bridge from the CRC, over Tech Parkway to the Marietta Ridge facilities, is also envisioned, to easily and safely navigate the grade across the two streets.



Illustrative Marietta Ridge District precinct plan. ▶

▲ *View of the Marietta Ridge Corridor looking north.*



Illustrative Northwest Residential District and West Campus Recreation precinct plan.

Northwest Residential District

Land Use Characteristics and Development Guidelines

The northwest residential neighborhood has the capacity to accommodate additional new student residence halls through the development of surface parking lots and redevelopment of existing facilities. Additional student population will also require more services, dining, recreation, etc. that will need to be programmed within this district. The redevelopment of the Woodruff surface parking lot along Northside Drive is currently being planned to be redeveloped for a new ~800-bed facility. New buildings in this zone will need to be of a similar scale, height, and mass to this new facility.

New Residence Halls

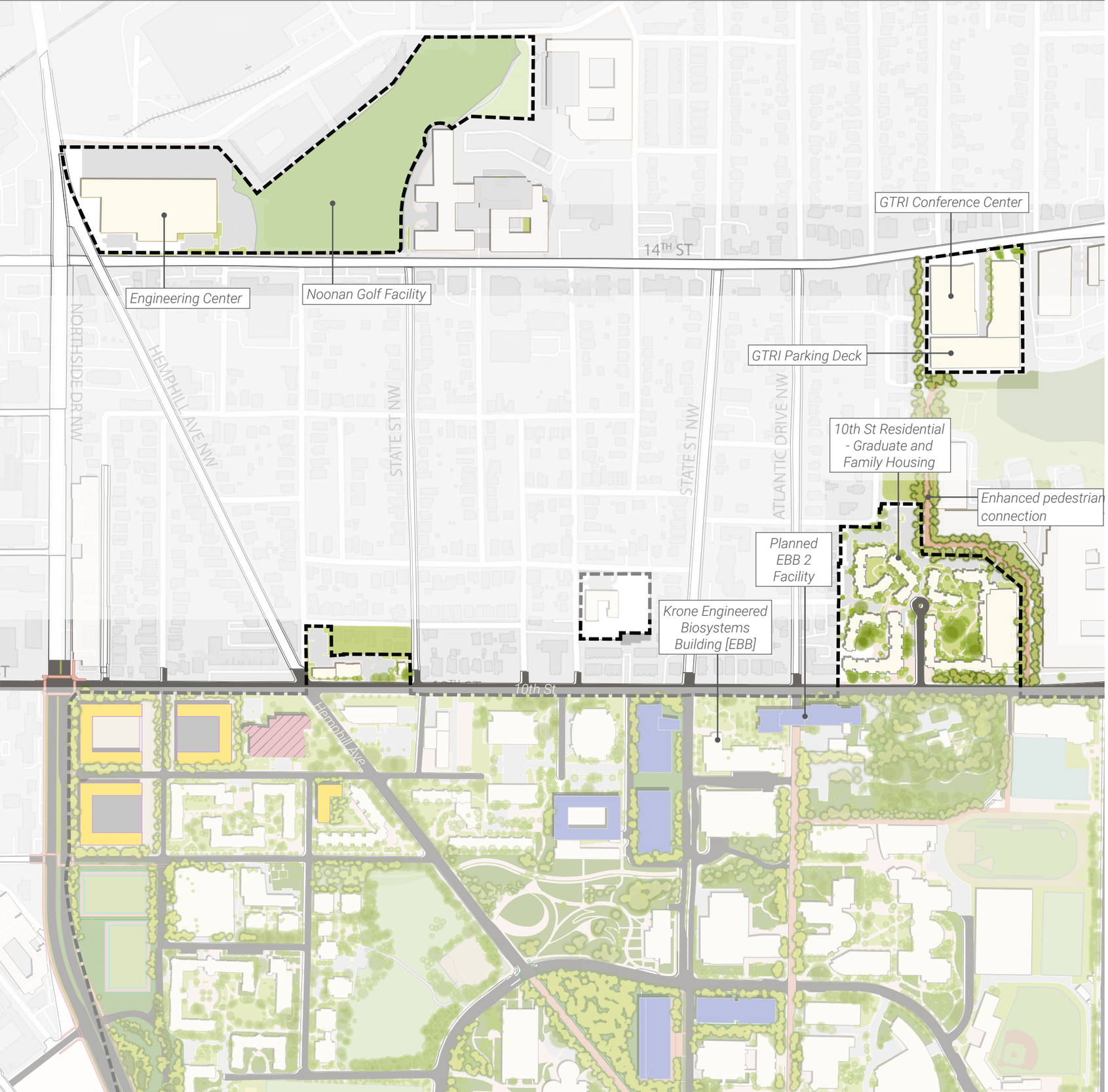
With the need to accommodate another ~2,000 beds (not including the 800+ new beds currently underway), two new residential halls will need to be built. The CCP recommends these be located along Tenth Street and a small infill site at the intersection of McMillan Street and Ninth Street. With limited expansion space on the east side of campus, the West Campus housing area and its available land will need to accommodate the bulk of this residential growth. The plan also recommends the demolition of Woodruff Residence Hall and additional recreation fields be developed in its place.

Student Activities Hub and Community Gateway

The Paper Tricentennial Building, located along 10th Street and Hemphill Avenue, is not well-suited to its current use (research) and is far removed from the academic and research activities on the rest of campus. With the increased student population in this area, the CCP recommends that this building be renovated to incorporate satellite student services, health and wellness programs, community recreational amenities, and serve the additional purpose of a campus gateway benefiting Home Park residents.

West Campus Recreation

The West Campus Recreation area, which includes the CRC, is also largely built out and cannot accommodate any future growth without the redevelopment of existing facilities. The CRC will continue to be upgraded and renovated as conditions and needs arise.



10th Street Residential

This zone of campus provides housing for graduate and family housing. It is largely built out and cannot accommodate growth unless through the redevelopment of existing facilities. The CCP does not anticipate any development in this area; however, the existing informal pedestrian connection between 10th Street and 14th Street should be formalized and enhanced, keeping pedestrian safety and convenience in mind. The CCP further recommends that Georgia Tech partner with the City of Atlanta and adjoining Home Park neighborhood to create a "complete streets" environment to enable safe access for all users — pedestrians, bicyclists, micromobility, and transit, in addition to motorists.

14th Street Corridor

Georgia Tech properties along 14th Street are used by the Georgia Tech Research Institute as well as some Georgia Tech schools and research centers. The Georgia Tech golf program also operates a golf training facility here. There are no growth opportunities on these sites and the CCP does not anticipate any changes other than change of program and renovation of existing buildings. The CCP recommends that Georgia Tech partner with the City of Atlanta and adjoining neighborhoods to create a "complete streets" environment to enable safe access for all users — pedestrians , bicyclists, micromobility, and transit, in addition to motorists.

Apart from the overall campus recommendations discussed on the previous pages, the CCP also provides guidance for the future of various campus components — Mobility, Utilities, Student Life, Stormwater Management, and Research and Workplace — to further guide decisions around space allocations, infrastructure, and capital investments. The overall growth of the campus is dictated by the specific needs for each component, and together they set the foundations of a robust and resilient campus plan and guide the physical growth and character of the campus. The following pages provide a detailed look at these individual components that are key to creating a truly 'Comprehensive' Campus Plan.

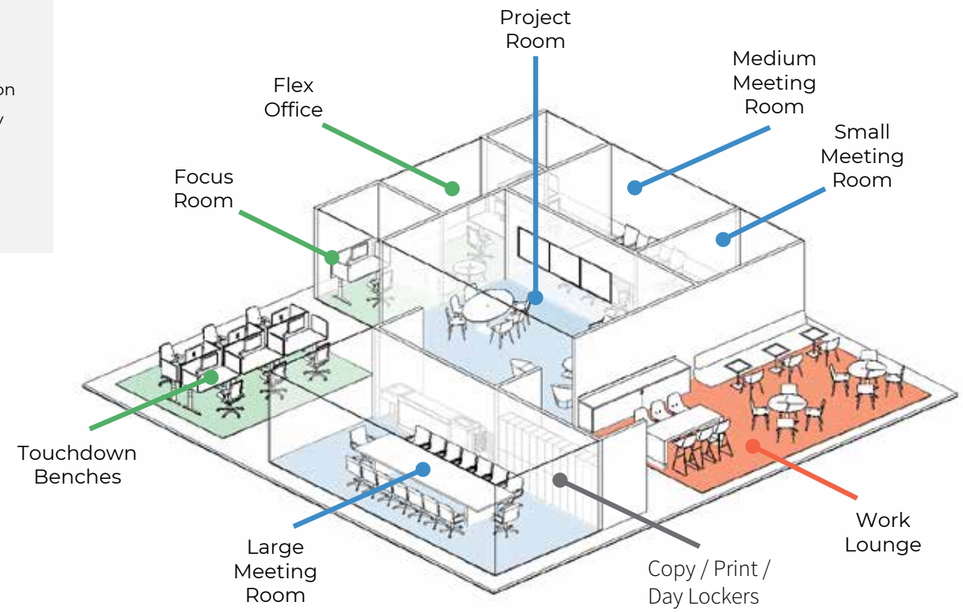
Illustrative 10th Street Residential and 14th Street Corridor precinct plan.

4.5 Research and Workplace Space Recommendations

Georgia Tech needs a new approach to the workplace, one that provides continuity with how space has been allocated and used historically while adapting to changes in how we work, changes to our climate, and the need for good financial stewardship — use space more efficiently, reduce the carbon footprint, and achieve the goals set out in the strategic plan.

We must also accept the reality that hybrid and remote work will continue for the foreseeable future, and that when Georgia Tech's space policies account for this, it will reduce the amount of office space that is required. This will mean shifting the way space is allocated, embracing hybrid and activity-based work, and supporting work with a modular kit-of-parts.

Graphic demonstration of how a kit-of-parts strategy for workplace design can allow spaces to flex and adapt over time.



Shift Space Allocation

Going forward, while the needs of individual groups and buildings may vary, there are general shifts that space allocation should reflect: First, more collaborative space and less individual space. Second, fewer offices in favor of more workstations. This reduction in enclosed space will mean a smaller footprint for everyone. Third, more flexible, shared space and less fixed, assigned space. These changes can be captured in guidelines on overall space allocation per person to help plan workplace environments more efficiently and equitably when it comes to both the quantity and type of space provided.

Embrace Hybrid Work

National data from occupancy-sensing companies like Kastle and research from Stanford Professor Nick Bloom and others have demonstrated that working from home has normalized post-pandemic. We are now in the "new normal" of hybrid work where some time is spent in the office and other time at home, in cafes, or elsewhere. We thus need to catch up our workplaces to support this hybrid work, which will vary by group and by role. For example, an IT group may embrace more remote work than a student advising group. This means that more spaces will be shared and booked rather than assigned to one person five days a week and that AV technology in meeting spaces will need to accommodate remote participants.

Enable Activity-Based

Once hybrid work is embraced, it means that staff, faculty, partners, and visitors will have greater choice in where, when, and how they work. The workplace needs to reflect these choices by providing a greater variety of settings to work in. Whereas a traditional workplace might have offices, workstations, and meeting rooms, future formats will promote small video/phone booths, cafes, lounges, lockers, project rooms, and others. This is enabled by the underlying assumption that everyone is not at their desk the entire day and will also provide greater efficiency of space types (i.e., less space per person) as you assume some seat sharing or hoteling.

Provide Modular Kit of Parts

To accommodate change and create more equitable environments, approach the workplace with a modular kit-of-parts and the most consistency possible from group to group and building to building. For example, as you think about campus space standards and applying them to each project's space program, how can you reduce to the fewest number of space sizes possible? How might one space size adapt to serve multiple functions, such as a meeting room doubling as an office for one faculty or staff member, or as a shared office for two postdocs without moving/demoing a wall? In addition to accommodating changes in work, a modular approach will also create operational savings. This will make it easier as faculty, staff, and students move assignments/allocations across and within buildings and also make it easier to reuse and relocate furniture and equipment and reduce move costs.

Georgia Tech Progressive Workspace Pilots

There are currently four progressive workspace pilots on the Atlanta campus. These spaces are for staff and admin populations. The following elements are employed and the provided metrics inform portions of the overall office and conference space recommendations:

- Provides seats for an assumed 50% occupancy.
- Half of those seats are in enclosed spaces (flex or solo offices), half are in open spaces (workstations).
- Meeting space is provided within enclosed and open collaboration spaces.
- Community areas provide additional spaces for individuals and groups to work and collaborate, as needed.
- Currently averaging 98 ASF/headcount among all pilots, inclusive of meeting and support space.

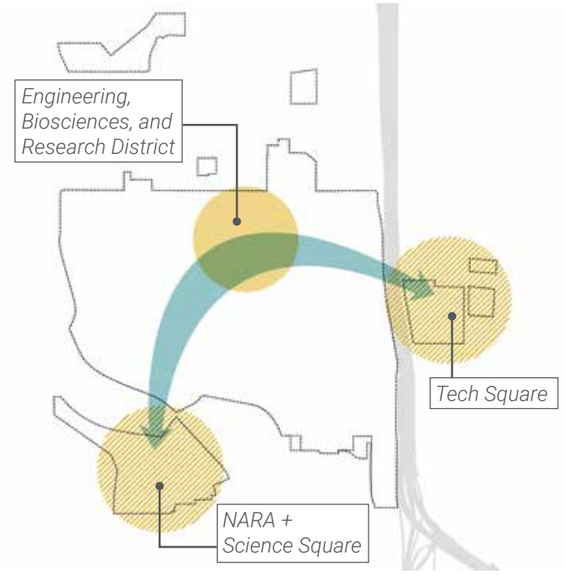
Research Space Recommendations

Collaboration and innovation are the foundations of Georgia Tech's research ambition for even more impact in Atlanta, the state, the U.S., and globally. To be an engine of innovation and entrepreneurship, Georgia Tech faculty, students, and staff will have to collaborate with other public and private entities to create economic opportunity and mobility and lead by example.

The right type, quantity, and location of research space will play a critical role in this. This will mean clustering researchers and spaces into neighborhoods with meaningful adjacencies, adapting to AI and automation in workflow and workplace, centralizing research support services, and providing flexibility in building systems infrastructure.

Cluster Research Neighborhoods

Achieving Georgia Tech's goal to "champion innovation" will require championing collaboration within and across disciplines and with external industry, government, and institutional partners. Clustering groups and spaces to create meaningful adjacencies will help to cultivate this collaboration and interdisciplinary interaction. These clusters will form neighborhoods that act as integrators for the campus community, generating new ideas that lead to new collaborative research projects. Not only will this increase interactions, but it will also save space and resources: Neighborhoods with shared spaces and equipment can save a range of 10%-30% compared to typical lab layouts and provide flexibility and agility to change quickly.



The CCP seeks ways to better connect these three neighborhoods of research — Biosciences,TechSquare, and Science Square — through physical infrastructure, enhanced mobility, and technology.

Leverage AI in the Research Process

Research space needs to accommodate changes in research processes brought about by artificial intelligence and machine learning. Spaces must plan for new technologies that enable faster, more efficient testing, research, and development. These can include AI, machine learning, automation, and robotics. Automated workflow can increase sample throughput and laboratory efficiency while decreasing costs. Incorporating laboratory automation into the workflow can also help improve sample management procedures, reduce process variability, and alleviate the time spent on the bench. Adopting these may require more or different space; for example, an automated science facility may also reduce bench and people space.

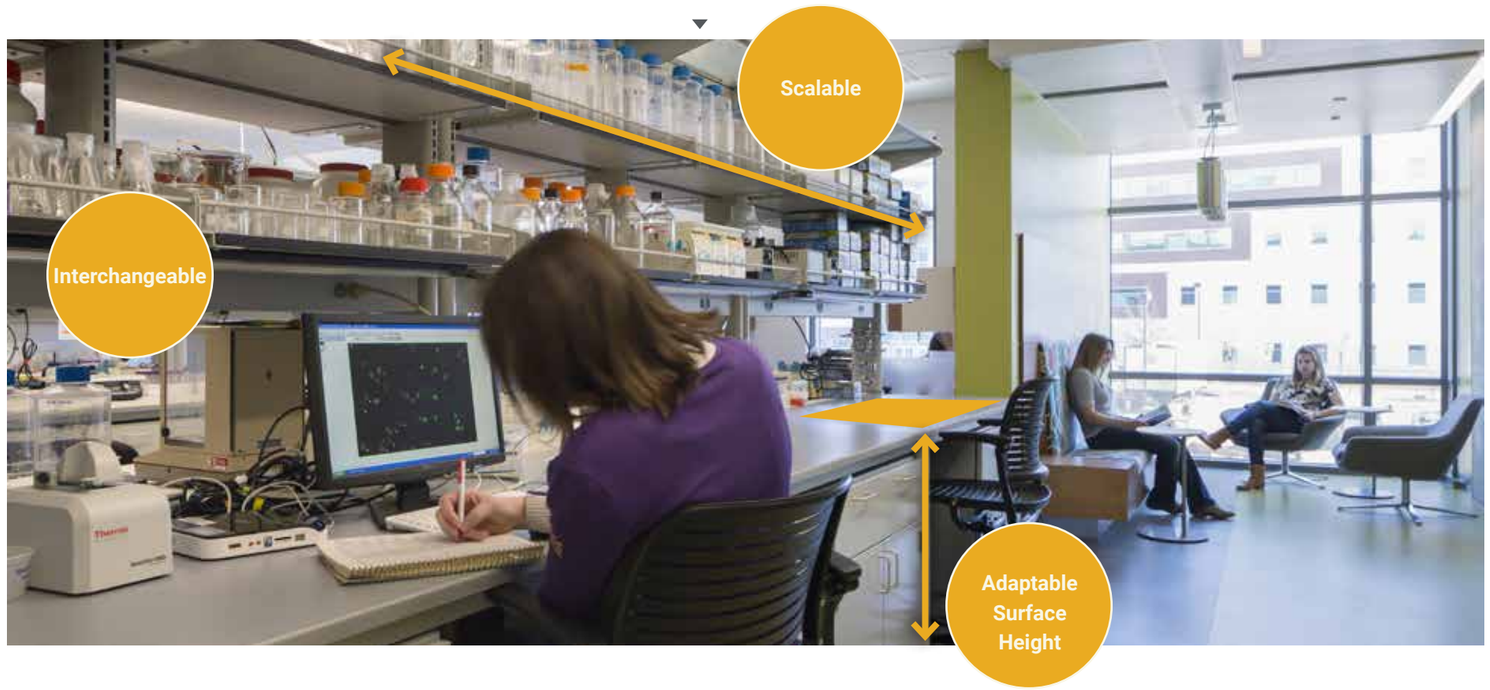
Centralize Support Services

Georgia Tech's research enterprise is supported by a variety of services and activities, from tech support to grant administration to institutional review boards to technology transfer and more. The more distributed these services are, the less efficient it is in terms of researchers' time, staff time, and space. Wherever possible, establish support hubs of services that can be shared across groups, disciplines, and functions to create "one-stop shops" that are more efficient and effective. Moving to a hub model may mean some process changes such as sending researchers to a shared support center rather than dedicated departmental ones or cross-training staff. Consider operational changes along with the space changes to reap the maximum benefits.

Expand MEP Services to Provide Flexibility

Not only must space change to accommodate changes like growth or automation, but the building systems must adapt as well. Georgia Tech can increase its ability to accommodate changes in research by providing robust infrastructure to support needed flexibility in MEP services over time. A great way to test this is to play "What if?" with common changes, such as the addition of new research team members or a new piece of equipment or a new access requirement for an external partner to work side-by-side with Georgia Tech faculty, students, and staff and then see how easily these changes can be accommodated. Systems should allow for reconfiguration to suit workflow, which maximizes lab productivity.

Provide flexible laboratories that include adaptable ceilings with a variety of services, interchangeable and modular casework, adjustable work surfaces, and scalable frame that storage and shelving can be added to.
(Photo credit: nbbj; University of Utah Skaggs Pharmacy Research Building)



4.6 Student Life Recommendations

Housing

The 2020 Housing Master Plan leveraged an extensive student survey (conducted in February 2020) and demand analysis to quantify and project student demand for new on-campus housing. This demand analysis was updated to reflect Georgia Tech's most recent set of enrollment projections, which projects a population of 21,708 undergraduate students and 10,145 graduate students by 2031. As a result, GT will experience a deficit of over 2,300 first-year traditional beds, nearly 600 non-first-year semi-suite beds, and additional apartment-style beds by the end of the decade. Based on the recommendations set forth by the 2020 Housing Master Plan, Georgia Tech should prioritize delivery of new traditional and semi-suite beds to serve as swing space for renovation work and to meet 10-year demand projections.

The CCP recommends the construction of 1,513 beds to satisfy first-year demand and 592 additional semi-suite beds to serve as swing space as Georgia Tech renovates other on-campus housing facilities.

The above needs are in addition to the ~800+ beds currently being planned. The CCP also highlights the opportunity for Georgia Tech to provide affordable housing for additional segments of its student population, including transfer students, international students, and graduate students. While the off-campus housing market has grown significantly over the last five years, rental rates have also increased. The off-campus housing market may also be difficult to navigate for transfer, international, and graduate students who are unfamiliar with the Atlanta area.

Georgia Tech also has the opportunity to consider providing more attainable housing for portions of its faculty and staff populations seeking housing options within close proximity to campus.

These opportunities are well-positioned for campus-edge mixed-use developments such as the Marietta Ridge District and the North Avenue Gateway District, which could be delivered through public-private partnerships. In addition, Georgia Tech could consider delivering housing through public-private partnerships on other Institute-owned properties located within the Midtown Atlanta area.

CCP-recommended sites for adding student housing on campus and additional housing along campus edges

Dining

Future AYCTE (all-you-care-to-eat) dining capacity should be delivered to complement the new first-year housing being planned for the northwest and eastern precincts of campus.

Given the institutional imperative to densify campus land use, Tech Dining should consider coordinating with Housing and Residential Life to integrate dining into the ground floor of new residential buildings. Further study will be required to determine the optimal delivery windows for one or more new AYCTE dining facilities based on demand and financial feasibility. Likewise, space need projections should be refined to capture nuances in meal plan utilization and how different populations utilize dining dollar retail programs across campus more accurately. Evaluation of cross-utilization of retail and AYCTE concepts by patrons both with and without meal plans, combined with a detailed review of venue profitability will yield important insights.

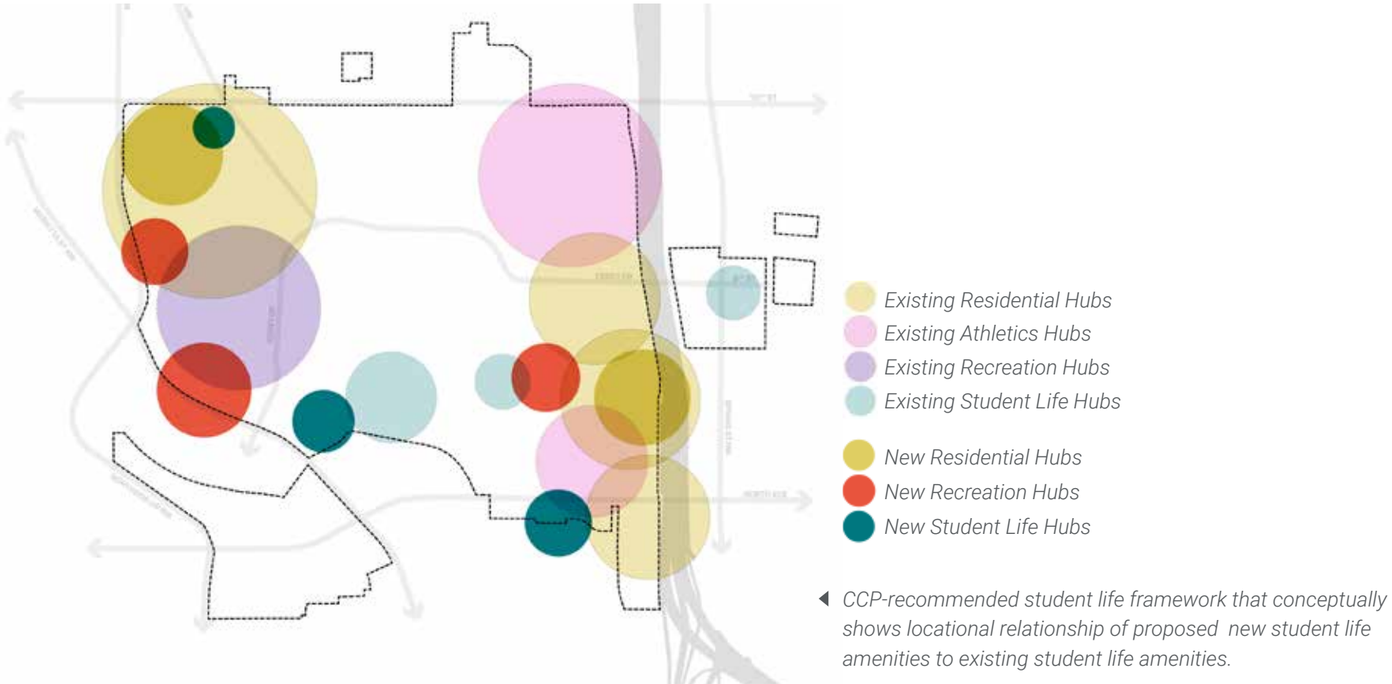
Programmatically, GT students had a number of points to consider in future dining concepts. Primarily, students expressed a desire for lower-cost options on campus. Second, extended hours of operation were considered highly attractive. And third, while not represented in survey data, many students expressed a desire for specialized food options on campus. Two variants of this request affect retail and AYCTE dining. In the first case, a significant number of students asked for more vegetarian options in Tech Dining's retail portfolio. In the second case, students noted the increasing prevalence of dietary restrictions on campus and proposed that Tech Dining establish a specialized food-safe or allergen-free kitchen to accommodate that subpopulation.

Recreation

In order to fulfill its promise of supporting campus well-being, Georgia Tech's recreation facilities must be more accessible to students and faculty than they currently are. This means that GT must relieve overcrowding by providing additional facilities and planning those facilities to accommodate future growth. In order to meet more of the existing demand for indoor and outdoor recreation space as well as additional demand generated by enrollment growth through the end of the decade, Georgia Tech must consider creative, cost-effective, and efficient solutions. Due to significant competition for available, developable space on campus, the CCP recommends that indoor recreation spaces be integrated into new on-campus residential, academic, and research buildings.

Likewise, distributed recreation space will be more convenient to other campus uses. While some recreation facilities are space-intensive and may be standalone or pushed to the campus edge due to density imperatives on the campus core – such as new recreation fields – other uses may be effectively collocated. Combining group fitness, multipurpose spaces, or even weight and fitness space could be effectively combined with campus gateway or student union uses to ensure recreation amenities are conveniently located to students' other activities throughout the day.

The CCP's student life recommendations reflect the importance of on-campus housing and recreation spaces in supporting student well-being, engagement, and success at Georgia Tech.



CCP-recommended student life framework that conceptually shows locational relationship of proposed new student life amenities to existing student life amenities.

Georgia Tech should continue its progress toward being a more multimodal campus centered on a car-free core where pedestrians have priority.

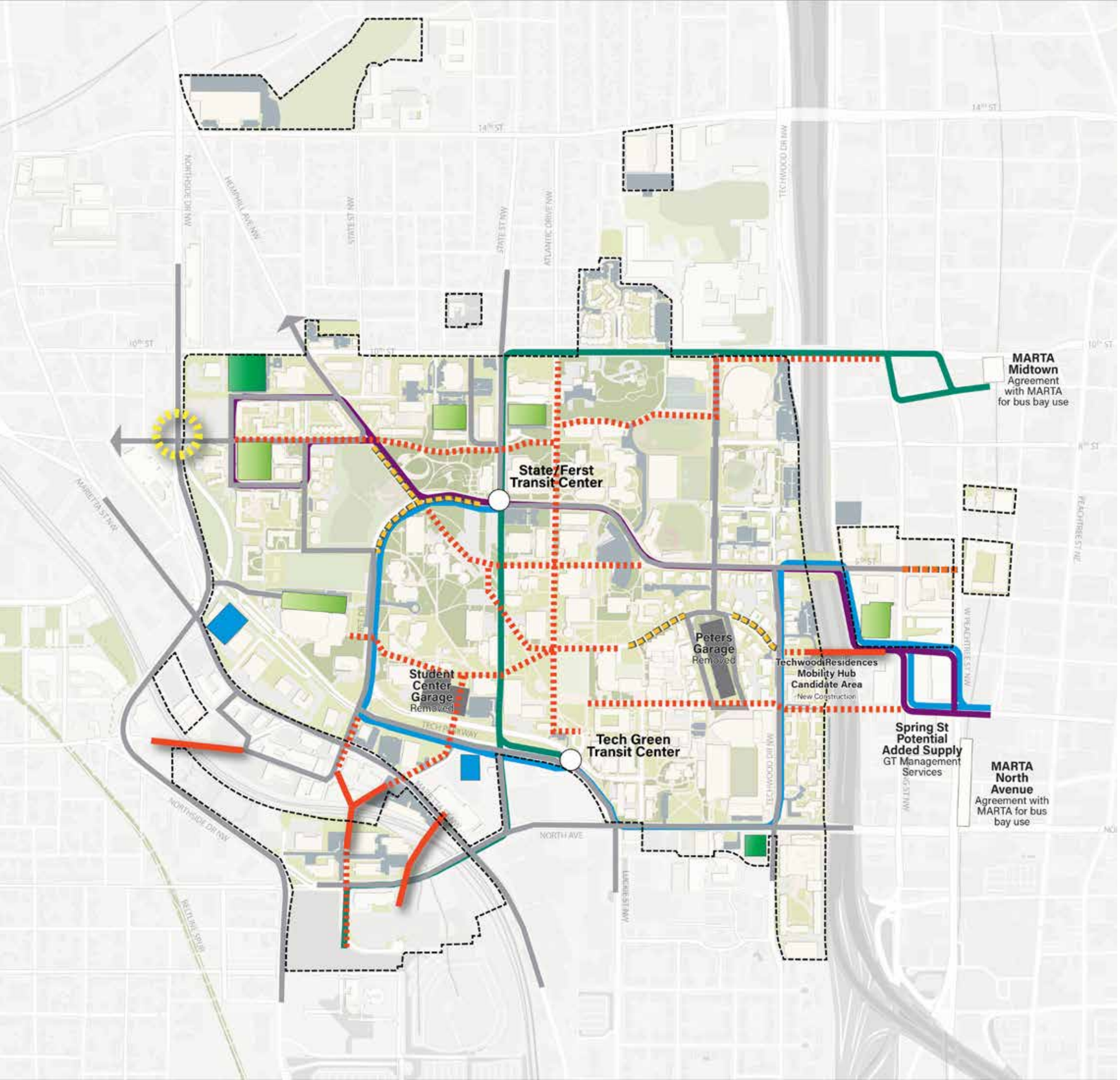
4.7 Campus Mobility Recommendations

A growing Georgia Tech community population in the same physical footprint as today's campus will require new approaches to mobility and parking.

The Comprehensive Campus Plan's overall vision for the evolution of the Georgia Tech campus is anchored by a car-free campus core generally inside the Ferst Drive loop, west of the historic Cherry Street corridor. This area is the center of campus and anchors many of the buildings and facilities that are pillars of the Georgia Tech campus experience, such as Clough Undergraduate Learning Commons, Tech Green, and the John Lewis Student Center. The physical transformation of the campus to establish this car-free core is underpinned by three primary transportation concepts:

1. Rethinking campus parking facilities to concentrate supply, over time, in a smaller number of structured parking garages, gradually replacing surface lots and land-inefficient parking structures with higher-density garages. Several of these garages are also envisioned to take on a more integrated, multimodal function as mobility hubs that provide space for bicycles, micromobility devices, transit vehicles, and other services like shared-ride transportation.
2. Shifting campus transportation services to a more streamlined operational plan that offers greater levels of transit service frequency in locations with a high density of on-campus travel demand. This approach recognizes the likelihood of PTS remaining organized as an auxiliary campus service and needing to rely on user fees and charges as a source of revenue.
3. Emphasizing other forms of transportation, especially micromobility and cycling, to continue to meet the expected growth in travel demand that accompanies an increased Georgia Tech campus population but also to provide faster ways to cross Georgia Tech's large campus. Given the physical constraints of the campus's ability to expand out and the CCP's focus on increased building density in the core of campus, these forms of transportation will be central to on-campus mobility. This is a primary motive for the car-free core discussed as another of the big ideas for campus: emphasizing the need to prioritize people over cars, and making human-scale transportation options safer, more appealing, and more closely coordinated with other travel options.

Georgia Tech's history of transportation planning prior to the CCP preceded the Covid-19 pandemic. Past plans and studies followed a trend over time toward encouraging non-driving travel to and around the campus, but with most campus community members following the same patterns five days per week. The pandemic significantly changed this, of course, as it did commuting and travel patterns across the American economy and society. The CCP has focused on the opportunities provided by this change, especially in how to manage the addition of overall parking with the growth of student, faculty, and staff populations.



Campuswide Mobility Recommendations

Transit Service

- Conceptual Campus Fixed-Route Transit Services

Bicycle and Pedestrian Connections

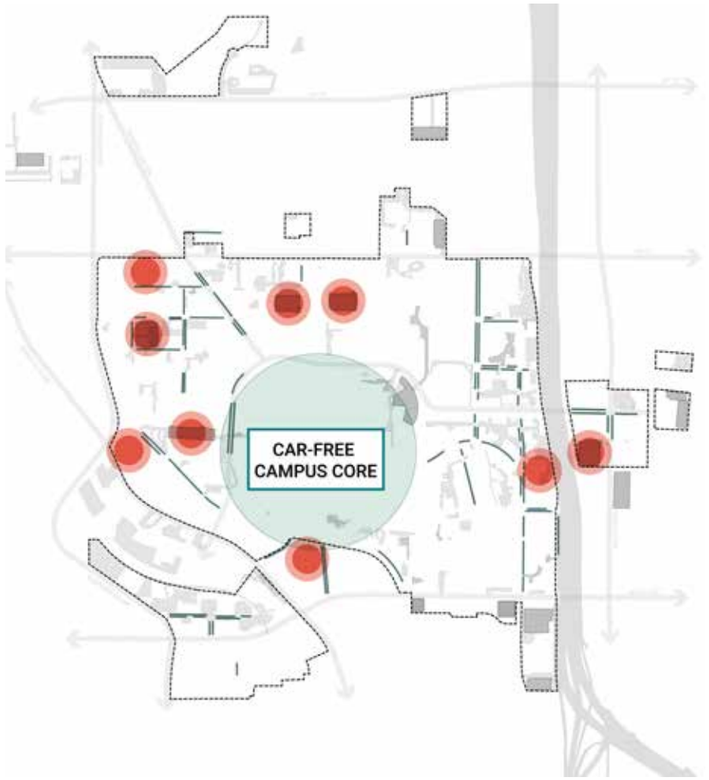
- Streets open for bicycle-pedestrian and transit travel only
  (May include golf carts and other special service vehicles in certain locations)
- Bicycle-pedestrian priority pathways (not full curbed streets)
- Bicycle-pedestrian bridges
- Regional multiuse paths

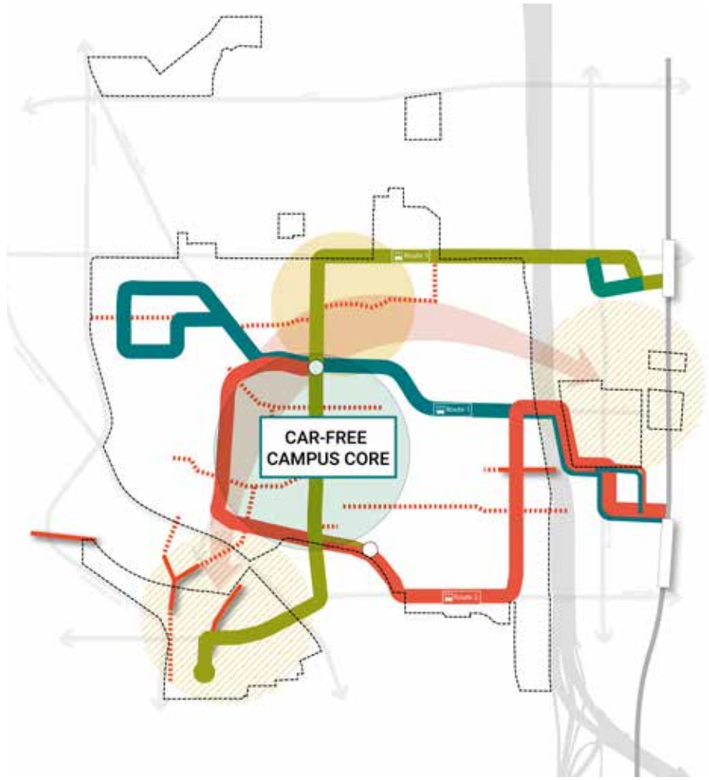
Vehicle Circulation

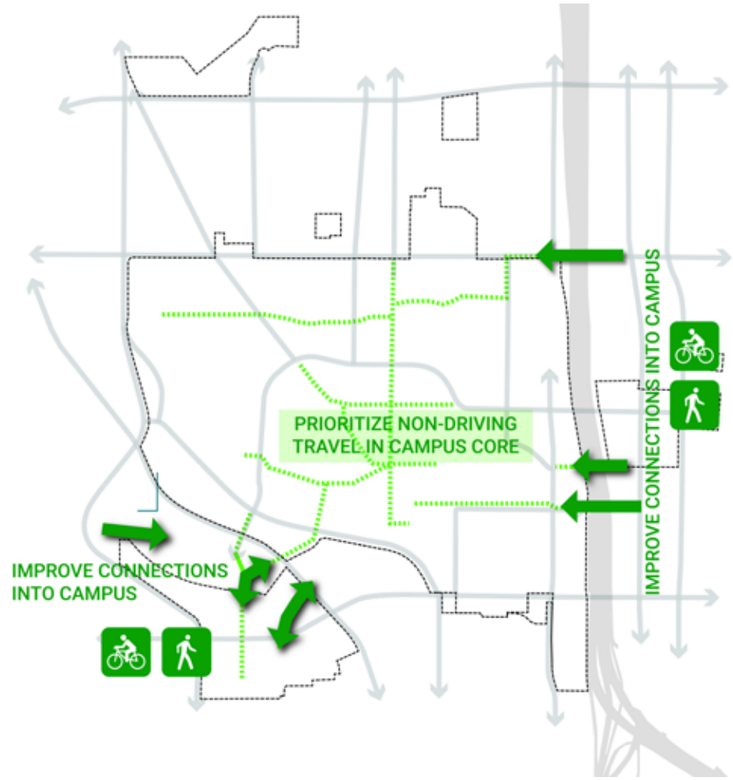
- New Intersection (either Eighth / Northside or Hampton / Northside)
- Remaining Vehicle Circulation

Parking/Mobility Hubs

- New Construction (From GT)
  New Construction (PPP)
- Repurposing of Existing Parking Structures
  (most parking stays, but more space added for other travel)
- Parking Removed
- Parking Primarily Unchanged







Mobility Hubs Across Campus

Rethinking the campus's parking facilities to concentrate supply over time in a smaller number of structured parking garages, gradually replacing surface lots and land-inefficient parking structures with higher-density garages. Several of these garages are also envisioned to take on a more integrated, multimodal function as mobility hubs that provide space for bicycles, micromobility devices, transit vehicles, and other services like shared-ride transportation.

Frequency Over Coverage

Shifting campus transportation services to a more streamlined operational plan. This offers greater levels of transit service frequency in locations with a high density of on-campus travel demand, reducing duplication where more service is not needed. Instead, strategically overlapping service where increased transit frequency is important to attract more Georgia Tech campus students, workers, and visitors away from driving and parking. This approach recognizes the likelihood of PTS remaining organized as an auxiliary campus service and needing to rely on user fees and charges as a source of revenue.

Supporting Mobility Options

Emphasizing other forms of transportation, especially micromobility and cycling, to continue to meet the expected growth in travel demand that accompanies an increased Georgia Tech campus population. Walking, cycling, and rolling are already highly popular on campus, but given the physical constraints of the campus's ability to grow and the CCP's focus on increased building density in the core of campus, these forms of transportation will be central to on-campus mobility. This is a primary motive for the car-free core: emphasizing the need to prioritize people over cars, and make human-scale transportation options safer, more appealing, and more closely coordinated with other travel options.

Understanding Travel Dynamics Around Campus

Inter-Campus Travel With a Larger Campus Population

When considering the large Comprehensive Campus Plan recommendations, mobility strategies and approaches are intended to serve in a supporting role to ensure that the campus is connected with multiple options for travel to, from, and around Georgia Tech. These fit the general approach the Institute has taken on mobility and transportation options: as a service facilitating the Institute's core mission and purposes, but also as a way to reflect its core values and strategic objectives.

These mobility strategies are based in an understanding that the Georgia Tech campus combines different populations (students, faculty, staff, researchers, and visitors) and that the travel needs and profiles of these populations are diverse and complex.

Trip activity associated with the future development of the Georgia Tech campus was estimated as a basis for the transportation and mobility recommendations. The campus activity includes internal trips made by students, faculty, and staff within the campus, in between destinations, throughout the day. This trip activity does not include trips to and from campus made by students, faculty, and staff when they commute to campus or travel to destinations off campus.

How Campus Travel Patterns Were Estimated

Several of the CCP transportation and mobility recommendations are based on estimated levels of trip activity associated with the future development of the Georgia Tech campus. This includes internal trips made by students, faculty, and staff within the campus, in between destinations, and throughout a typical weekday in spring or fall semesters. This trip activity does not include trips to and from campus made by students, faculty, and staff when they commute to campus or travel to destinations off campus (which is discussed separately in a later section).

The basis for understanding internal campus trip activity was the campus survey conducted as part of the CCP. Among other questions, the survey asked how often respondents need to travel from a primary location on campus to another location on campus, and grouped responses by user type into all students (including graduate student off campus [online], graduate student on campus, and undergraduate student), and faculty/staff. Respondents indicated how many trips they take based on the following options:

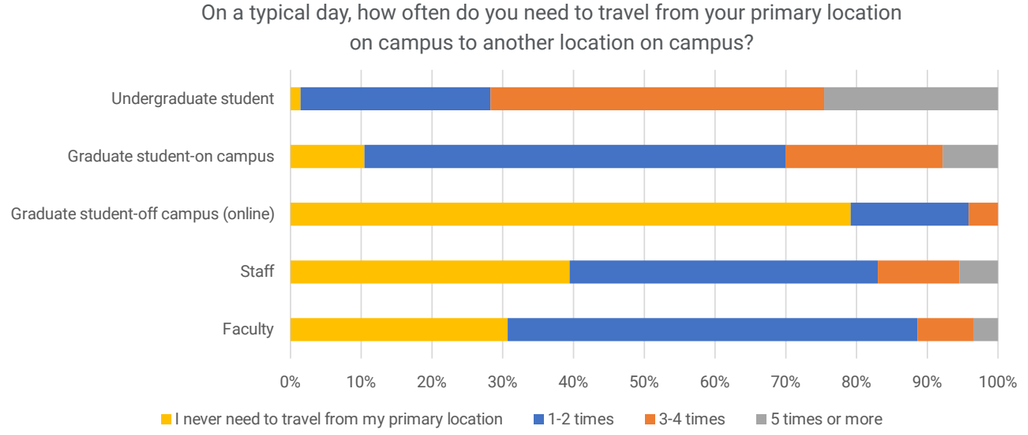
- 1 — 2 times.
- 3 — 4 times.
- 5 times or more.
- No internal trips made (staying in a primary location the entire day).

The responses to this question allowed a weighted average number of daily internal campus trips to be calculated for each of the two campus population groups, providing a working average number of trips that each group takes around campus in a given day. This trip estimate was then applied to the projected 2031 populations of students and faculty/staff.

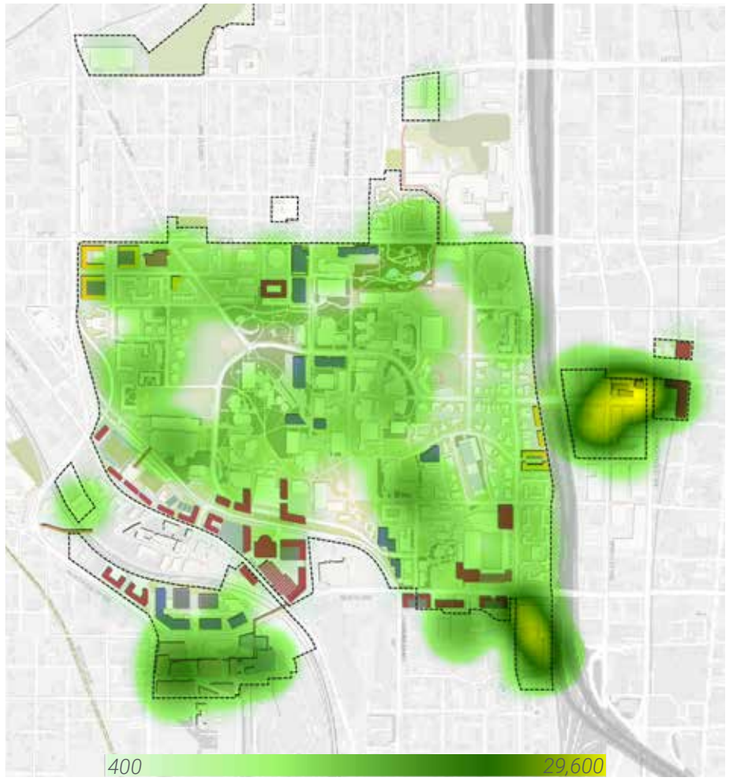
This trip activity is assumed to represent travel patterns that would be shaped by the density of buildings, facilities, and other functional spaces in the future CCP heavy-build growth scenario, based on classifying the campus's buildings and facilities into the following four categories:

- Academic / Research.
- Residential.
- Other GT needs, including dining, student center, recreation.
- Non-trip-generating, including parking, utilities, and non-Georgia Tech buildings.

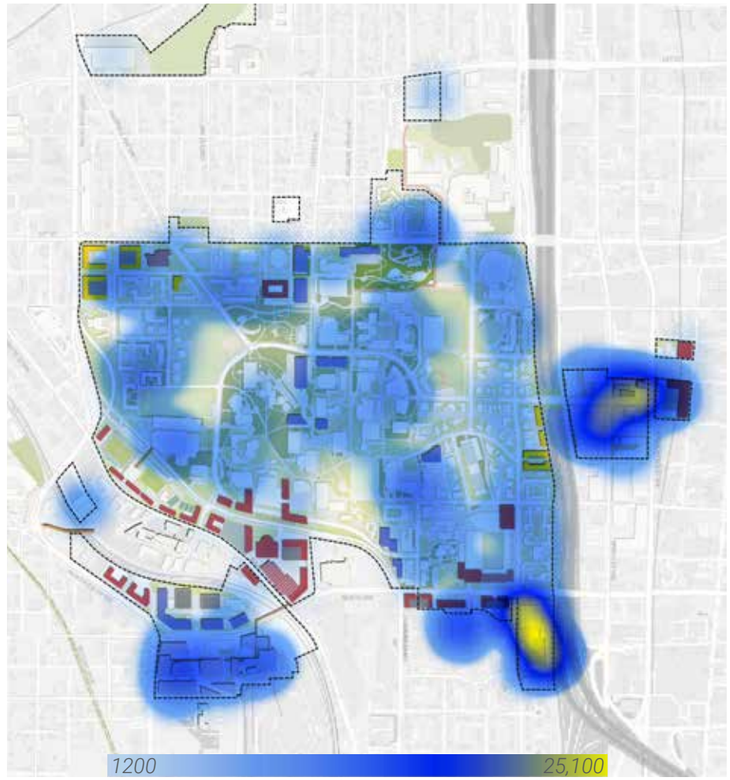
This allowed a simplified travel profile to be estimated based on the number of daily campus trips with the origins and destinations of trips (the locations and types of buildings and space). The assumed approach to this is detailed in the table below, with the diagrams on the following pages illustrating the broad patterns of trip density and activity. Generally, student travel is more heavily focused on residential and academic/research buildings, with faculty and staff more focused on buildings representing academic/research and other GT needs.



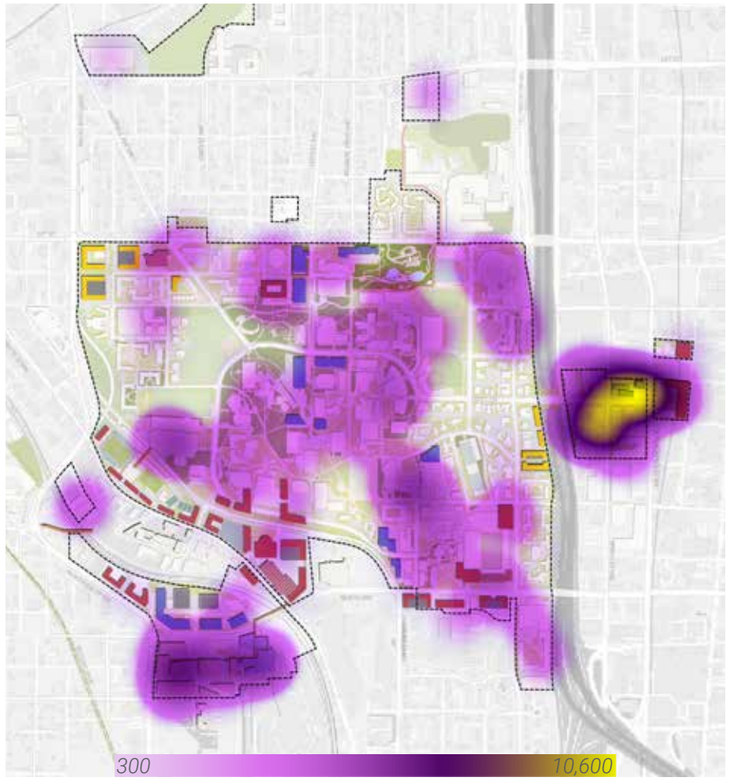
The CCP's engagement survey explored the ways the campus community travels to and around the campus, and this served as the basis for estimating an overall level of travel demand that might be expected with future campus growth as envisioned in this plan.



TRIP DENSITY: Daily Trips/1,000 square feet



TRIP DENSITY: Daily Trips/1,000 square feet



TRIP DENSITY: Daily Trips/1,000 square feet

Density of All Intra-Campus Trips

There is a broad parallel between building density and trip activity, an intuitive relationship but still one that is not always reflected in current campus mobility infrastructure and services. The two highest-activity areas of campus, Tech Square and the North Avenue Apartments, are at edges of the overall campus and separated by major transportation thoroughfares (I-75/85 and North Avenue). As the Science Square district reaches its full buildout potential, this is another major generator of activity, but one separated by the Norfolk Southern and CSX railroads and North Avenue.

Student Trip Density

Student trips are most concentrated on residential buildings, especially the North Avenue Apartments, and campus facilities featuring classrooms. Tech Square, however, is an important destination for students as well: It contains classrooms but is also a major dining and retail district, generating travel not captured in an analysis strictly based on Georgia Tech buildings and facilities. For this reason it remains a key destination to which students need reliable and convenient connections.

Faculty and Staff Trip Density

Faculty and staff trips concentrate more in the central Ferst Drive loop of the main campus, though they are also expected to be heavily represented in the Science Square and Tech Square areas. This points to a need for connections across the campus to these major activity centers.

Mobility Hubs to Anchor the Parking System

A Unified Set of Locations for Intermodal Travel on Campus

The Comprehensive Campus Plan's vision for parking at Georgia Tech builds on previous directions recommended for the parking system in previous plans, especially the 2019 Parking and Transportation Demand Management Immediacy Plan. This includes:

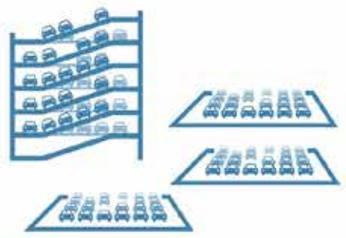
- A shift toward flexible forms of parking payment and usage and a move away from assigned permit parking.
- Adjustments to parking pricing (both upward and downward for specific parking types and locations) to allow more strategic management of parking demand.
- A strong focus on transportation demand management to provide alternatives that allow options for users wishing to offset price increases.

This approach is based generally on parking closer to the car-free core of campus, where the greatest density of buildings is to be located, as having a higher premium for use than parking located toward the campus edge.

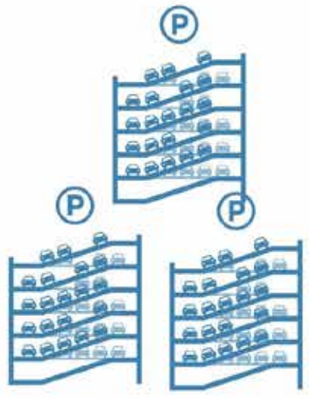
The concept of mobility hubs as described in this plan is not new to Georgia Tech, but the degree to which these would serve as an organizing principle for all mobility services on campus, including transit, active transportation, and on-demand services would be a paradigm shift. They are intended to serve in a role that no current single campus facility meets: integrated locations for transit service, multimodal transportation options, and vehicle parking.

The CCP's proposal for mobility hubs is based largely on adaptation of current parking garages, though the proposed addition of new garages should also follow this model and create designated spaces for other travel options.

Current System
Parking Lots and Garages



Current Trend
Moving Toward Consolidation



CCP Recommendation
Fully Integrated Mobility Options

Frequency-Based Transit System

More Focused and Strategic Approach to How Stinger Shuttle Serves the Campus

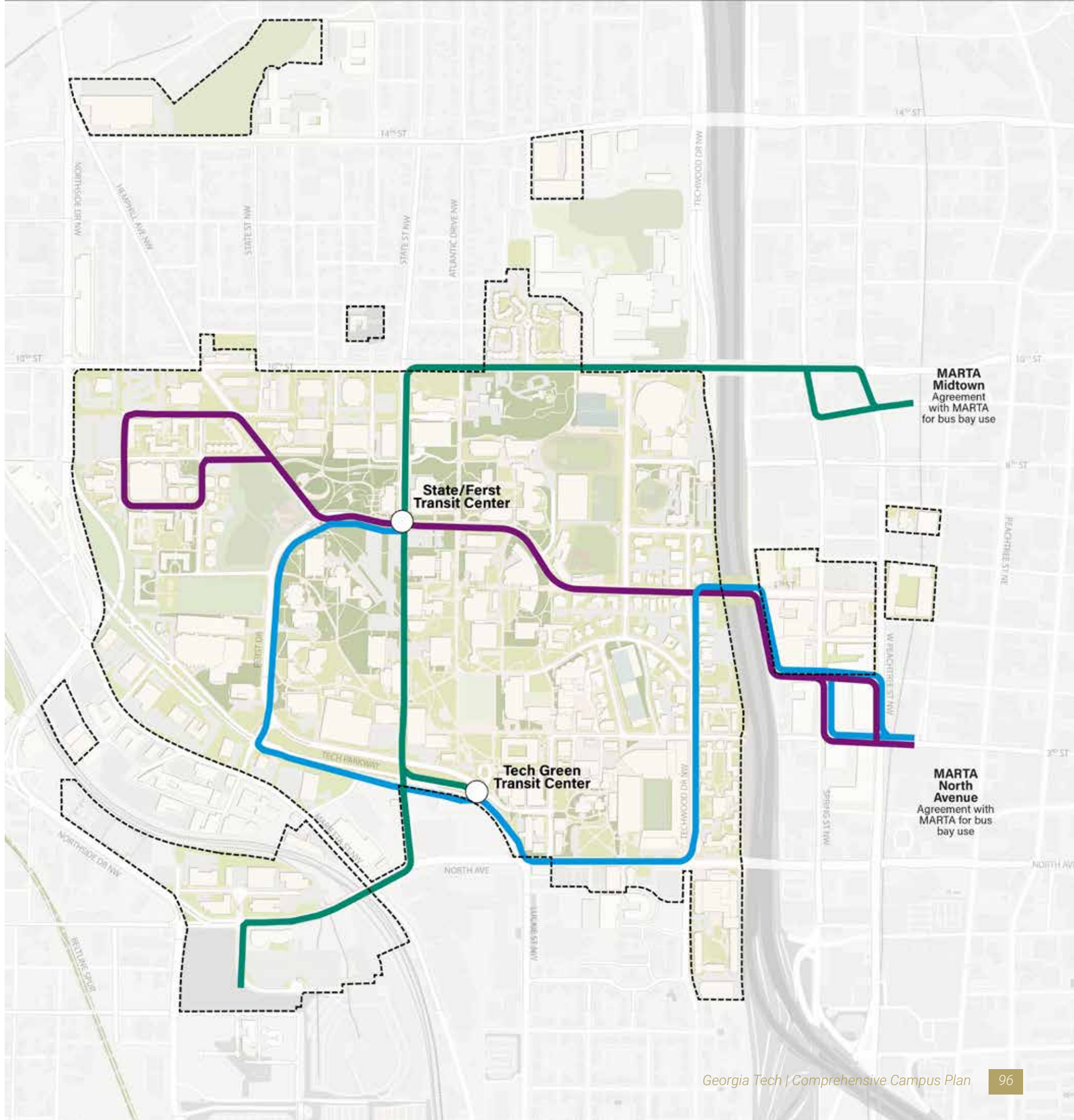
This recommendation calls for Georgia Tech to shift its transit service operations over the next several years to a more streamlined system of fixed routes prioritizing frequency over geographic coverage. This will likely mean that some destinations on campus that currently have direct transit service (within close proximity to a building or amenity) would not have it in the future. However, the locations where service is provided can enjoy a greater frequency, extended span of service throughout the day, and improved reliability due to a more even distribution of transit passengers on more buses.

The existing shuttle system that serves the Georgia Tech campus includes several routes that overlap in the core of campus and connect to a variety of specific destinations on the edges of campus of the surrounding community. The CCP recommends a more targeted transit system to focus more heavily on a few high-frequency routes that serve the trip generation hot spots identified previously.

The three routes shown in the diagram to the right represent three key connections through campus. They all flow through the high-density center of the campus and connect to the two MARTA stations east of campus in Midtown. This transit network also benefits from being straightforward to the user because routes are direct and have clear end points.

To estimate the potential productivity of a future transit service, the CCP created a model that tied existing annual cost to operate the service with the transit service details, including routes, frequency, and spans of service across the year. The three proposed transit routes were then fed

Transit focused more on direct routes and frequent service may be able to help Georgia Tech with overall campus mobility and sustainability goals.

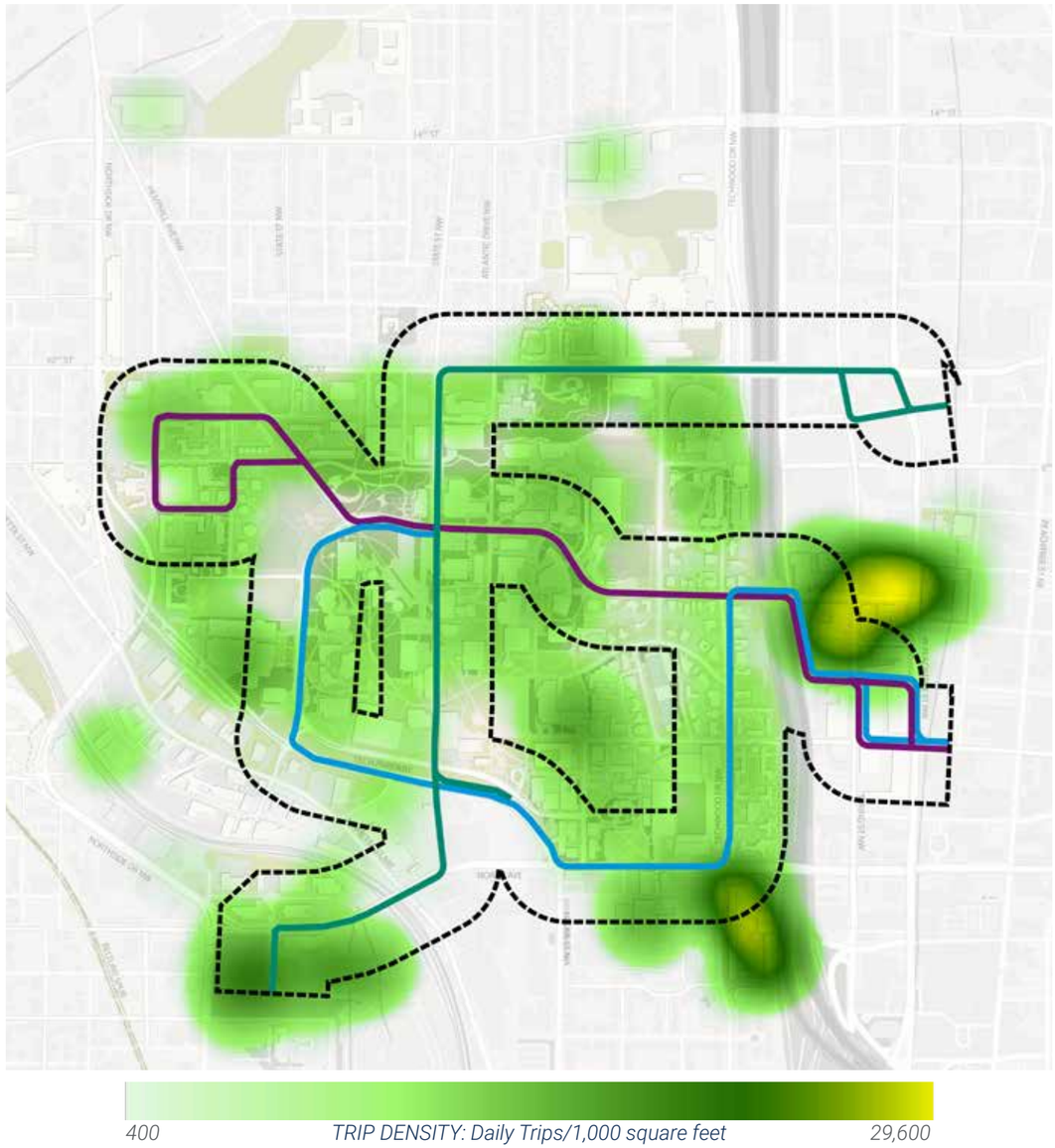


into a future version of the model. The frequency and span of service assumptions are presented below. These assumptions were applied to all three routes and represent an increase in bus frequency, with six-minute frequencies for most of the day. The future transit model showed that this focused but more frequent service would have the same cost to operate as the more dispersed and less frequent service that operates today.

This proposed transit service concept would likely spur new ridership in several ways. First, it is designed to target the trip generation hot spots on campus. Second, these routes are not circuitous and provide direct connections that can be easily understood by users. Finally, research shows that increases in frequency cause increases in transit ridership because people feel that the service is more reliable and dependable as an alternative to driving and other modes.

	Existing Transit Service	Proposed Potential New Service Model	Difference
Total service hours per day *This is an estimated amount of bus vehicle service hours available on the core campus on a typical weekday.*	*255*	*292*	*38*
Estimated annual operating cost *The operating cost, based on GT 2021-22 transportation expenditures, of providing this service.*	*$2,684,812*	*$3,168,055*	*$483,243*
Person capacity *The total number of passengers that could be served with the new service, as determined by the number of transit vehicles providing this service.*	*33,600*	*45,900*	*+ 12,300*
Ridership potential based on improved service *Compares the existing (2019) ridership, which was higher than pre-Covid data available for the CCP, to potential new ridership if the inter-campus trips within the catchment areas as shown in the map above used transit.*	*8,758*	*33,731* *Assumes all typical-day campus trips close to transit use transit*	*24,973*
Ridership to capacity ratio *The degree to which the transit system is utilized based on more focused service.*	*26%*	*73%*	*47%*

If transit service is focused at higher frequencies to serve the areas with the highest expected concentrations of travel demand, it has the potential to capture a significantly greater share of inter-campus travel and potentially make non-driving access to and from campus more viable for commuters.



The table to the left provides a comparison, using the same level of transit frequency for the streamlined service model as shown in the diagram on the previous page. Not only does streamlining service to emphasize frequency over coverage provide a more attractive form of transit, it also offers potential to better utilize Georgia Tech's investment in the service overall.

Street System Repurposing for Pedestrian Safety

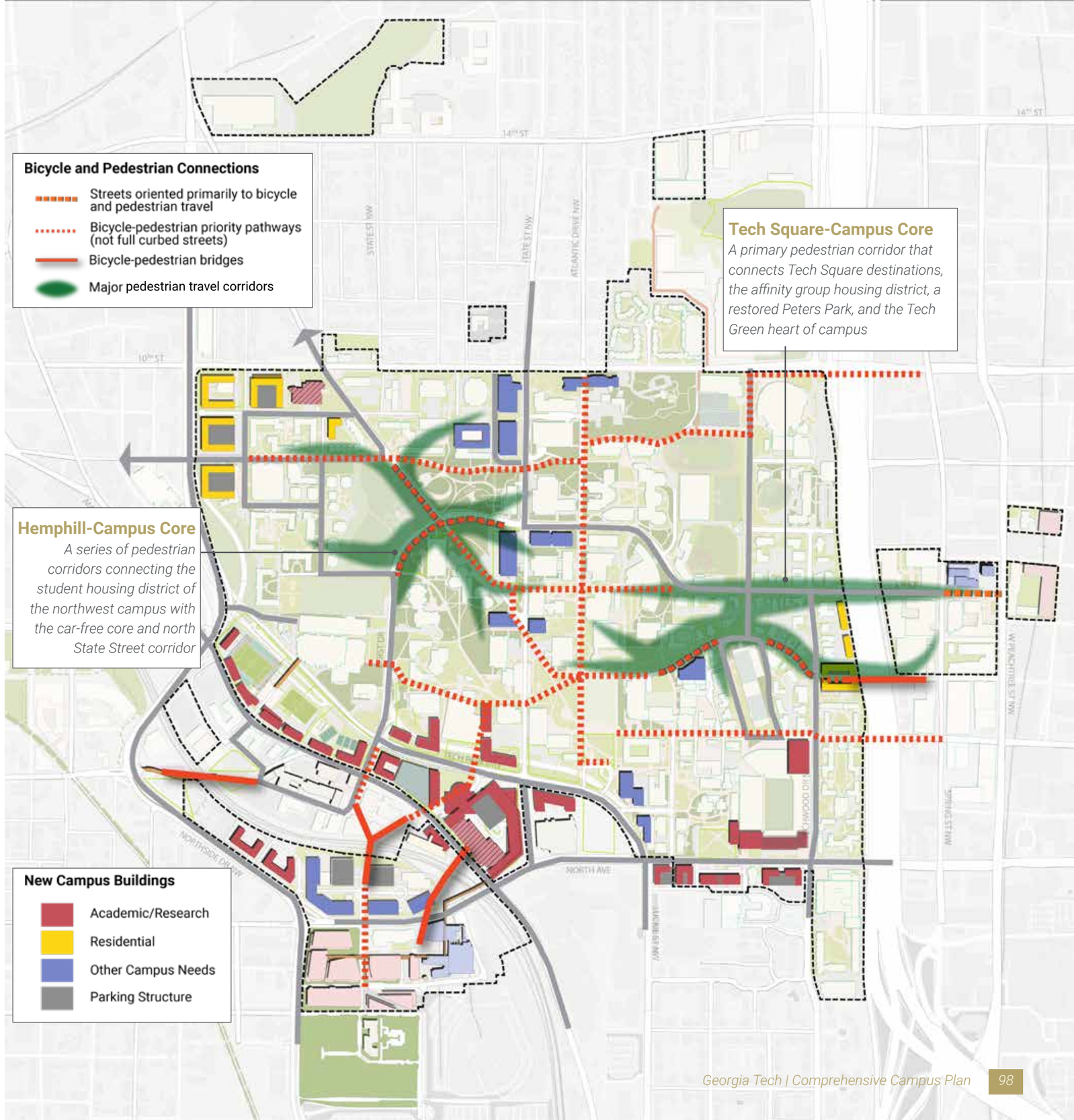
Selective Street Closures and Prioritization

As part of achieving a car-free campus core, the Comprehensive Campus Plan recommends that select streets on the campus network be closed to general-purpose vehicle traffic. These streets would still allow transit vehicles, selected service vehicles, and other special-permission motorists (such as users of accessible parking and loading areas that rely on an otherwise car-free street). Over time, Georgia Tech should enhance these streets with design features that emphasize slow vehicle travel speeds and a priority for bicycles, pedestrians, and micromobility, but in the short term simple signage and light-touch physical enhancements like bollards and planters should be used to limit entry. These closures are intended to focus on the following areas:

- Northern portion of Ferst Drive and Hemphill Avenue adjacent to Couch Park, part of a major vector of pedestrian travel on campus (especially for students connecting to housing in the northwest campus).
- Peters Park and the affinity group housing district, part of a larger effort of transforming the current Peters Parking Deck into an open-space amenity for the southeast campus.

The CCP outreach efforts underscored walking and cycling safety on campus streets as a major theme of concern, with many students who participated in outreach discussions noting that the Ferst Drive corridor is a particularly uncomfortable pedestrian environment. However, even prior to the CCP, Georgia Tech has been addressing issues. Its approach to street design reflected the state of the art in bicycle facilities, and served as a leader for the larger Atlanta community in thoughtful street and intersection design approaches for bicycle and pedestrian safety. Existing plans and project initiatives have already proposed expanding the reach of protected bicycle infrastructure and shared-use paths on campus, and these should continue to be priorities for the Institute.

The CCP recommends key street extents for car-free designations. These would prioritize pedestrian movement in these spaces but could still allow transit, service and delivery vehicles, and other designated special users to connect.



Better Connections to the Campus Edges

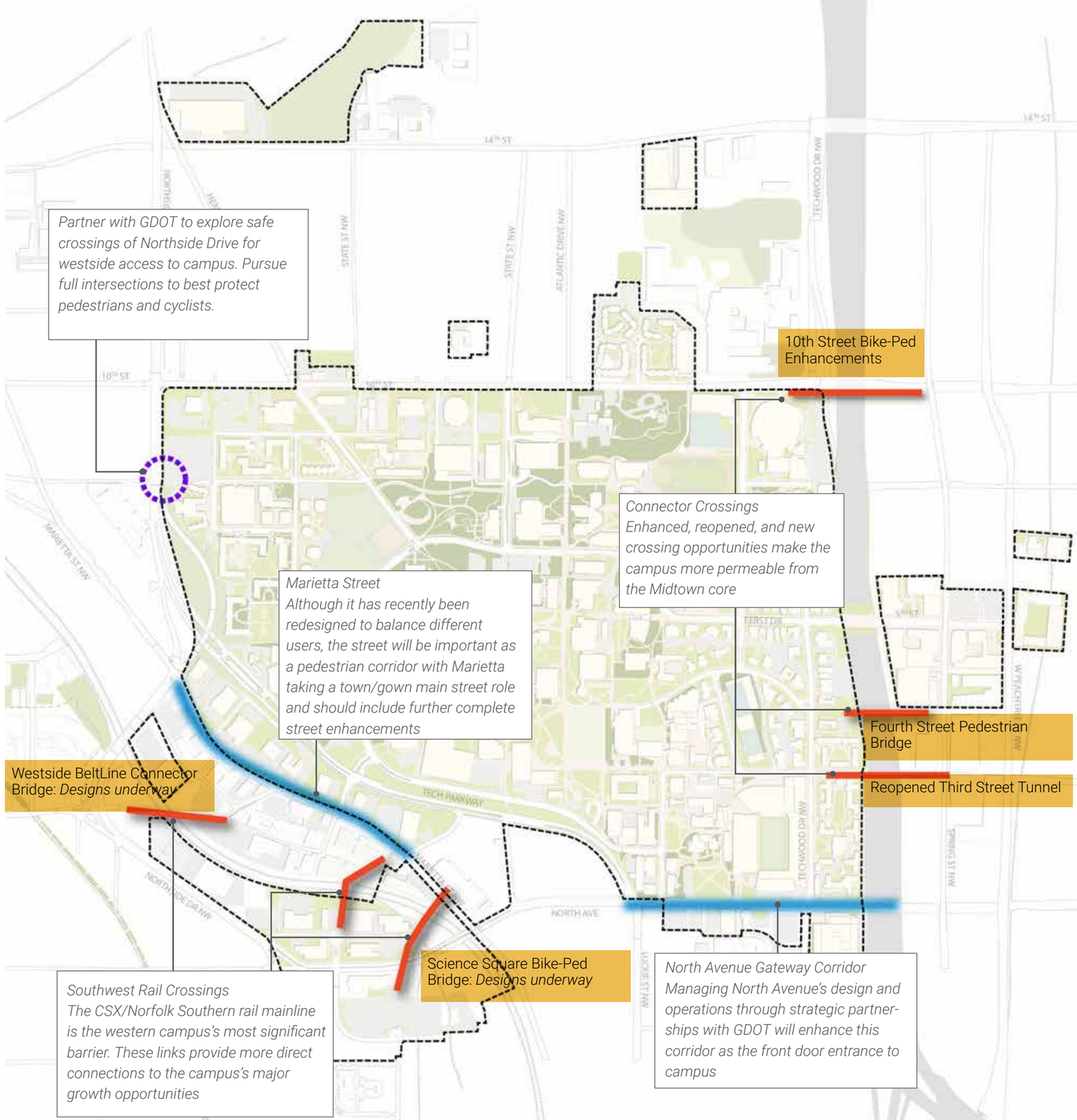
New Intersections, Bridges, and Crossings

The physical limitations of the major infrastructure surrounding the Georgia Tech campus affect internal travel on the campus and increase potential for conflict between vehicles and non-driving travelers. In particular, two of the three crossings of I-75/85 (North Avenue and 10th Street) have some degree of direct access to the freeway, requiring walking or rolling travelers to navigate not only these local streets but also the wide intersections where they meet freeway access ramps and frontage roads. This means that the Fifth Street Bridge is the only street without freeway access, and despite its comfortable space and design for pedestrians and its central location, it is not an immediately convenient connection to destinations in Midtown. The campus's other edges face similar challenges, with highly limited access across Northside Drive and the Norfolk Southern/CSX railroad.

The CCP's recommendations include expanding these edge connections into Midtown, the Upper Westside, and other adjacent parts of Atlanta. Specific connections include the following:

- A reopened Third Street tunnel, allowing a direct path from the North Avenue MARTA station into a major residential and athletic-event district of campus.
- A new Fourth Street pedestrian and bicycle bridge, taking advantage of the high elevation of the Midtown side of the I-75/85 freeway relative to the freeway itself and the Georgia Tech campus.
- An enhanced 10th Street crossing and corridor, already in progress through projects led by Midtown Alliance but with potential for expansion further west from Fowler Street.
- New intersections along Northside Drive can allow for full turning access into the northwest quadrant of campus and allow a direct path to campus from the Marietta Street and Howell Mill corridors.

Connections at campus edges into Midtown, Upper Westside and other adjacent parts of Atlanta. ▶



Travel Dynamics To and From Campus

Understanding the Reality of Hybrid Work for Georgia Tech

As discussed previously, this CCP is the first major campus planning effort since the impact and gradual recovery from the Covid-19 pandemic. Georgia Tech, along with peer institutions and other industries throughout the U.S. and world, is still assessing the long-term transportation shifts to occur from the pandemic. However, it seems likely at the time of this plan that physical travel to the campus as a place of employment is not likely to reach the same levels, at least on a per capita basis, as before. The model of remote work that many organizations were forced to adopt for public health and safety measures has seemed to demonstrate enough effectiveness to have remained a desired option for many employers and employees. The hybrid work concept has now become more of a baseline than an option in American society.

In the few years since the pandemic's onset in the United States, numerous survey and study efforts have monitored the degree to which pre-Covid employment and travel patterns have returned. This will undoubtedly continue as university campuses, employment districts, and cities in general make decisions around infrastructure and service delivery. The CCP has taken a series of assumptions for how this will affect Georgia Tech, as based on the mode-based shares of overall travel illustrated in the table to the right.

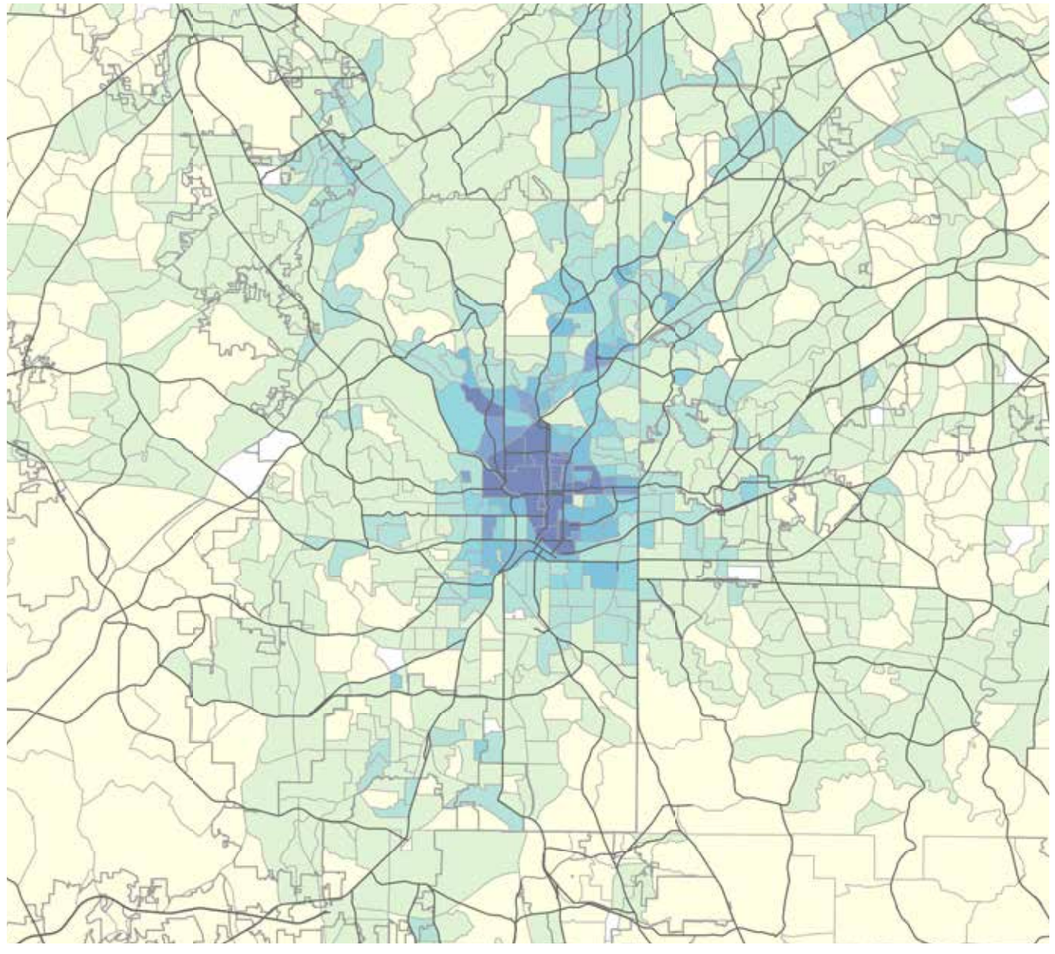
		Commuting Mode Share To and From Campus			
		Driving (alone or carpooling)	Transit	Multimodal (walk/bike)	Working From Home
Current (2019) Conditions	*Staff*	*74%*	*10%*	*13%*	*3%*
	Faculty	*66%*	*9%*	*22%*	*3%*
	Student	*35%*	*8%*	*54%*	*3%*
Future (2031) Conditions Assumed for CCP	*Staff*	*69%*	*9%*	*12%*	*10%*
	Faculty	*54%*	*7%*	*18%*	*20%*
	Student	*29%*	*7%*	*45%*	*20%*

▲
Current and projected mode-based shares of overall travel.

How Campus Travel Patterns Were Estimated

The 2019 Parking and TDM Immediacy Plan included extensive employee travel surveys and data collection to understand the overall commuting profile to Georgia Tech. This data served as the basis for the CCP's assumptions of future conditions and recommendations. The recommendations take an ambitious approach to further reductions in drive-alone travel to campus, although they recognize the reality of many subgroups of the overall campus population (especially staff, who tend to be more constrained in housing choices and make longer commuting trips due to the relative affordability of housing further out from Georgia Tech and Atlanta's metropolitan center). The primary difference in assumed future conditions, however, is the continued prevalence of hybrid work and campus access at Georgia Tech. This means that travel patterns on an average weekday are likely to feature a greater amount of remote work (or working from home) than prior to the pandemic, even if a student or employee regularly accesses the campus. The 20% of work-from-home external trips (for both faculty and student populations) would equate to everyone connecting remotely to the campus about one day out of a five-day working week.

The primary factor affected by this is a need for parking to adapt, something already in process before the Covid-19 pandemic elevated hybrid work models to a common status for many organizations and employers. The following section addresses ways Georgia Tech's parking system can adapt to meet these needs.



Mobile-device travel data as illustrated in this map demonstrates the degree to which trips to and from the Georgia Tech campus are dispersed throughout the region. The density of trips to campus (normalized by square mile) that lies within approximate areas to campus well served by multiple travel options is limited.

As shown in this table, the overall distribution of trips to campus is heavily focused on longer distances, with over 55% of trips coming from distances of 5 miles or greater. This suggests that parking will remain an important part of the campus.

	Fall 2019		Spring 2021	
Trip length	*Trips*	*Pct*	*Trips*	*Pct*
0 to 0.5 mi	*1,600*	*3%*	*1,150*	*3%*
0.5 to 1 mi	*6,050*	*11%*	*3,350*	*8%*
1 to 1.5 mi	*4,700*	*9%*	*2,850*	*7%*
1.5 to 2 mi	*3,250*	*6%*	*2,350*	*6%*
2 to 5 mi	*8,950*	*17%*	*6,900*	*17%*
5 to 10 mi	*5,850*	*11%*	*4,750*	*12%*
10 to 20 mi	*9,100*	*17%*	*7,550*	*18%*
20 to 30 mi	*6,200*	*12%*	*5,200*	*13%*
30 to 40 mi	*4,150*	*8%*	*3,200*	*8%*
40 mi +	*3,900*	*7%*	*3,750*	*9%*
TOTAL	*53,750*	*100%*	*41,050*	*100%*

The Evolution of Parking

Shifting Toward a Transient Parking Model

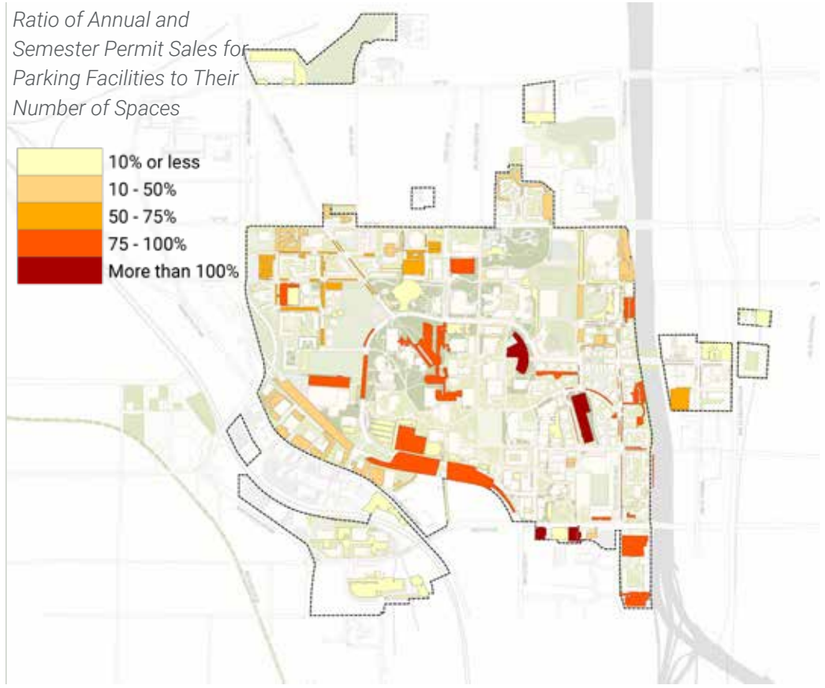
One of the most prominent opportunities that a hybrid work paradigm has offered to campuses and employment districts is the ability to use parking in a different and potentially more efficient way. Depending less on single-user parking permits would allow universal access to designated parking facilities and moving toward more flexible parking arrangements that suit a hybrid model. This is another concept not new to Georgia Tech. PTS's SmartPark program already allows participants to pay on a daily rate across a series of parking facilities. However, that program is still relatively small in scale and would need to expand to more facilities and a greater number of users to capture the degree of hybrid work participation assumed in this plan.

Hand in hand with an emphasis on a transient parking model is the need to provide different parking choices. These options are the policy-based companions to the mobility hub concept described in the CCP's major themes and ideas. These recommendations are designed to support one another in collectively reducing the need for campus commuters and visitors to rely on an assigned parking facility. This also creates a system by which this is predetermined when a long-term parking product (such as an annual or semester permit today) is purchased. Overall, parking should allow greater flexibility for users, both from a location and a product (the type of parking permit or arrangement) perspective. For that to be an effective approach, however, each parking facility must offer a seamless and high-quality set of multimodal options allowing the Georgia Tech community to connect to other locations around the main campus.

Previous sections have pointed to the degree of challenge that adding substantial new parking supply on campus will entail. This is primarily financial, due to the self-sustaining nature of Georgia Tech's parking management system and the complexity in public-private development partnerships that might bring outside resources to new buildings and facilities. The CCP recommends that Georgia Tech take advantage of its geographic position as a nexus between major destinations in central Atlanta and its institutional position as an established and sophisticated operator of a major parking supply to explore opportunities for expanding its parking reach beyond parking facilities that the Institute owns. The most prominent opportunities for this would be in Midtown, although emerging concentrations of parking in the Upper Westside and in the southwest edges of the campus may provide similar opportunities in the future.

This is based on a premise of Georgia Tech competing for private business as an operator and administrator of privately owned parking facilities. Unlike many cities with major employment cores and activity centers, Atlanta has virtually no publicly owned off-street parking lots or garages (parking owned by the City of Atlanta or a parallel organization such as a parking authority). All off-street parking in Midtown is privately owned, usually under the same ownership as the office or residential buildings that individual parking facilities serve, and most of this is managed by third-party operators who provide a suite of services covering parking sales, access, operations, maintenance, and security. It is common for property owners to engage these operators on a contractual basis and periodically change to other operators when contracts are renewed, tapping into a competitive marketplace for services. Georgia Tech's Parking and Transportation Services auxiliary is in a strong competitive position to provide such services, and this would provide two primary benefits to the campus:

- Potential for additional revenue through management services contracts, with PTS able to position its current resources over a larger inventory.
- An expanded "virtual inventory" under GT management control, wherein underutilized or underperforming parking facilities could be used as intermittent supply to support campus needs on a periodic basis.



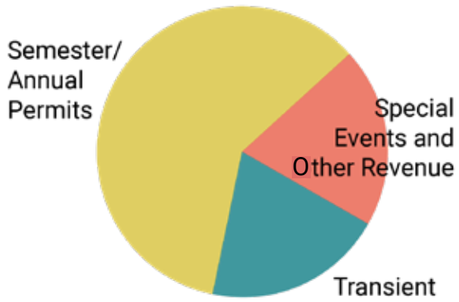
Currently, Georgia Tech's central parking garages and lots are the ones most heavily occupied by permit-based parking customers, with spaces toward the campus edge used more for visitor parking. Shifting to a more transient approach to parking will also mean rethinking where permit-based parking is prioritized.

In this illustration, garages with a higher ratio of annual and semester permit sales to their number of spaces appear in heavier colors. Values over 100% mean more permits are sold for a parking garage than spaces available, suggesting strong preference for the location but not a pattern of regular use by each individual parking user.

As parking needs on Georgia Tech's campus become more varied, the Institute has an opportunity to expand current trends toward more as-needed parking access and to move away from reserved parking permits.

Current Model

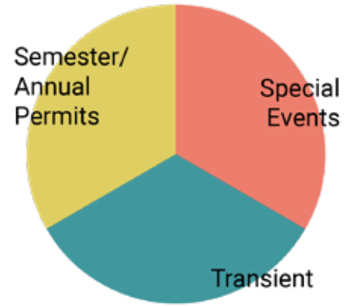
EMPHASIS ON SEMESTER AND ANNUAL PERMIT SALES



Distribution of Parking Revenue

Potential Future Model

GREATER EMPHASIS ON TRANSIENT AND EVENT USE



Distribution of Parking Revenue

Considerations for

EQUITY	Campus community members who need to rely on parking have a larger pool to choose from, with stronger guarantees to access.	→	Pricing and availability of permit parking may be harder to find: GT will need to consider ways to reserve select parking supply for critical needs. Pricing may increase for daily parking users: GT will need to continue exploring strategic pricing for lower-income and price-sensitive users.
SUSTAINABILITY	Parking's availability and price, relatively low compared to Midtown and other surrounding markets, does not encourage consideration of other means of travel to campus.	→	More may be accomplished with less, reducing a need to construct new parking if its use can be managed more closely. A focus on as-needed transient parking, coupled with other demand management measures, may reduce overall driving need to campus.
FISCAL HEALTH	The bulk of Georgia Tech's parking supply is made available through permits, reflecting a relatively low cost and leaving PTS operating with relatively narrow margins and unable to advance major new investments without financing and debt.	→	PTS may have more flexibility to use dynamic pricing and set pricing around high-demand areas of campus without the higher-impact increases of raising permit prices for all users. Special event parking may help to capture additional parking revenue, allowing PTS to make strategic investments more easily.

The CCP's approach to parking is guided by Georgia Tech's campus sustainability goal of building no net new parking.

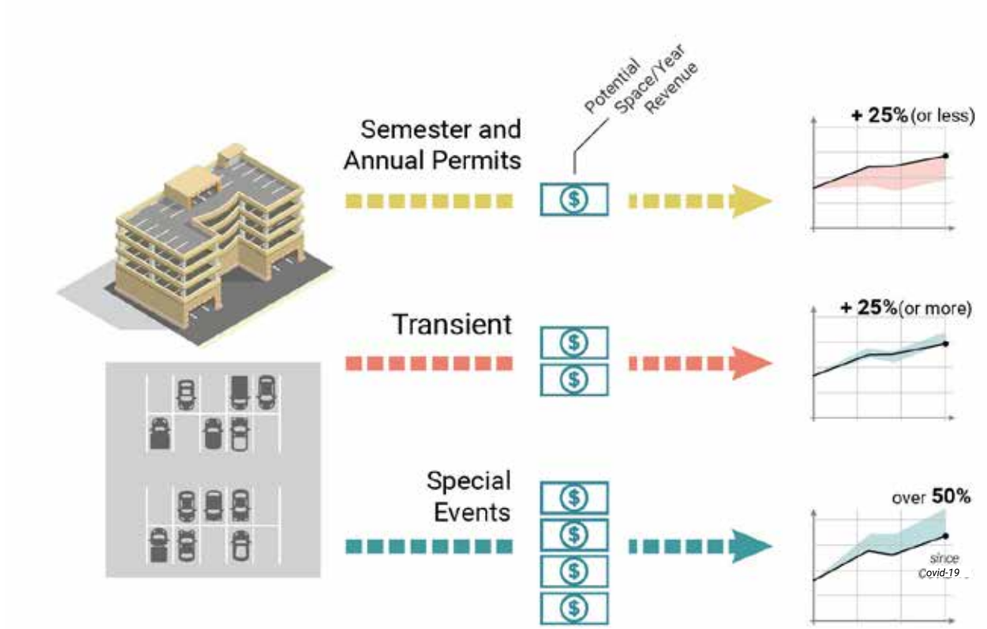
This means some existing spaces may be replaced, but none added above current numbers — even with campus population expected to grow by 26%.

Major Parking Decisions Moving Forward

PTS's organizational and financial structure as a self-sustaining auxiliary of Campus Services means that any major capital investment, such as new parking facilities, must be supported from finances driven almost entirely by user fees. It also sets pricing based on multiple priorities and political directions across the Georgia Tech community. The primary sources of revenue for the Institute overall have been restricted for use in parking and transportation investment, either by statutes and state regulations (in the case of tuition and allocations from the state) or by political reality and designated conditions (in the case of private philanthropy and fundraising). This points to financing as the only practical option for new parking construction, and even a sustainability-driven goal of no net new parking that the CCP has taken as a guiding factor would still require PTS to undertake debt if previous parking is to be replaced with new parking.

The CCP has not proposed a new organizational structure for how parking investments can be funded, but it does acknowledge that the current structure has required PTS to act cautiously and prudently in providing new parking supply. In plain terms, there is also limited desire across the campus community — either in PTS or among other divisions and levels of the campus organization — to invest substantially in new parking. The CCP's recommendations focus more on a highest-and-best-use approach to physical parking facilities and have been judicious in determining where existing parking should be removed and replaced. However, the current model of self-sustaining operations will continue to be a challenge if other approaches and models are not found.

In lieu of this, the CCP has identified a series of decision points that the Institute will likely reach in moving forward with implementation of the plan. Each of these decision points is communicated below, along with the major tradeoffs to come from moving in the directions recommended in this plan.



Given the self-sustaining nature of parking on GT's campus, PTS could restructure parking to take more of a focus on transient customers and special events. The CCP recommends shifting emphasis away from permits and toward transient, pay-as-you-go parking for the day-to-day campus community. The degree to which GT leverages demand for other types of parking to provide long-term revenue is a decision the Institute must make.

How much parking supply?

How is parking priced?

For whom is the parking supply designated?

What degree do other travel options support the system?

How can parking be organized within the Institute?

Parking Supply

The CCP's physical plan recommendations around parking have been driven by the Georgia Tech sustainability goal of no net new parking, meaning the approximately 13,200 spaces available today would not be exceeded in the future, even if parking is relocated and reconfigured. However, Georgia Tech must decide if it even wishes to replace any parking being removed or restructured, or if a lesser amount of parking can and should serve the campus's future needs. This has follow-on implications in other major decision points discussed here.

Parking Pricing

PTS has set parking rates as a result of complex agreements among numerous constituencies and stakeholders of the Institute. While it has generally adjusted prices to keep up with rising costs and inflation, its prices are below the commercial parking market of the Downtown and Midtown Atlanta employment districts. When considered on a monthly basis, the cost of an annual permit is as little as half the cost of some parking facilities nearby in Midtown. This not only limits PTS's ability to support strategic reconfiguration of the parking system to a higher and better land use, but also limits the incentives commuting members of Georgia Tech would have to use other travel options than driving.

To be clear, this does not suggest that pricing must be increased uniformly. A move toward transient parking and a greater allocation of the Georgia Tech parking inventory to support more flexible parking arrangements could save money for end users who only need to use it occasionally, while strategic increases (such as for premium facilities in the central campus, closest to major destinations, or for dedicated permits or reserved spaces) may command price premiums. These questions will need to be answered for a more strategic approach to parking management to be successful, and they should be considered in light of multiple campus objectives (such as construction of new buildings and adaptive reuse of existing ones, the amount of transient and special event parking, and Institute commitments to reducing drive-alone parking).

Parking Allocation and Designation

A fixed parking supply coming from a no net new parking approach combined with a growing campus population suggests that not all users in the future may be able to gain access to campus parking. Restrictions on certain user groups, such as undergraduate students, are commonly used in other campuses facing an overall constraint on parking resources. Georgia Tech will need to consider these kinds of approaches in future parking management decisions.

Commitment to Other Travel Options

The recommendations of the CCP point to a more integrated approach to campus mobility wherein parking is part of a larger overall system, and other travel modes support the Institute's ability to limit the physical footprint of parking and keep inventory at or below current levels as the campus is expected to grow. However, these other options will need significant investment and a holistic approach to serving travel needs on campus.

Georgia Tech should consider ways to provide more of these services in a manner tailored to the campus's needs and integrate these into its larger transportation systems decision-making. These may include investment in campus-specific micromobility (such as a campus-area bikeshare system or other means of supplementing personal bicycles), proactive integration of bicycle and micromobility support facilities (especially parking and storage) in buildings other than mobility hubs, and partnerships with other service providers to offer discounts and incentives to Georgia Tech community members.

Organizational Structure of Parking at Georgia Tech

As this report has discussed, parking and transportation services are currently organized as an auxiliary of Campus Services, requiring them to use a self-sustaining organizational and business model that focuses much of their activity on operations and maintenance. The nature of this organization means that construction of new parking requires financing since the cost of constructing new facilities is prohibitive for the typical annual budgets around these services. By extension, this also means that existing parking supply takes on a relatively sacrosanct status due to its capital and financing costs largely having been absorbed over time. This in turn limits the degree to which Georgia Tech can position its limited land resources to support strategic growth and development.

The CCP planning process explored potential alternatives to this, but found significant constraints to existing funding sources and approaches to capital project delivery and land development. There is simply no immediately apparent alternative to the current approach. However, the increasing demands that PTS already faces and the likelihood of further evolution of travel patterns and preferences on campus point to a need to explore new ways to structure parking and transportation where all aspects of it — construction, operations, and maintenance — do not rely solely on annual budgets driven by user fees. Any such options explored should keep in mind that the current model, wherein parking services are organized in the same division of Georgia Tech as transportation and TDM, possesses a strategic advantage of centralized knowledge and strategic thinking. Any new models should strive to retain that approach and not separate parking out of the overall mobility system.

View of the John Lewis Student Center. ▶
Photo credit: Jonathan Hillyer

4.8 Stormwater Recommendations

Heal the Ridge

Atlanta's urban form is based on a topographic response to ridgelines and lowlands. The major ridgelines drive the urban economic patterns, disconnect the communities in between, and dictate the extent that communities face the brunt of Atlanta's unprecedented development. This history, the current disturbance and social disenfranchisement in Atlanta, is intimately tied to a legacy of water, industry, and people. The memory of racial and environmental injustice can serve as the catalyst for ecological restoration, an innovative watershed approach, and the reconnection of the local community to two watersheds leading to the banks of the Chattahoochee River. As new neighbors on this land, the Institute inherits the history of Atlanta that occurred before us — the growth of trees and the economic suppression of lowland neighbors.

But, with this lies a unique opportunity to provide reconciliation for the past. Georgia Tech must expand the lens through which it looks at restoration and resilience planning and consider impacts on the neighbors that the campus depends on.

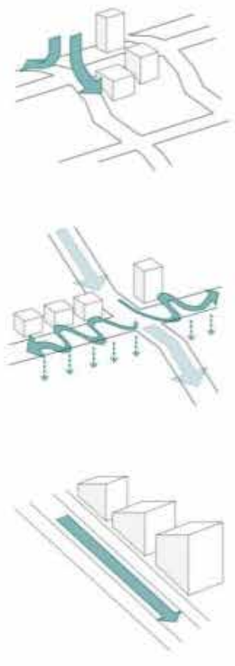
By acknowledging the natural drainage network and how development changed those patterns, Georgia Tech can leverage its position on the ridge to restore its watersheds as a connective tissue between the campus and Atlanta to heal the legacy of the ridge.

Targeted Impacts of Design Framework.

Natural System

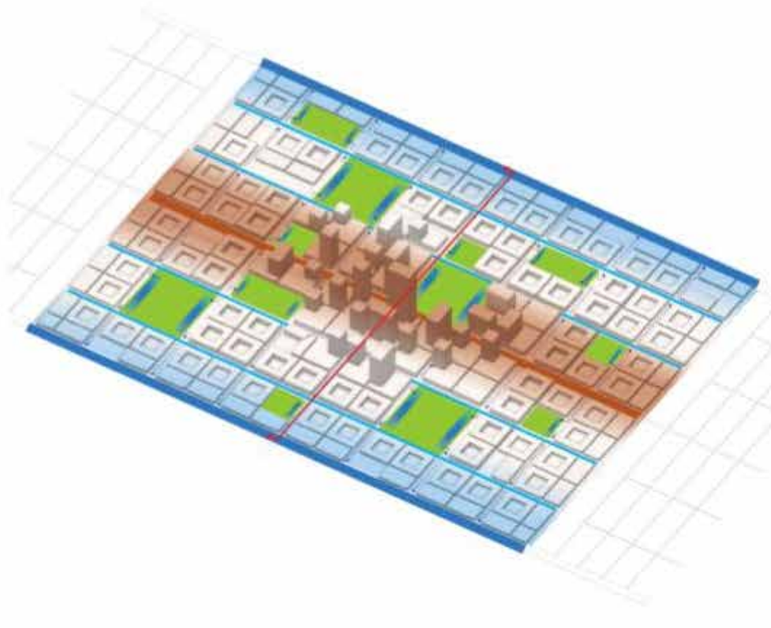
Stormwater interactions with the topography in the natural system

Urban System

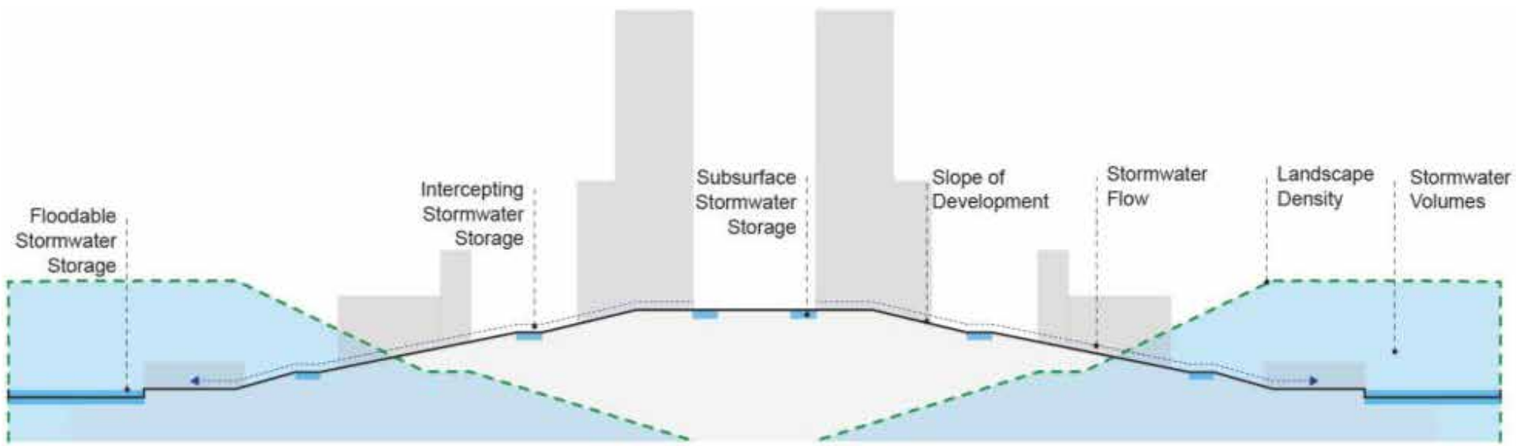


Stormwater interactions with built forms in the urban system

Integrated Open Space System



Naturalistic stormwater interactions with ecologically performative open space in the integrated system



Stormwater recommendations aim to deviate from the traditional interactions of stormwater within the urban system to mimic the behavior of water in the natural system to create an integrated, ecologically performative open space.

Stormwater Recommendations

As Georgia Tech's footprint and geographic impact continue to evolve, along with the city surrounding it, strategies for development must evolve intellectually to integrate future possibilities. Historically, stormwater management aimed to drain public spaces as quickly as possible, collecting sewage and storm flows in underground pipes that outfall directly into downstream water bodies. As infrastructure has evolved, water is no longer seen as a waste product but a multilayered resource to be managed from roofs to soils. Recommendations for stormwater infrastructure must position built systems as companions to the water, moving in rhythm with the natural ebbs and flows through each season and storm. At the core of all recommendations is the philosophy of restoring the natural drainage patterns on campus through an integrated open space framework, to allow nature to heal itself and to align infrastructure to work with nature, rather than against it.

Under the umbrella of this core philosophy, the following stormwater recommendations apply a range of solutions that match the scale of water flowing from the ridgelines to the rivers. These systems aim to mimic how water would naturally behave within the hydrologic cycle as runoff conveys from the ridge to the lowlands. An organizational structure for recommendations of ridgelands to midlands to lowlands, defined in this report, represent some of the framework of Atlanta's natural and anthropogenic history and nods to the layers of land, water, and history that can be leveraged to heal the legacy. All recommendations included are oriented to the goal of developing an integrated, ecologically based landscape that helps Georgia Tech achieve the following goals:

- Align Georgia Tech as environmental stewards of the landscape it occupies.
- Enhance the living, working, learning environment of the Institute.
- Develop a landscape that unifies the campus and gives it a distinct sense of place and expresses the identity of campus.

Ridgeline Recommendations

- Sensitively integrate development along Marietta Street/Tech Parkway to accommodate the programmatic growth of Georgia Tech along the ridge and optimize the amount of pervious surfaces that mitigate stormwater runoff.
- Convey stormwater laterally along the ridgeline with surface conveyance techniques (e.g., bioswales) to junction points to dissipate the conveyance of water downstream and to reduce accumulation of concentrated flows at any one point.
- Incorporate street-adjacent green infrastructure along Marietta Street/Tech Parkway and throughout open space areas to promote infiltration of stormwater before conveying downhill to the midlands and lowlands.
- Provide opportunities for rainwater harvesting and stormwater capture along the ridge.
- Incorporate ridgeline landscape material palette.

Midlands Recommendations

- Provide additional underground storage opportunities at large junctions of drainage paths to intercept stormwater conveyed from ridgeline for stormwater reuse.
    - Couch Park, North Campus Parking Deck, Bobby Dodd Stadium, East and West Architecture buildings.
    - Augment opportunities already advanced by underground storage incorporated under Tech Green.
- Incorporate landscaped bioswales for surface conveyance along major drainage paths to reduce load on downstream stormwater pipe networks, filter stormwater of pollutants, and slow down the rate that stormwater conveys downstream.
    - Place open spaces between the Allen Sustainable Education Building and along State Street, between the West Architecture Building and the Klaus Advanced Computing Building, behind MRDC, and along Atlantic Drive.

Lowlands Recommendations

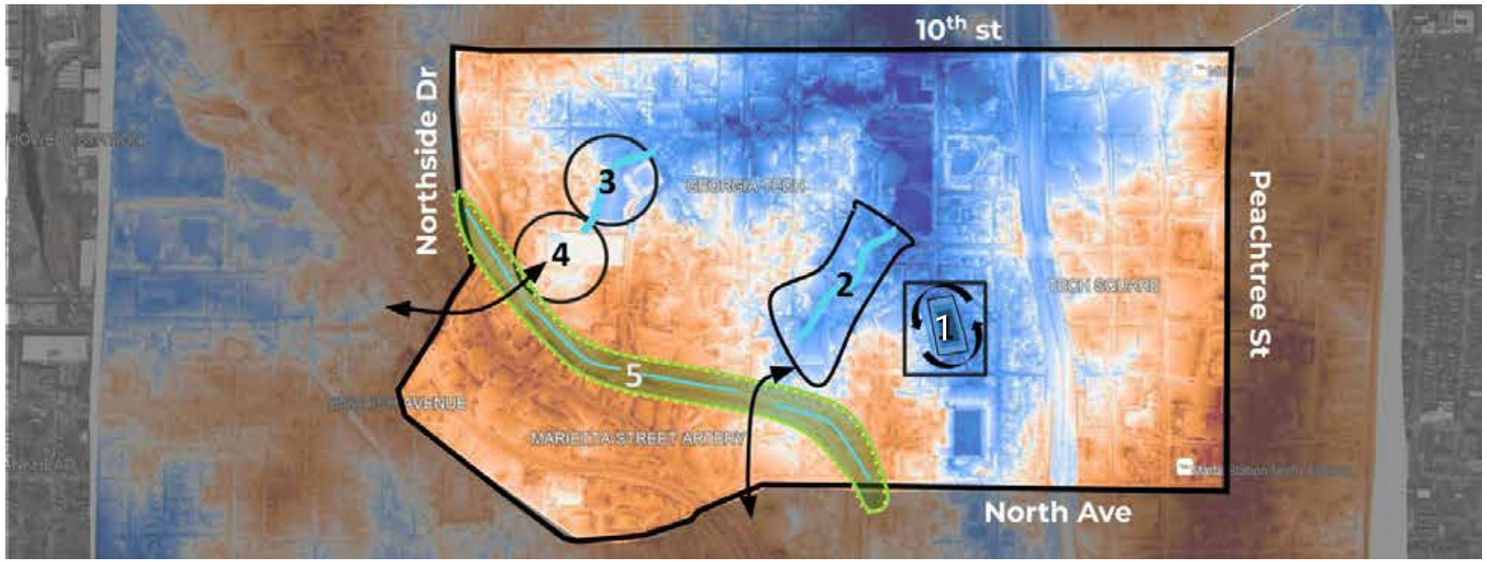
- Increase density of landscaped vegetation to promote absorption of stormwater and urban heat island mitigation.
- Incorporate floodable stormwater storage within open space or programming areas where stormwater is expected to accumulate.
- Build off the concept of EcoCommons, but in a decentralized manner throughout the existing development of North Campus.

Transformative Projects

- Promote retention, reuse, and infiltration in SxSW to reduce demands on downstream infrastructure.
- Peters Parking Deck is the location where large amounts of stormwater are expected to accumulate.
    - Evaluate if Peters Parking Deck could become Peters Park to incorporate more open space.
    - Use open space for large-scale detention in storm events.
    - Evaluate wastewater reuse for non-potable demands, and thermal energy transfer for Holland Utility Plant to mitigate regional CSO (combined sewer overflow) issues.
- In future design exercises, amend topographic characteristics around West Architecture Building to align with surface drainage patterns to prevent ponding and flooding, and to restore natural conveyance characteristics.

At the core of the stormwater recommendations, it is essential that future campus planning prioritizes that surface runoff at ridge points should be managed on site rather than directed downstream to Proctor Creek or Tanyard Creek. By doing so, Georgia Teach can effectively preserve the watershed capacity and prepare for the increasing intensity and frequency of rainfall events caused by climate change. Current precipitation data trends reveal a significant rise in more substantial and frequent rainfalls falling in quick and intense deluges. As GT further develops stormwater management strategies, it is crucial to address this reality and consider the impact on watershed capacities already overburdened downstream. Implementing sustainable stormwater practices at ridge points will be vital in mitigating flooding and reducing downstream impacts while safeguarding the environment from the effects of climate change.

Transformative projects ▶



1. *Peters Park for intercepting campus flows with on-site water reuse facility*
2. *East and West Architecture buildings impacting drainage patterns*
3. *Couch Park grading could improve performance and connect drainage to EcoCommons*
4. *Low point at CRC will be an important SW access node in future phases*
5. *Ferst Drive is a good place to promote infiltration in the upper watershed and move flows laterally to junctions*

Creating a Water Positive Campus

Georgia Tech finds itself, both in the context of the campus and regional scale, in the unique position to leverage water reuse tactics to facilitate a water positive campus that pioneers water stewardship in the landscape of the Southeast. A water positive campus, which by definition is a campus that replenishes and enhances water supply more than it depletes, aims to go beyond mere sustainability and actively contribute to the long-term health and resilience of water systems. The goal is to restore, protect, and replenish water resources, ensuring their availability for present and future generations while minimizing negative impacts on the environment.

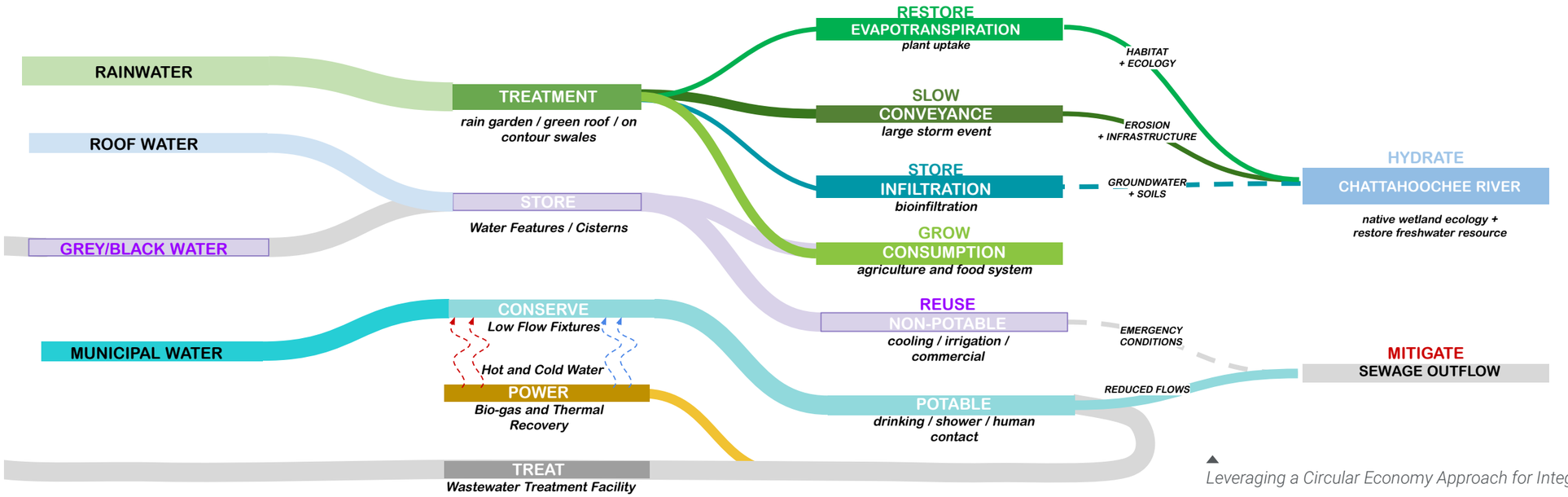
The benefits of Georgia Tech transitioning to a water positive framework, provides impacts that are both large in number and large in scale — including, but not limited to: improved human health of downstream communities, educational opportunities for Georgia Tech students and the greater Atlanta community, improved habitat availability/quality, decreased reliance on aging infrastructure, and improved climatic impact adaptation.

Water positivity at the Institute begins with the incorporation of water reuse strategies to work alongside existing efforts documented in the Stormwater Master Plan. With these two efforts working in tandem, a new Integrated Water Management Strategy is formed with the intent of optimizing infrastructure synergies that are able to do the following:

- Foster a circular economy of water that provides long-term sustainability and resilience.
- Reconcile historical environmental injustices in the lowlands through mitigation of downstream combined sewer overflows.
- Provide educational/research-based opportunities for other campuses to follow.

In a city plagued with aging infrastructure and the largest municipality reliant for drinking water on the smallest single watershed in the country, the Institute can leverage water reuse to establish sustainable resilience with its water security by establishing a circular economy of water. A circular economy departs from the philosophy of the traditional linear economy, which follows a "take-make-dispose" model and emphasizes reducing resource consumption and recycling materials to create a closed-loop system. This closed loop of water-waste-energy fosters resilience by reducing dependency on deteriorating regional infrastructure to satisfy water demands by recycling treated wastewater for non-potable demands (e.g., toilet flushing, cooling, irrigation), creating an emergency supply of non-potable water on campus that can supplement potable water supply, transform methane GHG (greenhouse gas) into usable energy, and provide high performance campus infrastructure intertwined with natural green infrastructure.

Although many campus-scale developments are reasonable contestants for water reuse facilities due to the amount of sewage generated by the development for treatment, Georgia Tech is of special interest for a water reuse facility due to the upstream sewer catchment that reaches campus via major sewer trunks passing through campus as part of the Tanyard Creek combined sewer system. At the point that the combined sewer system intersects with the southwest portion



Leveraging a Circular Economy Approach for Integrated Water Management.

of campus, the system is conveying nearly 5.5 million gallons on any average day from Downtown toward the lowlands. This positioning allows a water reuse facility on campus to feasibly tap sewage from the combined trunk sewer to increase the amount of wastewater treated for non-potable use beyond what would be possible otherwise.

The commission of a water reuse facility that treats both campus sewage and scalped sewage would have impacts ranging in scale both locally and regionally. Locally, this alignment of existing infrastructure conveying upstream sewage provides the perfect opportunity to leverage an economy of scale for water reuse, reducing the cost per unit of water reuse and improving treatment efficiency through resource optimization, making reclaimed water more affordable and economically sustainable. In a city where water and sewer rates are among the highest in the nation, are least affordable based on the city's median income, and have increased by 3x over the last 20 years, the Institute can take advantage of this opportunity to position itself as a regional leader in water resilience and intercept flows from the combined sewer system to replenish the non-potable water supply for use throughout campus and export to neighbors.

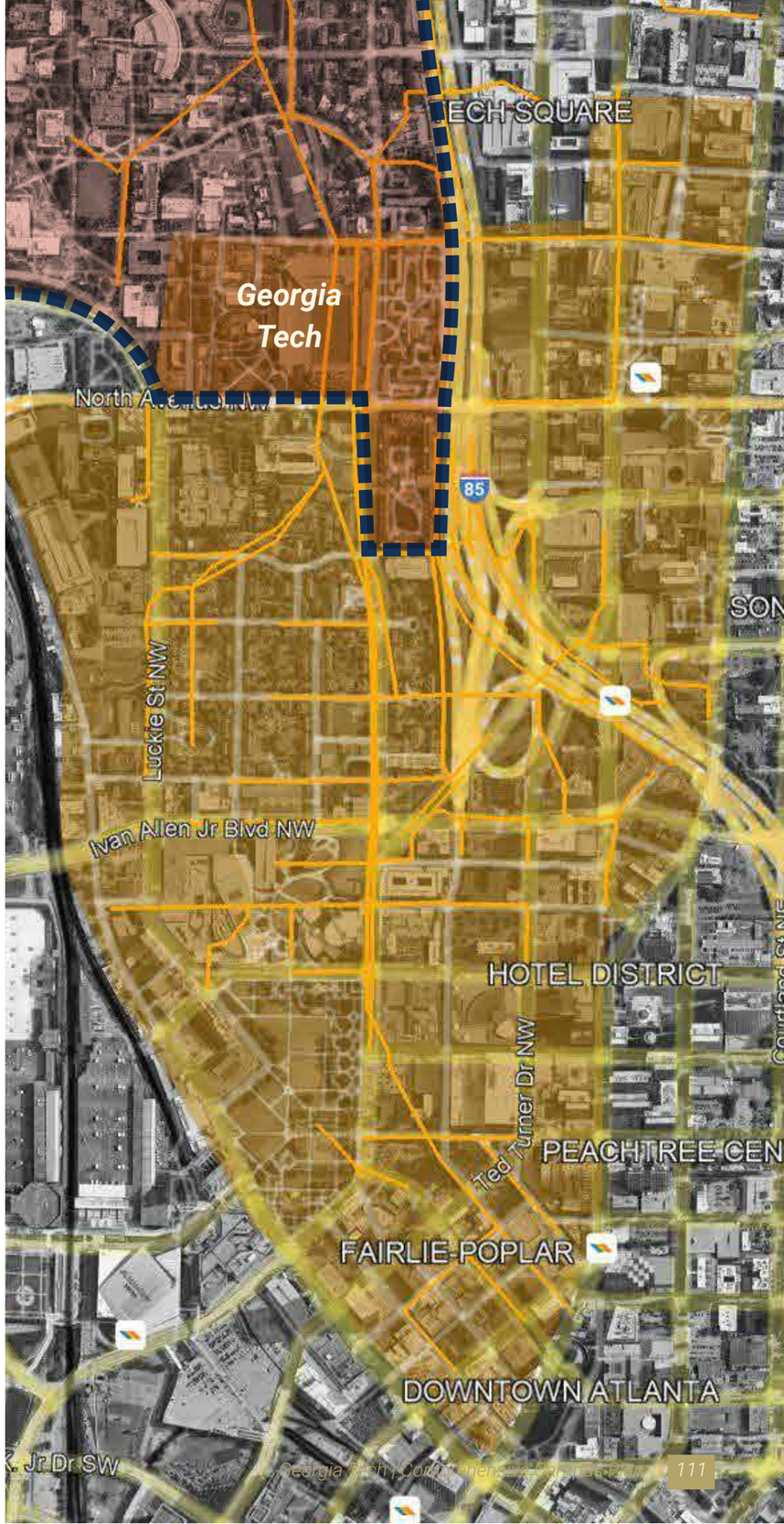
Regionally, the campus location at the upper portion of the Tanyard and Proctor Creek watersheds provides an opportunity for a water reuse facility to mitigate combined sewer overflow events downstream and reconcile historical environmental injustice imparted upon the lowlands. Since establishment, the amount of sewage reaching the pipes has increased due to development, but the capacity of the network has not, resulting in an increased amount of combined sewer overflows that exacerbate flooding and water quality issues in the lowlands. Despite the city's infrastructure improvement efforts, combined sewer overflows continue to occur and are continually exacerbating in the face of climate change, with overflows now occurring in as little as 0.1" of rainfall. Across the city, 1.97 billion gallons of overflow reaches our creeks each year, annually contributing to 6.57 million kilograms of pollution.

Through the incorporation of an on-site water reuse facility, Georgia Tech could effectively intercept and divert large volumes of water that would otherwise be in the combined sewer each day for treatment and reuse, reducing the demand on the overwhelmed combined sewers downstream and mitigating combined sewer overflows that disproportionately impact the downstream lowlands. Georgia Tech can leverage its intimate knowledge of engineering and technology to play a role in repairing environmental impacts within its community, offering both "Progress and Service" to its neighbors.

Upstream Sewer Catchment Reaching Georgia Tech

- **Catchment Takeoffs**
  - 500 Acres
  - 78% Impervious
- **Residential Population**
  - 5,534 Residents
  - 90 Gallons per capita per day
- **Employment Population**
  - 54,822 Jobs
  - 83 Gallons per capita per day
- **Stormwater**
  - 500 million gallons/year of runoff
    - 2,800,000 peak gallons per day
    - 530,000 average gallons per day
- **Wastewater**
  - Residential
    - 500,000 gallons per day
  - Employment
    - 4,500,000 gallons per day

Assumptions for the upstream sewer catchment that reaches the southern portion of Georgia Tech from Downtown.



Implementing Water Reuse at Georgia Tech

Advancing the Institute in fostering water stewardship is outlined in three different scenarios, each tier involving an increasing amount of centralized intervention, and should be evaluated in consideration of the campus's goals and priorities. As many of the buildings on Georgia Tech's campus are LEED certified, and thus incorporate LEED low-flow fixtures, it can be assumed that Georgia Tech is operating near or at the "good" level now. "Better" and "best" scenarios are differentiated by the extent to which wastewater is treated for use, and if the facility produces offset or replenishment.

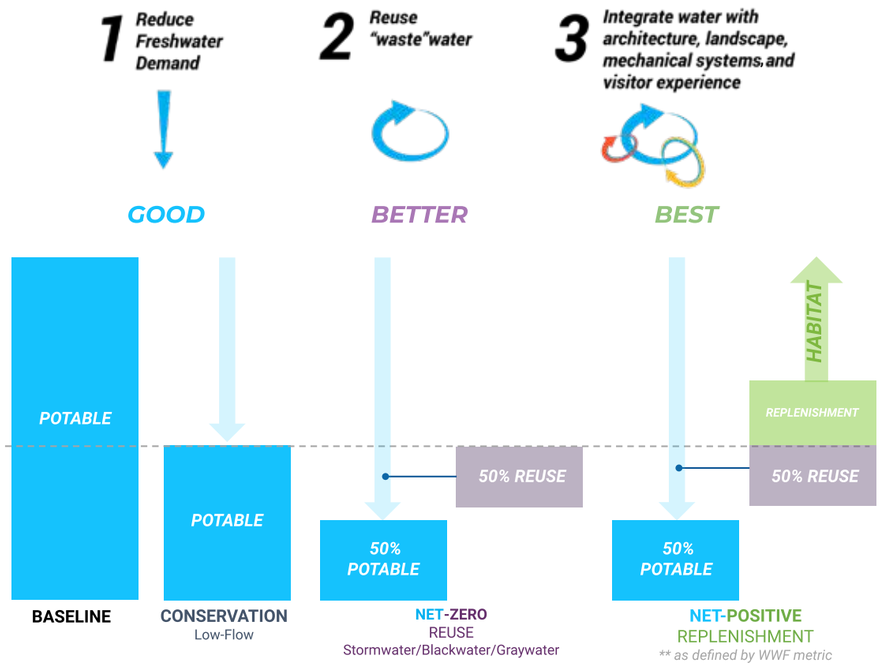
For both the "better" and "best" scenarios, an on-site water reuse facility would be optimally incorporated in the redevelopment and restoration of Peters Park, due to the site's ability to meet design criteria for both topography and capacity for development. This location, which would further build upon the previous recommendation of Peters Park, would be an ideal location to intercept stormwater and wastewater from a majority of the south and southwest campus, while also serving as a prime location for tapping into the combined sewer network.

Treated water generated from this on-site facility would be used for non-potable demands across the campus (cooling, irrigation, toilet flushing), stored to an extent in case of future emergencies, and potentially exported to neighbors who may also have non-potable demands, offsetting operational costs and extending an arm of resilience to the surrounding communities.

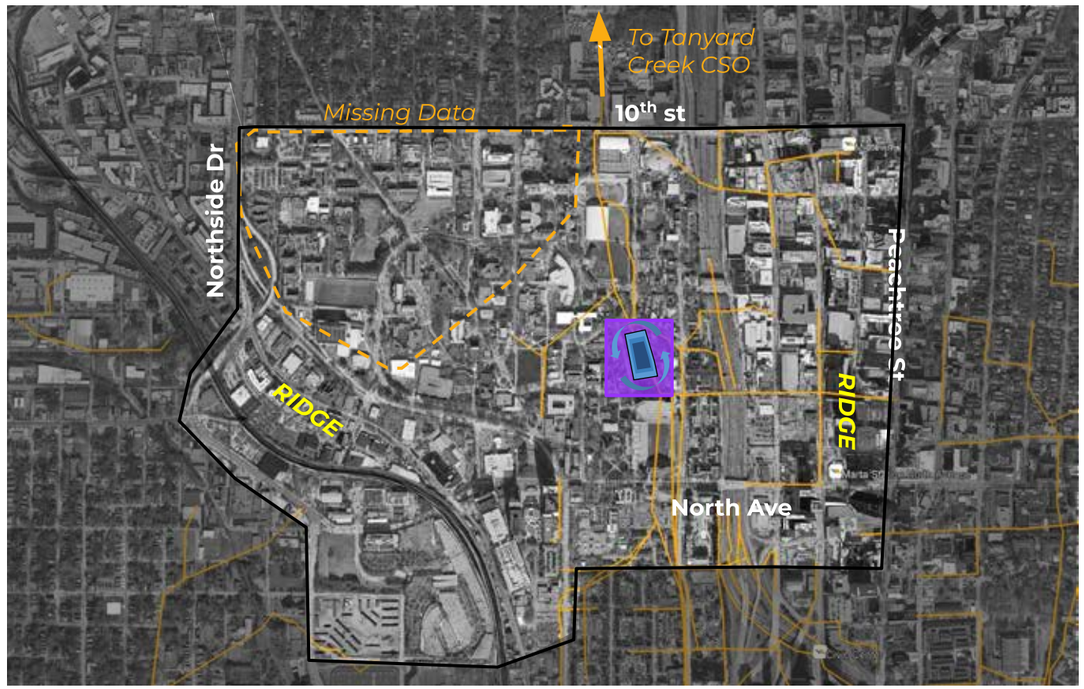
Good
Minimize potable consumption
Minimize outdoor consumption

Better
Capturing and using rainwater, stormwater, and condensate
Implement Greywater/blackwater systems for mechanical and irrigation demands

Best
Restoring natural drainage patterns with reclaimed water
Educate and instigate innovation in the faculty, staff, and community



Three Scenarios of Water Stewardship Proposed for Georgia Tech



Alignment of On-Site Combined Sewer Pipes that feed the Tanyard Creek Combined Sewer System and proposed location for on-site Water Reuse Facility at Peters Park.

On-Site Water Reuse Precedent: Emory Water Hub

The WaterHub at Emory University is a water recycling system that uses eco-engineering processes to clean wastewater for future non-potable uses like flushing toilets. The system was created in 2015 to treat 400,000 gallons of stormwater, greywater, and blackwater each day, providing water supply for 90% of utility water needs and 40% of total water needs. Collected water is treated using natural processes (hydroponic plants and microorganisms) and UV disinfection, making it the first treatment facility of its kind in the country. The facility also includes a 50,000 gallon emergency water reserve, which allows heating and cooling systems to function for an additional seven hours in the event of disrupted water availability, securing the integrity of research labs in the event of infrastructure disruption.

The system reduces the draw of water from Atlanta's municipal water supply by up to 146 million gallons of water annually, which helps ensure the availability of water for all and saves the university millions of dollars in water utility costs. By 2025, Emory plans to reduce water use by 50%, including eliminating drinking water use for heating, cooling, toilet-flushing and other non-potable uses.

Image of the greenhouse that houses vegetation and natural processes that utilize biomimicry to break down pollutants in the water at Emory University's WaterHub in Atlanta, GA.
Source: Emory University

4.9 Campus Utilities Recommendations

The CCP recommendations for utilities infrastructure supports Georgia Tech's Sustainability Next Plan that has set several operational objectives related to campus utilities. This includes a goal of carbon neutrality by 2050, a milestone reduction of 50% reduction for Scope 1, 2, and 3 emissions by 2030, and a reduction in energy use per square foot by 40% (from a 2010 baseline).

To achieve these objectives, Georgia Tech must infuse energy efficiency and other decarbonization strategies (such as electrification) within the planning, design, and operation of utilities infrastructure, existing buildings, and new buildings.

Georgia Tech's utility infrastructure needs to support a growing campus while preserving and improving existing facilities and enabling a graceful and deliberate transition to carbon neutrality. Georgia Tech can accomplish this through preventive maintenance, building renovation and deferred maintenance projects that incorporate deep energy upgrades, and zero carbon, high-performance new construction. Building performance improvements should be leveraged to support district thermal systems, which must evolve to support new growth and facilitate a transition to a decarbonized utility system.

Optimize Performance of Existing Facilities Through Operations and Renovations

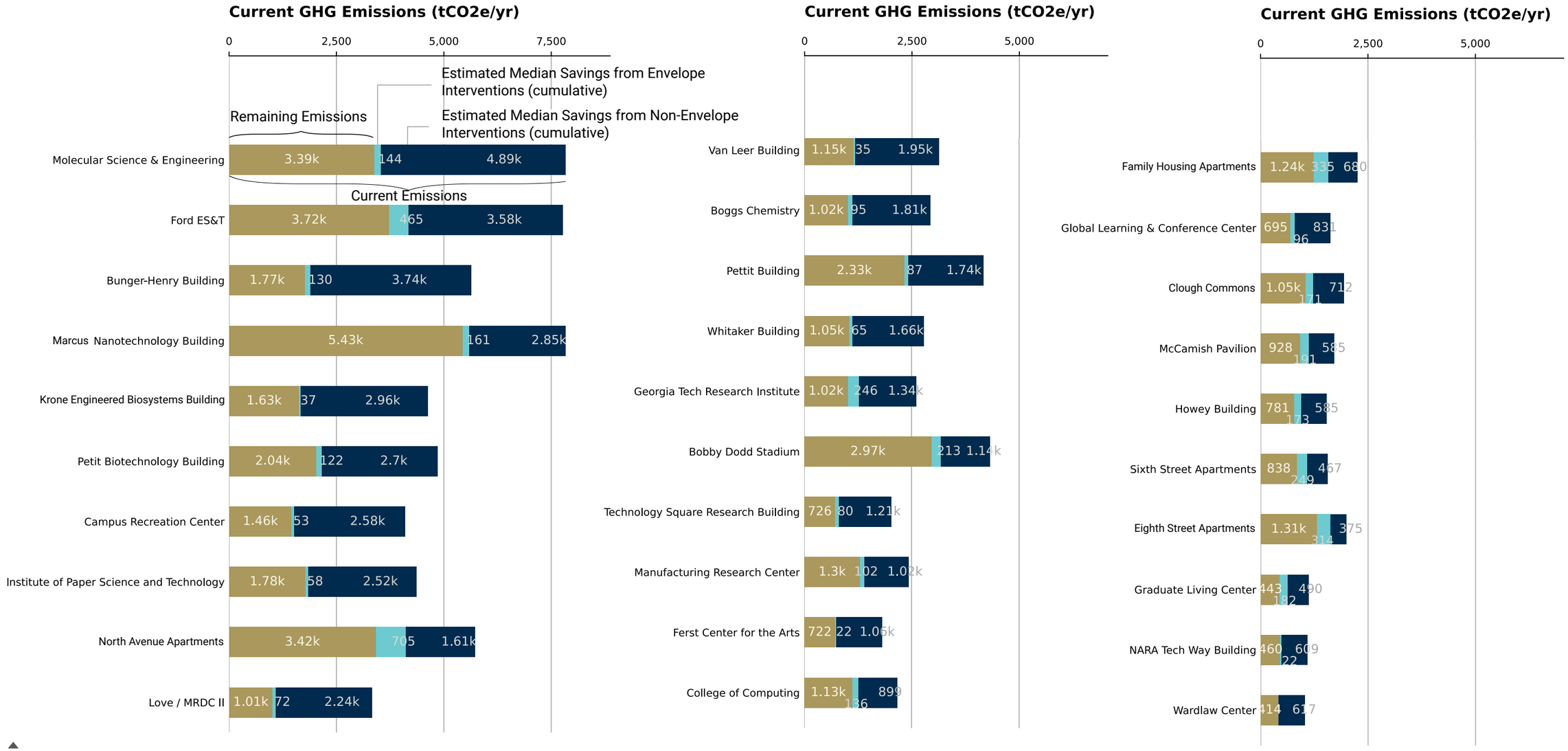
By investing in existing buildings, Georgia Tech can greatly reduce operational costs, carbon emissions, and the amount of new construction required to support the Institute's growth. Investment in energy efficiency and deep energy retrofits can also be used to reduce demand on utility infrastructure, along with reducing the cost of providing additional capacity. Georgia Tech's Sustainability Next Plan identified several strategies to achieve these outcomes, including the definition of a Strategic Energy Management program, development and implementation of a Campus Energy Efficiency Strategy or Policy, and funding and developing a continuous-commissioning program.

The building portfolio performance assessment identified a list of 30 buildings with the greatest estimated emissions reduction potential (see charts on next page.) The emissions reduction potential in these buildings equate to over 70% of the total emissions reduction potential identified for the entire campus. These buildings should be prioritized for retro-commissioning and other energy efficiency efforts, with continuous commissioning deployed to maintain energy savings. These efforts should assess opportunities to regain chilled water capacity by reducing demand and addressing low temperature differential.

Georgia Tech will need to implement heating electrification to meet its carbon neutrality goals. This will include a transition from steam generated by natural gas boilers to hot water generated by heat pumps.

However, most heat pump technologies operate most effectively at lower hot water supply temperatures. To prepare for heating electrification, buildings' system should be assessed for the potential to operate at lower hot water supply temperatures to expand the range of heat pump technology options and limit the need to boost hot water supply temperatures. This assessment should also include buildings served by high-temperature hot water from standalone boiler systems. Building heating systems are often over-engineered; using building automation trend data, experimenting with lower hot water supply temperatures, and addressing troublesome zones can often avoid the need to invest in costly upgrades to physical infrastructure, such as replacing heating coils and upgrading piping within buildings. Early identification of required upgrades can be used to inform equipment replacement and building renovation requirements.

Georgia Tech should also continuously assess the preventive maintenance program and ensure adequate resources are provided to allow buildings to operate optimally. The dramatic energy savings from retro-commissioning projects are often due to years of deferred maintenance. Resources to continually assess and maintain energy metering systems should also be provided to ensure building energy data is accurate and actionable.



List of top 30 buildings by maximum emissions reduction potential for envelope and non-envelope interventions.

Building Renovation and New Construction

Building renovations and new construction should incorporate deep energy efficiency and be compatible with a decarbonized district energy system. Design decisions should incorporate a total-cost-of-ownership approach that reflects the fact that today's new buildings and renovations will become tomorrow's existing buildings.

It is more cost effective to incorporate decarbonization measures like energy efficiency and electrification as part of new construction and major renovations rather than isolated upgrades. Georgia Tech can best steward institutional resources through a total-cost-of-ownership approach.

Renovations should refer to the building performance analysis to support development of performance targets and identify areas of prioritization. Design standards should be assessed and updated to align with this approach, with an emphasis on facilitating transition away from district steam. New buildings connected to the district thermal system should be designed to be compatible with a low-to-zero carbon district thermal system. New buildings not connected to district thermal systems should be all-electric and assess the potential to share thermal resources via local ambient loops.

Georgia Tech has demonstrated leadership in sustainable building design and construction through the success of The Kendeda Building for Innovative Sustainable Design. This is the first building in Georgia to achieve the ambitious Living Building Challenge certification and the second building in Georgia to achieve LEED Platinum v4 certification.

This all-electric, high-performance building has achieved both net positive energy and water performance. By applying the experience gained from this project to all new buildings and renovations, Georgia Tech can enhance occupant experience and mitigate carbon reductions, while shifting from a framework of limiting negative environmental impacts towards a truly regenerative approach.

The Kendeda Building for Innovative Sustainable Design.

Thermal Plant to Serve Growth, Expand Resiliency, and Facilitate Decarbonization

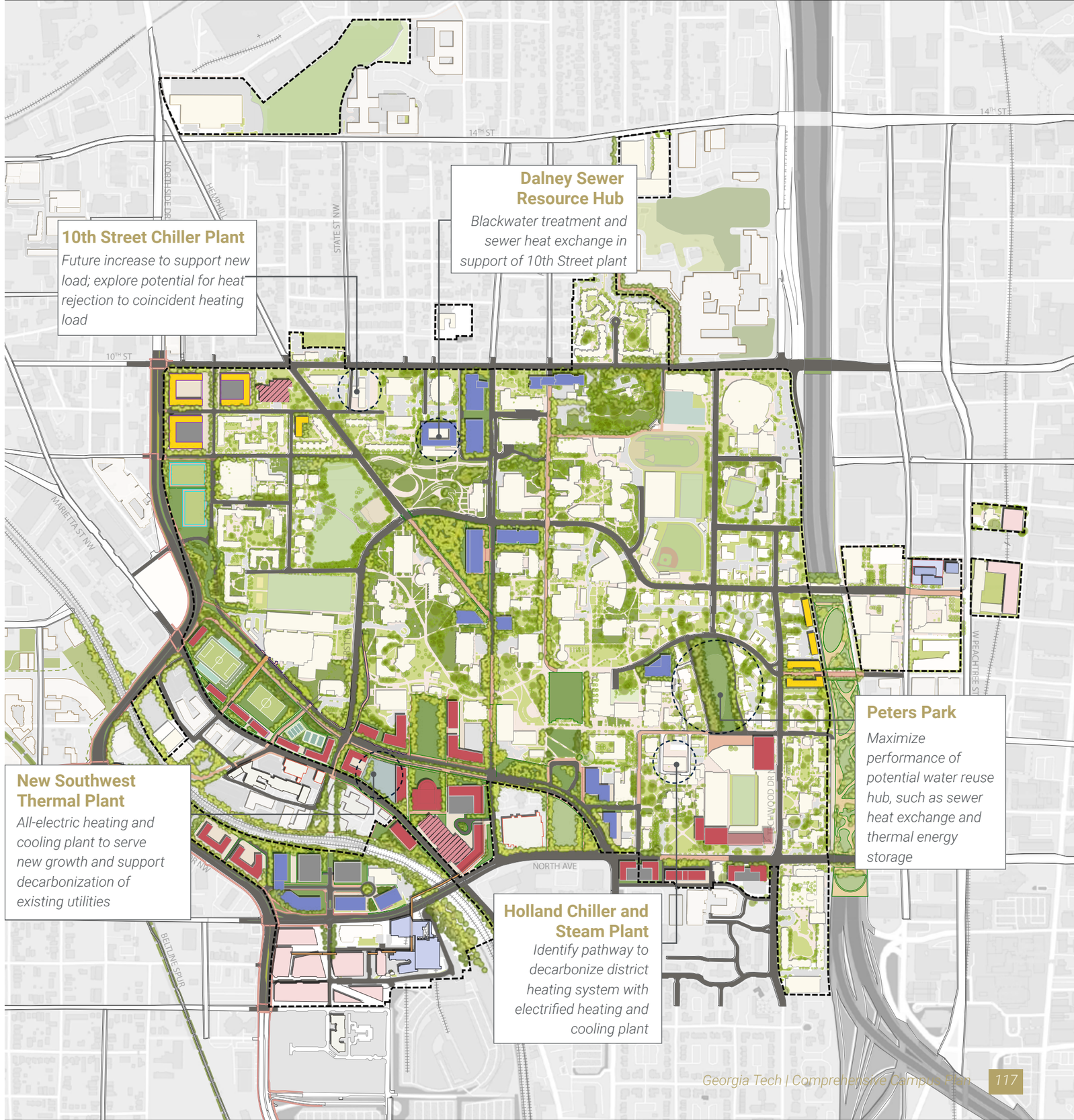
The existing district chilled water system is unable to accommodate the additional growth needed to meet Georgia Tech's needs. A new thermal plant is anticipated to meet the increased loads from the southwest sectors.

To advance Georgia Tech's carbon neutrality goals, the plant should be all-electric (except potential combustion of methane from collocated wastewater treatment system) and on-site renewable energy generation should be maximized.

While the plant would largely serve the new growth in the southwest sectors, the design should consider the potential to support existing district thermal systems by providing redundancy for the chilled water systems and facilitating a transition away from steam and toward low-carbon heating systems. Technologies to consider include heat recovery chillers, air-source heat pumps/chillers, sewer heat exchange, and ground-source heat pumps.

Thermal energy storage should be considered to reduce the size of mechanical equipment, enhance resiliency, and expand the ability to meet near coincident heating and cooling demands with technologies like heat recovery chillers. Georgia Tech should consider other opportunities to provide resiliency, including development of a zero carbon microgrid using lessons learned from the urban microgrid at Tech Square.

Highlights of utility approach. ▶



Georgia Tech should also embrace this new plant as an opportunity to beautify and make visible sustainability infrastructure elements to educate, engage, and inspire students, faculty, staff, and the broader community. Finally, the design of this plant should align with an overall strategy to modernize and decarbonize Georgia Tech's district energy systems.

Identify Pathway to Decarbonize District Thermal Systems

Georgia Tech needs to identify a pathway to decarbonize the existing utility infrastructure while continuing to provide reliable service to the campus. The new southwest plant should be used as an opportunity to develop a framework for integrating the new and existing chilled water systems and moving away from fossil fuel-based heating and steam distribution.

A Utility Master Plan should be developed to identify a decarbonization pathway for Georgia Tech's utility infrastructure and ensure the benefits of a new southwest thermal plant are maximized.

The study should assess whether the new southwest thermal plant should be designed to serve existing loads on standalone or multi-building heating systems, including in the Northwest Residential District. The potential for the southwest plant to provide additional capacity to serve portions of campus on the steam distribution system and provide a decarbonized district heating approach to buildings not currently on the steam system, both in the near and long term, should also be explored.

Most importantly, a Utility Master Plan should develop and assess strategies for Georgia Tech to transition to a decarbonized utility infrastructure, informed by phasing and aligned with renovation schedules and equipment end of life needs. In addition to consideration of technologies such as heat recovery chillers, air-source heat pumps, and water-to-water heat pumps, the study should explore ways to reduce the cost and disruption through thermal energy storage and demand side management.

The Dalney Building has a space identified for a blackwater treatment facility. This location can also be used to tap into the sewer lines from the dormitory buildings and is in close proximity to the 10th Street Plant. The ability for the Dalney Building to serve as a water and energy hub should be assessed in the Utility Master Plan, with an emphasis on supporting additional capacity at the 10th Street Plant.

As part of this effort, Georgia Tech should evaluate opportunities to maximize the performative elements the CCP recommended: replacement of Peters Parking Deck to Peters Park in concert with a water reuse approach.

This should consider opportunities to use sewer heat recovery and combust harvested methane to serve campus heating needs through the Holland Plant. The study should also assess the ability for the system to reject heat when cooling is required to reduce losses from evaporation. Opportunities to leverage stormwater detention as thermal energy storage should also be considered.

The study should assess which buildings and groups of buildings can currently operate at lower hot water supply temperatures and what upgrades would be required to enable the transition, along with updated design standards for equipment replacement and renovations.

The Comprehensive Campus Plan is developed as a flexible decision-making framework, rather than a prescriptive blueprint to be implemented, as is. Critical to the decision-making process will be conducting follow-on studies that explore certain ideas further, confirm emerging needs, and identify priorities for projects that will guide near- and long-term capital investments.

4.10 Next Steps

These follow-on studies, as summarized in this section, are "next steps" for Georgia Tech to act on. Some of the next steps also include the need for deeper analysis that was beyond the scope and time frame of the CCP process.

Keep CCP Current as a Living Framework

- Update the digital campus clone: Keep the campus GIS map and model current by updating it regularly to reflect the physical changes occurring on campus.
- Staff training: Assign and train Georgia Tech staff to use the CCP ArcGIS Online Tool with the goal of testing new/alternative scenarios to the CCP in response to evolving campus needs.

Undertake Detailed Planning Studies

- Conduct campus sector plans / implementation plans to detail planning and site design for focus areas.
- Undertake detailed facilities assessment to determine renovation, repurposing, or redevelopment strategies for facilities identified as such in the CCP.
- Develop athletic facilities plan to verify GTAA programmatic needs and priorities.
- Update the 2011 Landscape Master Plan in response to the Institute's Climate Action Plan (CAP) and to mitigate the projected increase in campus building development by incorporating innovative and cutting-edge ideas in support of ecological performance goals.

Academic, Research, and Workplace Space Next Steps

- Academic plans: Undertake academic plans to identify specific programmatic needs and priorities.
- Research growth plan - Conduct a study to understand impact of future research funding on personnel growth and research priorities to project specific future space needs.
- Space utilization study - Conduct a space utilization and occupancy study to inform and have a detailed understanding of how the current spaces are being used. This will assist in further determining future space metrics and workplace strategies and is especially useful when hybrid and shared seating are in use.
- Update space policies - Consider updating space policies and processes to align with recommended CCP space strategies, particularly to accommodate hybrid and remote workers. This is most successful when coordinated with HR (human resources.) Also update operational process and practices as new space types and strategies are implemented.
- Research and workplace space standards – Update space standards to align with newly implemented space strategies and pilots. Research space standards to include metrics for Principal Investigator (PI)/ASF.
- Assess and report current space use and budget model transition to continue to formulate an accurate projection for future space use.
- Pilot programming and tracking – Pilot (try as test case) recommended space type strategies and track data and user inputs to inform future implementations.
- Implement change management program – A robust and well executed change management program will contribute greatly to the success of implementing updated space strategies. It is recommended to start this process as early as possible.

Mobility Next Steps: Implement Complete Streets

Continue to implement complete streets on key campus edge streets in concert with neighborhood partners and City of Atlanta. Each main bounding street of the core campus is a critical opportunity to reduce the barrier effect of major transportation corridors and to make the campus more accessible to the community. However, due to differing ownership of the major streets around campus, this will require different strategic approaches. Key streets to focus on are noted below.

- Northside Drive complete street implementation - Owned and maintained by Georgia Department of Transportation (GDOT), Northside Drive has already been studied extensively for a set of corridor management and design interventions that could improve safety, efficiency of vehicle operations, and eliminate key conflict points. A critical part of GDOT's study and concepts for this corridor is the reconfiguration of the Marietta Street/Northside Drive intersection complex and the removal of the northbound Northside flyover lane. GT should include the following in next steps:
    - Develop a preferred alternative for the Marietta Street and Tech Parkway intersections with Northside Drive, including a clear understanding of potential surplus right-of-way.
    - Understanding of how a potential removal of Hemphill Avenue from the Northside Drive/14th Street intersection, as illustrated in GDOT concepts for the Northside Drive corridor, would affect GT-related needs for mobility between the core campus and GT facilities on or north of 14th Street. This study should explore potential impacts on the Home Park neighborhood and identify potential mitigation strategies.
- North Avenue complete street implementation - North Avenue, owned and maintained by GDOT, has been identified as a new "front door" corridor to the campus and a major location for connections to the historic core around Tech Tower, including transit operations (which can link directly to the North Avenue MARTA station). Georgia Tech has also noted potential benefits in special event-based closures of the street. Georgia Tech should consider these next steps:
    - Identification of a desired list of GT-related priority users of the North Avenue corridor (especially transit vehicles and special events use). This would form the primary inputs to a later study on how a more sophisticated corridor management approach to North Avenue might be phased and implemented in coordination with GDOT.
    - Develop a corridor management study that includes potential impacts and mitigation strategies for an increased role in GT-focused uses of North Avenue, such as frequent transit service (as recommended in the CCP) and special event-based closures and operational plans.
    - Perform an alternative route study to identify a new potential alignment for SR 8, the GDOT designation for the North Avenue corridor from Northside Drive to Courtland Street and Piedmont Avenue (where the SR 8 designation shifts to Ponce de Leon Avenue). GDOT has historically expressed willingness to consider removal of routes from the state highway system if they can be replaced with a broadly parallel route with a similar number of miles and with streets or roads that can be feasibly brought to GDOT design and construction standards. GT should explore this option as a means of returning control of North Avenue to the City of Atlanta and therefore having more easily attainable influence in decision-making for the corridor.
- 10th Street complete street implementation - Owned and maintained by the City of Atlanta, 10th Street is a key link for the campus's connections to Midtown and serves as a gateway to Home Park. Next steps for 10th Street include:
    - Working with the city to identify potential design concepts for expanded multimodal accommodation on the south side of 10th Street. GT has been making site design and building decisions that reserve a design envelope on this side of the street. The Institute and city should take early steps to understand what could be placed in this envelope.
    - Studying overall pedestrian safety on the 10th Street corridor and where potential improvements might be warranted.

Mobility Next Steps: Traffic Impact

- Study traffic impact of street repurposing across campus to chart a sustainable path to increasing the car-free area of campus to the northwest and around Peters Park. The CCP recommends a series of selective street closures to general-purpose vehicle traffic; these are intended to increase the footprint of a generally car-free area inside the Ferst Drive/Tech Parkway loop and to focus vehicle movement on a parallel set of streets closer to the edges of campus. Georgia Tech should perform a traffic operations study of these changes and partner these with envisioned closures of Fifth Street in the Tech Square district. This study should include typical-day travel patterns, but also understand the implications of special events. It may be used to explore how selective special-event-based vehicle traffic operations can be selectively allowed to improve access to/from the campus and circulation around it when major special events occur.

Mobility Next Steps: Transportation and Parking

- Reevaluate transportation and parking operational and revenue models: Conduct a feasibility study on parking governance and administration models, exploring alternatives that might allow Georgia Tech's Parking and Transportation Services (PTS) to participate in the CCP recommendations without absorbing long-term negative impacts.
- Feasibility of parking governance and administration models: A long-term next step for the Institute should be a feasibility study on parking governance and administration models, exploring alternatives that might allow Georgia Tech's Parking and Transportation Services to participate in the CCP recommendations without absorbing long-term negative impacts. This study should explore 1) How PTS can increase revenue opportunities through offering competitive, contract-based management services of non-GT-owned parking facilities, essentially entering the market for contract-based parking operators. 2) How public-private partnership models of site development for new campus buildings and facilities could include parking construction costs. 3) How different pricing options can create paths to expanded revenue.
- Transit plan: Whether part of the Transportation and Parking Plan or an independent study, Georgia Tech should also study how transit operations might expand beyond their current fixed-route model and whether third-party service providers could be used to fill geographic gaps in service that might result from a more streamlined transit route network focused on frequency (as recommended in the CCP).

Student Life (Housing/Dining/Recreation) Next Steps

- Dining operational plan: Evaluate operational plans for campus dining to optimize all-you-care-to-eat dining hall operations and strategically expand retail operations.
- On-campus housing modernization: Continue to advance the modernization and updating of on-campus housing through phased new construction, renovation, and demolition.
- Integration of Student Life spaces: Evaluate budget/financial models that will allow for the creation of mixed-use facilities, enabling the integration of Student Life resources into other campus assets as they are developed in strategic locations.

Utilities Next Steps

- Climate Action Plan: Complete the in-process Climate Action Plan to provide a framework for utility infrastructure as it relates to institutional carbon neutrality.
- Utility master plan: Develop a cohesive and phased approach to serve the thermal needs of existing buildings and new growth while also facilitating a pathway to carbon neutrality.
- Building renovations and new construction standards: Update Yellow Book to reflect recommendations of the CCP and lessons learned from The Kendeda Building for Innovative Sustainable Design, including carbon neutral and all-electric new construction.
- Develop a strategic energy management program: Leverage results from building performance assessment to expand energy efficiency efforts, including prioritization of buildings for retro-commissioning and other energy efficiency improvements, to reduce emissions, utility costs, and load on district thermal systems.

Stormwater Next Steps

- Complete campuswide stormwater master plan to include a comprehensive analysis of stormwater management strategies that align with Georgia Tech's evolving footprint as recommended by the CCP and the surrounding city. Focus on integrating past, present, and future possibilities while considering water as a valuable resource rather than a waste product.
- Expand 2011 Landscape Master Plan recommendations (EcoCommons) for stormwater infrastructure to further restore headwater natural drainage patterns on campus through an integrated conveyance and open space framework. Ensure that built systems work in harmony with seasonal water flow and extreme storm events from ridge to valley.
- Update Landscape Master Plan with a focus on promoting carbon capture biodiversity, reducing water consumption, and enhancing ecosystem health and patch sizes of the current campus boundaries.

Net Positive Water Next Steps

- Campuswide water reuse: Conduct further analysis of campus water demand and supply to verify the feasibility of implementing water reuse at a campuswide scale. Update the financial analysis based on current estimated construction costs and municipal water/sewer rates to determine the projected return on investment.
- Collaborate with city authorities to assess the viability of sewer scalping and the advantages of heat exchange as a crucial component of Georgia Tech's upcoming Utility Master Plan.
- Blackwater reuse strategy: Update the current blackwater reuse strategy conducted by the Institute to accommodate the increased density in Tech Square and on the ridgeline, as well as explore additional opportunities. This includes exploring the potential for extracting heat from the sewer flow, in addition to any combustion of captured methane.
- Comprehensive water balance plan: Create a detailed water balance plan that outlines specific targets, goals, and strategies for achieving a net-positive campus. The plan should encompass key areas such as energy, water, waste management, transportation, and social impact.
- Collaborations and partnerships: Forge collaborations and partnerships with local communities, businesses, and government entities to leverage resources, knowledge, and expertise. Seek opportunities for joint projects, research collaborations, and community-based initiatives that contribute to the net-positive goals of the campus and the surrounding area. Consider net-positive opportunities at a district scale rather than individual sites or buildings.
- Continuous monitoring and reporting: Establish a robust monitoring and reporting system to track progress toward net-positive goals. Regularly assess and report key performance indicators related to energy consumption, greenhouse gas emissions, water usage, stormwater infiltration, habitat footprints, waste diversion rates, and community impact. Use the data to identify areas for improvement and drive ongoing sustainability efforts.

Community Engagement Next Steps

Continued engagement with stakeholders has been identified as a high priority beyond the completion of the CCP. Moving forward, the following activities should be undertaken:

- Seek ongoing feedback from the community on recommendations of the Comprehensive Campus Plan.
- Amplify impact by actively serving on community boards and civic organizations and partnering with community entities.
- Champion innovation and advocate for positive change in the community in collaboration with partners, agencies, and neighbors.
- In general, keep an open channel of communication to strengthen current partnerships and build new ones.

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