Georgia Tech Sustainability Summary:

Georgia Tech is home to award winning sustainability programs in recycling, green cleaning, landscaping, sustainable food practices, green buildings, green purchasing, and other operations.

In 1992, Georgia Tech embarked on a twenty-year program of institutional transformation.
- Our goal is to incorporate concepts of sustainable technology and development into every academic program, to promote innovation through our research and development programs, and to model sustainable practices in the way we manage the built environment of our campus.
- We believe that sustainability is everyone's responsibility, and that each discipline, inter-discipline, and prof contribution to make.
- Sustainability is incorporated in both our mission statement and strategic plan.
- Georgia Tech is a leader in research in fields of energy, climate change, nanotechnology, biomedical technol and public policy.
- **Our students are taught to be collaborative, innovative, interdisciplinary, and global.**
- **They operate at the intersection of technology, policy, business and sustainability**.

In 2007, Georgia Tech signed the President's Climate Commitment and has met the milestones associated with it.

Tech has many fulltime sustainability staff including:
- Campus Sustainability Director,
- Sustainable Systems Research Director,
- Energy Conservation Team Manager,
- LEED accredited Capital Projects Director,
- LEED accredited Landscape Master Planner,
- Alternative Transportation Manager,
- Recycling Manager,
- As well as numerous Center Directors, Researchers, and Faculty focusing on sustainability.

The impact of our visionary efforts in sustainability is to our students to compete in the increasingly complex and competitive global workplace which includes more and more serious environmental issues. A sampling the recognition of our green progress include:

- **Princeton Review Green Honor Roll 2009, 2010, 2011, 2012, 2013** – recognized for our
  - o Campus quality of life that is healthy and sustainable
  - o Prepare students live/work in world w environmental challenges
  - o Overall commitment to environmental issues
  - o This not only ranks Georgia Tech in the top 2%, it puts Georgia Tech in the top 1% of public universities
- **National Wildlife Federation Exemplary Green Campus 2008** - recognized for
  - o Ecology and Sustainability Education
  - o Interdisciplinary Programs
  - o Supporting Faculty, Green Personnel Orientation
  - o Environmental Goals
  - o Transportation and Recycling Programs (also recognized in last NWF ranking)
  - o Landscaping, Conservation, Efficiency, Renewable Energy, etc.
- **American Forrest and Paper Recycling Award 2008, National Recycling Coalition Recycling Award 2008**
- **2012 Atlanta Better Building Challenge – 3 buildings participating**
- **2012** founding partner in **Billion Dollar Green Challenge**
- Top 10 public university
- Top 5 engineering research program
- Top 2 engineering research
- Top 10 urban transformative urban development
- Top 12 value in public education
- Top 12 academic places to work

Sustainability Permeates our Curriculum:
Varied and numerous in nature, the educational aspects of Georgia Tech's commitment to environmental sustainability reflect our promise to produce the technological leaders of the future. Rather than offer a degree in sustainability, we chose **to incorporate sustainability into every degree program** at Georgia Tech via **core curriculum** as well as **majors courses**.
- Georgia Tech has a goal that **every graduate will have at least one course in sustainability**.
- We have **more than 260 courses with an emphasis in sustainability, spanning every college** at Georgia Tech.

Research and Interdisciplinary Research Centers Focus on Sustainability:
- Georgia Tech has **21 Endowed Chairs and 30 Research Centers that include significant sustainability** components or a sustainability focus.

- **Interdisciplinary Research** Centers, Corporate Partnerships, NSF and SEED funding all support major sustainability research at Georgia Tech.
- We have many award winning researchers and highly referenced (h-index) in sustainability. Examples include:
  - Presidential **Green Chemistry** Award,
  - Power Finance & Risk Magazine's one of the **Five Most Influential People in Renewable Energy**,
  - National Medal of Technology Laureate and LED technologist (LED in US alone is estimated to save the equivalent energy produced in 44 large power plants (1000MW))
  - 3 Nobel Peace Prize 2007 co-recipients, for their work on Climate Change
  - As well as many accomplished graduate and undergraduate researchers in the area of environmental sustainability.
- The collaborative research culture at Georgia Tech invites all members of the campus community to take part in the innovation.
  - Examples of Research Centers include:
    - **Strategic Energy Institute**,
    - University Center for Excellence in **Photovoltaic**'s,
    - Center for Innovative **Fuel Cell and Battery** Technologies,
    - Center for **Quality Growth and Regional Development**,
    - **Sustainable Design and Manufacturing**, etc.
  - Examples of Interdisciplinary Research Centers include:
    - Center for **Urban and Regional Ecology**,
    - **National Electric Energy** Testing, Research, and Applications Center, and
    - The Institute for **Leadership and Entrepreneurship**.
    - **Material Science** Research Center
    - **Center for Biological Inspired Design**
    - Brook Byers Institute for **Sustainable Systems**
  - Our researchers are leaders in new fields such as Nanomedicine, systems biology, and Piezo electricity.

Building Green, Energy Efficiency, Green Operations:
- Georgia Tech's **energy use** per square foot **is less than** the average **of its peer very high research universities** (.0135 vs .176 MMBTU/sf)
- Georgia Tech has **committed to reduce its energy use 15% by 2020** and to be carbon neutral by 2050.
- Georgia Tech has more than **44 buildings that are LEED certified, LEED registered and or renovated to LEED like levels**, **representing 5 million square feet**.
- Georgia Tech as 9 LEED certified buildings on campus, another 14 are LEED registered and in the process of being LEED certified, and an additional 21 campus buildings were designed to LEED standards but not certified, as of 1/23/2012.
- Georgia Tech has four buildings participating in the **Atlanta Better Building Challenge** to reduce energy used in them by 20%.
- Georgia Tech is a Founding Partner in the **Billion Dollar Green Challenge.**
- Georgia Tech is an established forerunner in innovative technology and an early adopter of LEED. Georgia Tech's Management Building was the **2nd LEED Silver certified building in Georgia and the 13th in the US.**
- Tech's policy requires new buildings and renovations meet **LEED Gold certifications standards at minimum**. We are registering new projects with the USGBC and seeking LEED Gold certification on projects. Georgia LEED Silver was added to our design standard in 2002, LEED Gold was added in 2009. As older buildings are renovated, they are brought to LEED Gold standards or higher.
- Georgia Tech's design standards are 40% more energy efficient than Georgia Code and 20% more energy efficient than California Building Codes. They also call for **100% low flow fixtures**.
- Tech retrofit the 64 campus buildings built between 1994 and 2004 for energy and water efficiency, resulting in an **11% energy savings**.
- Tech is implementing an additional $6.7 million of energy efficiency projects like lighting, variable frequency drives, and steam system insulation in 2010-11 which **will reduce energy consumed in those 46 buildings by 15%.**
- Tech has begun **re-commissioning older campus buildings** as part of our ongoing commitment to energy efficiency
- Purchasing EnergyStar products is part of our **green purchasing** program.
- Long a leader in **renewable energy use in operations**, **Georgia Tech installed the world's largest solar pv roof of its type in 1995 (340 kw)**. The Georgia Tech campus had the largest solar PV implementation in Georgia until this 2011.   Georgia Tech will have over 500kw of solar pv on campus by year end 2012.
- The Clough Undergraduate Building opened in 2011 has 86kw of solar pv on its roof, along with solar thermal which together provide up to 6.5% of the building's energy needs.   As of January 2013, **campus solar PV exceeds 500 kw**.
- Georgia Tech has a large **solar thermal** system which began saving Georgia Tech $12,000/month in 1995.
- Georgia Tech led the way in installing a commercial **geothermal** heat pump on campus in 1995. This 250 ton system continues in use.
- Georgia Tech's students received 6th place in our Institute's first entry in the **solar decathlon house** competition in 2007 with a carbon neutral home.
- R&D Magazine recognized Georgia Tech's Molecular Science and Engineering Buildings as an **exemplary Green Lab**
- Tech completed its first permanent Net Zero Energy Carbon Neutral Building on campus The building will house researchers who will research net zero energy solutions. The **Carbon Neutral Energy Solutions Laboratory (CNES) is Tech's first LEED Platinum building**.
- **Green Dorms**: Georgia Tech's North Avenue Apartments is the **largest university residence hall in the world to attain LEED Existing Building Operations and Maintenance and LEED Gold Certification**. It is home to 2000 students and approximately 1,000,000 sf. Living in our residence halls was already the greenest way to attend Georgia Tech, but with this even greener dorm, being a sustainable student has reached new heights. The green cleaning, operations, and maintenance procedures developed for this complex are utilized throughout all residence halls on campus.

- **Green IT**: Georgia Tech's Information Technology Office has undertaken many sustainability initiatives. Some of these include Server Virtualization, Air Side Economizers and use of hot and cold aisles to reduce hot and cold air mixing and improve cooling efficiency between server rows. They have upgraded their chillers for greater efficiency, and recently introduced Power Usage Effectiveness, or PUE, to help OIT measure data center efficiency. In the Audio/Visual (A/V) Technology Enhanced rooms, the control systems are programmed to shut down the system if there is inactivity for two hours. Computers in OIT, the Library and across campus use sleep mode to reduce power consumption. Georgia Tech researchers include experts in High Performance Computing which las led us to also be leaders in **Energy Efficient High Performance Computing**, too.

Promoting alternative transportation:
Alternative Transportation is the primary mode of transportation on campus:
- Georgia Tech is a national leader in supporting alternative transportation commute options, with **over 41% of campus students and employees taking advantage of our clean commute programs.**
- With approximately 10,000 people living on campus, and many more living within a few miles **Walking, biking, carpooling, vanpooling, and taking the bus are the major modes of transportation to and from campus.**
- Georgia Tech has the largest percentage of student housing on campus of any university of our type, over 60%.
- **Ours is a bike and pedestrian friendly campus**. We continue to implement vehicular traffic reduction programs on campus.
- Some of the first flex cars (ZipCars) in Georgia were on Tech's campus, offering **shared car usage**.
- Tech's campus transportation **system connects with MARTA (Atlanta's Rapid Transit System)** and is free for students, faculty, staff, and visitors. In 2007, 2.4 millions rides were provided on campus.
- All 23 campus trolleys and buses use low sulfur clean diesel fuel and are B20 vehicles.
- MARTA (**Atlanta mass transit system**) passes are available at reduced rates to students, faculty and staff.
- Special parking rates and programs are available for those who do not purchase annual parking permits, because they do not routinely commute to campus in their own, single occupant vehicle.
- Tech's campus fleet is **32% alternative fuel vehicles**.
- The US Environmental Protection Agency selected Georgia Tech as one of the "**Best Places for Commuters**" In 1991, Georgia Tech hired its first alternative transportation manager to build vanpool, carpooling, and alternate commuting programs at Tech.

Protecting green space:
Leading by example, Georgia Tech's commitment to sustainability is "a major component of the Georgia Tech Campus Master Plan and Landscape Master plan.
- While most universities have a Campus Master Plan, very few have a **Landscape Master Plan** or **Irrigation Master Plan**. .
- Georgia Tech's Landscape Master Plan calls for achievement of 22% woodlands coverage and 55% tree canopy on campus. Tech's lush green inner city campus' tree inventory includes **many 100+ year old trees and well over 7000 trees.**
- Land use has long been part of our campus master plan. The 2004 Campus Master Plan update increased the **campus green space to 52%. Over 13 re-forestation projects have been implemented on our urban campus since 2006.**
- Georgia Tech's Landscape Master Plan won an Honor Award from the Georgia Chapter of the American Society of Landscape Architects (ASHEA) and SCUP (Society of College and University Planners).
- Georgia Tech was one of the first 10 US campuses to be recognized by **Tree Campus USA** and has been recertified in 2011.
- Our campus landscaping has increased pervious surfaces on campus while **restoring wetlands** on and implementing an **EcoCommons** through our campus.

Recycling, Waste Neutral, Composting, Green Cleaning, and Green Purchasing:
Long an award winning leader in recycling, with a goal to become waste neutral.
- Georgia Tech **diversion rate** is 51-55% of its waste stream, including **97% of its Demolition and Construction waste**.
- **Paper recycling** is available beside the 5000 desks on campus and avoids over 6 tons of landfill per week.
- A dozen materials are routinely recycled on campus, such as aluminum, cardboard, metals, etc. The total "traditional" **recycling volume is approximately 900 tons per year** that does not go into the landfill.
- **Recycling representatives are in every building**. Tech hired its first Recycling Manager in 1996.
- **Student Move In – Move out** collection and reuse recycling is on campus and vigorously engages students
- Tech's **recycling programs are campus wide, over 115 buildings**.
- Students convinced the library make "print two sided" the default setting.
- **Battery and CFL** recycling are available at prominent locations on campus.
- **Game Day Recycling** began in 2007, expanded from tailgating only to include inside the stadium this year. Total game day recycling for 2010 was over 21 tons.
- Tech's award winning **Earth Day** celebration is the largest in the Southeast.
- Atlanta's first **e-waste** program began at Tech's Earth Day 2003.
- Campus electronics are recycled
- All of our **Dining Halls compost food** (pre and post consumer). The 2009-2010 total was 314 tons composted. Composting food is a voluntary program in administration buildings
- Yard waste is composted in place or shredded and used for mulch.
- Tech's **Green Cleaning Program** is also nationally recognized. Green cleaning spans facilities and housing.
- Georgia Tech has had a **green purchasing policy since 2003**. Office products, use of EnergyStar, use of Recycling, use of Life Cycle Assessment, and consideration of air quality, etc are factored into our green purchasing policy.
- Georgia Tech received the American Forrest and Paper Association's 2008 Paper Recycling on a college campus award.

- Every employee desk has a paper recycling bin with it. Tech has reduced its paper use by 30%.
- Tech's printing services center committed in 2009 to use only 100% recycled paper.

Conserving water: rainwater, stormwater management
Tech's comprehensive water management plan
- **Georgia Tech reduced its potable water consumption between 2001 and 2007 by 23%.**
- Georgia Tech Incorporates water saving technology into our buildings, including low flow fixtures, and cisterns to collect rainwater and condensate among other best practices to conserve water.
- Approximately 4 million of gallons of condensate water a year are collected from just 3 research buildings on campus and this practice is spreading to additional buildings on campus.
- Georgia Tech has the largest cistern in US, at 1.4 million gallons. The G Wayne Clough Undergraduate Commons building is the first building on campus to use **rainwater and condensation water for toilet flushing**.
- Georgia Tech currently has **approximately 2,250,000 gallons of cistern capacity,** built or in construction, and tied to smart irrigation.
- An Irrigation Master Plan ties cisterns to the smart, drip irrigation systems on campus so nonpotable water is used for irrigation.
- **Xeriscaping, performance landscaping, and using native vegetation**s further sustain our campus.
- Newly planted trees have **watering bladders** attached for the first year, and then trees no longer require watering.
- **Georgia Tech has committed to reducing its stormwater runoff by 50%,** back to the 1950's level, to relieve the city's aging water and sewer systems. Reforestation projects, reducing impervious surfaces, and adding pervious surfaces aid the environment while reducing stormwater runoff and more are part of the Eco-Commons.
- Georgia's Governor chose to announce his mandate to reduce water consumption in all State facilities by 10-15% in November 2007 because of the 100 hundred year magnitude drought in GA
- Georgia Tech's water conservation efforts were recognized by our local country with the Fulton County Citizens' Committee on the Environment's Water Conservation Award and also by the Upper Chattahoochee Riverkeepers with their first annual Sustainability Award.

Supporting local and sustainably grown food:
Georgia Tech encourages local and sustainable food initiatives in Atlanta.
- **Local food comprises 41% of food serves on campus**.
- **Organic food** has been added to the campus offerings, in every venue, is approximately 5% of the food
- **Vegetarian and vegan** meal options are available at all meals. **Fair Trade** coffee is available campus wise.
- Georgia Tech's Dining Halls are **98% waste neutral** as a result of the Sustainable Dining partnership between students, staff, and Dining Services. Used cooking oil across campus is collected and recycled into biofuels.
- Georgia Tech has signed its support of the Atlanta Local Food Initiative (ALFI).
- Georgia Tech completed its first new and sustainability designed dining hall, North Avenue Dining, which is seeking LEED gold.
- Brittain Dining Hall reduced its energy consumption 26% between 2010-2012.

Economic Development, Tech Transfer, Clean Tech, Co-op, International Study, Community Outreach, and Student Involvement:
Our goals include stimulating economic development and working on policy issues in a global context. We offer a multitude of leadership learning experience in and out of the classroom.
- Tech operates the nation's **oldest university-based high-technology business incubator**, the Advanced Technology Development Center, which had more than 120 startup companies, generating more than $13 billion in revenues
    - ATDC companies have attracted more than $1 billion in venture capital since 1999 and accounted for ten of the state's top twenty-five venture capital investments in 2006, including the two largest.
    - VentureLab is currently advising a number of "clean-tech" startup companies.
    - A graduate of our clean tech incubator, Suniva, is No.2 on WSJ's **clean tech** list
- The number of students studying abroad increased 101 percent; today, **one of every three undergraduates studies abroad**.
- Georgia Tech has 4 campuses on 3 continents and hosts **international** leaders at each of them.
- The Georgia Tech Center for International Business Education and Research has 26 international partner universities.
- More than **40 percent of undergraduates participate in structured research** for academic credit.
- Tech has the **fourth oldest cooperative education program** in the United States.
- 2009, more than 2000 Tech students actively volunteered in the local community.
- There are **20+ student organizations** at Georgia Tech that are focusing on sustainability.
- There are numerous **student versions of professional organizations** related to sustainability on campus, too.
- Annual competitions provide opportunities for students to demonstrate leadership and innovation in sustainability include **Inventure, Business Plan Competition including its separate Sustainability Award, the Ideas2Serve Competition**, along with many others.
- Tech is among the nation's top producers **of women and minority engineers**.
- Georgia Tech is cited by Kiplinger's as a **Top 20 best value in public education**
- **Our alumni influence their communities and corporations** (approximately 5,000 alumni currently hold prominent business roles as CEOs, Executive VPs, CIOs, CTOs, Presidents, or Board Chairs) and often return for networking and professional continuing education. Our alumni carry their sustainability training, life styles, and professional experience with them into the community, corporate world, and the global economy.

This is a summary. Much more detail is available upon request via marcia.kinstler@business.gatech.edu