On Oct. 2, 2015, President Peterson addressed the Douglas County Economic Development Authority’s Workforce Development Committee in a breakfast meeting at the Hilton Garden Inn in Lithia Springs, Ga. This is an annual event held by the DCEDA on National Manufacturing Day. Included in the speech were examples of Georgia Tech’s support of manufacturing locally, statewide and nationally, and its efforts in workforce development at the undergraduate, graduate, and post-graduate levels. (NOTE: As written— not necessarily as delivered.)

Thank you, Chris, for the kind introduction on behalf of the Douglas County Economic Development Authority. It’s good to be back in Douglas County and always enjoyable to meet with business and industry representatives who make this county work. Before we get too deep into today’s subject, I always like to get the lay of the land. How many of you are proud Georgia Tech alumni?

If you raised your hand, you’re among more than 2,000 Georgia Tech alumni in the Southwest Metro Atlanta region. We have awarded 723 degrees to students from your region in the past 10 years.

Today is National Manufacturing Day, when we both celebrate the contributions manufacturers make to our country and also seek to inspire the next generation of manufacturers. Georgia Tech has a special affinity with this occasion. An earlier generation of Georgians realized that if the South were to be competitive in the Industrial Revolution, it had to step up its game, and that meant educating its citizens in the technology of making things.

When the Georgia School of Technology opened its doors in fall of 1888, it had two buildings. One had classrooms to teach students. That building is now Tech Tower, one of the iconic structures on our campus. The second was a shop that had a foundry, forge, boiler room, and engine room. It was designed so that students could make goods to sell, which in turn would help fund the school. The buildings were equal in size to illustrate the importance of teaching both the mind and the hands. We have never strayed from the mission of applying scientific knowledge to practical problems.

Let’s examine the big picture for a moment, and then I’ll share with you some of the ways Georgia Tech supports industry in our state and in the Southwest Metro area.

The Southeast is on the cutting edge of advanced manufacturing in our country. Our challenge as educators and industry leaders is how we can work more closely together to grow, sustain and keep manufacturing jobs in our country. To give you an idea of the economic punch of the Southeast, our region’s $3.7 trillion GDP would rank fourth among the world’s nations behind only the U.S., China, and Japan.

In the coming decades, we will see massive investments in clean, new power-generating capacity throughout the world. The U.S. Energy Information Administration projects that roughly 60% of new power-generation capacity between now and 2035 will be supplied by gas turbines, which adds up to approximately $250 billion in the U.S. and $1.1 trillion worldwide.
Aerospace, automotive, and power-generation sectors are rapidly expanding their footprints in the Southeast. In your area, Georgia Tech [via GaMEP] has worked on plant-operations efficiency with International Component Repair, an FAA repair shop specializing in the overhaul of commercial aerospace airframes and engine components.

U.S. manufacturers have a huge and growing demand for skilled production workers, engineers and technicians. The resurgence in U.S. manufacturing since 2010 has already led to more than 600,000 additional jobs. The National Association of Manufacturers estimates that more than two-thirds of their sector's current skilled workforce will have retired by 2030.

These demands translate into higher pay for manufacturing workers. During the past decade, new hires in manufacturing earned an average of 38 percent more than new hires in non-manufacturing industries. And over a career, a manufacturing worker earns 17 percent more in wages and benefits than his or her counterpart in other sectors, according to U.S. Commerce Department data.

Together these trends indicate a major opportunity for the next generation of workers. Georgia Tech is doing its part to support good jobs in this industry, which is crucial to U.S. competitiveness. More than ever, we are a go-to place for both students who want a technology-focused education that is in high demand in our modern economy, as well as companies who want to stay on the cutting edge.

Government, industry, and academia are joining forces like never before to ensure that U.S. manufacturing continues to grow. It is vital that we do that as a country, both for the individuals who will contribute so much to society’s fabric and their own families, and also for the economy we will build as we head deeper into the 21st century.

Georgia Tech continues to be a national leader in manufacturing, not only in research and innovation but also in the personal assistance we provide to small, medium, and large manufacturers around our state. Georgia Tech influences important national issue. Our faculty members testify before Congress, serve on federal advisory boards and National Academy studies, and compete for and win competitive funding from research agencies and our industry partners.

Georgia Tech supports National Manufacturing Day through a series of events designed to showcase manufacturing to the future workforce, support the industry’s efforts to change the public image of manufacturing, and ensure the ongoing prosperity of manufacturing in Georgia and the U.S.

We also support manufacturing through degree programs, open-enrollment courses, research, technical assistance, and more. We have three main units at Georgia Tech that are involved in this collaboration:

- **The Georgia Manufacturing Extension Partnership (GaMEP)** is part of the federally funded MEP program (supported by NIST out of the Department of Commerce) and helps manufacturers grow and stay competitive through technical assistance, training, and education.
- **The Georgia Tech Manufacturing Institute** brings together top researchers and thought leaders from varied disciplines that shape manufacturing.
- **CEISMC** (Center for Education Integrating Science, Mathematics & Computing) works with K-12 students in Georgia to receive the best possible preparation in education for science, technology, engineering, and mathematics (STEM). Through its various programs CEISMC reaches on average 25,000 students in a calendar year.

We must be forward-looking about workforce development. A core belief we have at Georgia Tech is that you can’t wait until students are deciding on which college to attend to get them excited...
about science, technology, engineering and math, or STEM. We are working to inspire young people to pursue STEM education as early as possible. This summer we had 75 outreach programs that offered opportunities to participate in everything from science fairs to robotics competitions to invention competitions that help to inspire the innovator within each of them.

Each summer, for example, a number of high school students join Georgia Tech students in the Invention Studio for Makers Camp, building devices like a quad-copter, a simple helicopter that actually flies. Many times that's just the spark they need to explore one of the exciting career opportunities in manufacturing. Not all of them will end up in the field, but it’s a much shorter leap if we get them excited about devising technological solutions to problems at a young age.

Our new freshman class is 41% women, up from 30% just 5 or 6 years ago. Much of this increase is the result of our middle-school outreach programs. Georgia Tech has also been a leader in the recruitment and training of minority engineers, and we continue to be so. In our current freshman class, we have the largest number of African-Americans (208) we’ve ever had. We are determined to find the best minds and prepare them to take on the challenges that industry faces as we move deeper into this relatively new century.

We have cutting-edge workforce-development programs like the one funded by the National Science Foundation to recruit veterans and minorities from all over the country to introduce them to advanced manufacturing. The Georgia Tech Manufacturing Institute hosts students each summer with great success in helping them make the leap into STEM-related fields.

If you’ve already graduated from Georgia Tech or another university, we’re still interested in you. The Georgia Tech Manufacturing Institute has a manufacturing certificate that graduate students can work toward. And the Georgia Tech College of Engineering, Georgia Tech Professional Education, and the Renewable Bioproducts Institute recently announced a professional master’s degree program in manufacturing leadership designed to prepare leaders for the 21st-century manufacturing industry.

GTMI has an ongoing collaboration with the Technical College System of Georgia. We’re striving to improve the competitiveness of Georgia manufacturers by enhancing the skill set and knowledge of the manufacturing workforce. We also seek to identify pathways for enrolling talented TCSG students into Georgia Tech engineering and other STEM-related programs. This program is leading the way in developing opportunities for technical college students to be exposed to higher-level training and knowledge, and is creating a new channel from which manufacturers will be able to hire highly-skilled workers.

Helping educate the public about the promising career opportunities is also important. Last year I co-authored an op-ed piece with U.S. Commerce Secretary Penny Pritzker that appeared in the U.S. News & World Report. It was an open letter to parents encouraging them to steer their children toward a manufacturing career. We attempted to debunk the old image conjured up by the word “manufacturing” as the image of an untidy factory floor full of dirty, dangerous, and repetitive jobs.

As we wrote then, and I hope you don’t mind my quoting, “Many manufacturing facilities in the United States today are cleaner than most offices or doctors' office waiting rooms. They are gleaming showrooms of the latest technologies. And they are staffed by highly skilled and well-educated professionals producing some of the most exciting breakthroughs of our time.”

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This summer, I had the opportunity to address the Clean Energy Manufacturing Initiative Southeast Regional Summit in Atlanta. For both environmental and competitive reasons, the efficient use of clean energy will drive American manufacturing in coming years.

Once students arrive at Georgia Tech, they find that energy education is woven throughout our curriculum. This past summer, the U.S. Department of Energy announced a $200,000 grant to Georgia Tech that will support 20 student project teams in developing, building energy-efficiency technologies through a capstone design project. Our students will gain hands-on product design experience, including the manufacture and testing of a prototype solution, as well as publically demonstrating the solution at our Capstone Design Expo. Student teams partner with company sponsors, which fosters student employment in the building energy-efficiency sector.

We are focused on becoming an effective partner with both government and industry. We want to enhance our role as an anchor institution and help our non-university regional partners focus on growing U.S. manufacturers through better scale-up processes and growth of an innovation ecosystem outward from Atlanta.

One way we doing this is by working through our Enterprise Innovation Institute, or EI², to help grow existing manufacturers through programs such as the Georgia Manufacturing Extension Partnership, Minority Business Development Agency, and Federal programs such as the SBIR and STTR programs.

In the past two years, Georgia Tech’s Manufacturing Extension Partnership Program (GaMEP) helped 61 manufacturing companies in your area reduce operating costs by $15.8 million, increase sales by $26 million, creating or saving 148 jobs.

All told, Georgia Tech’s innovation neighborhood efforts have resulted in big dividends to Georgia. In fiscal year 2014, EI’s state and federally funded manufacturing program helped 1,440 companies in the state increase sales by $219 million, create or save almost 2,000 jobs, and cut costs by $40 million. EI’s government procurement program helped Georgia companies secure $592 million in government contracts and create or save an estimated 11,850 jobs.

VentureLab, a Georgia Tech incubator at Tech Square that serves faculty, staff, and students, is another key component of the innovation neighborhood. It is designed to bring research and ideas from Georgia Tech to market. VentureLab has helped Georgia Tech faculty, staff, and students develop more than 300 startups and form companies based upon their research. It was recently named the No. 2 university-based incubator in the United States.

We are working not only on large-scale manufacturing challenges, but also ones at the nano scale. Georgia Tech is a leader in nanotechnology research, which studies the manipulation of matter on an atomic, molecular, and supramolecular scale. Government and private industry together, invest more than $3 billion per year in nanotechnology R&D in the U.S., and globally the total is much higher.

Our researchers are seeking to understand the impacts of nanotechnologies on green economic development in such areas as energy, the environment, and safe drinking water. Because nanotechnology commercialization is still in its early phases, our experts are trying to get a better sense of what markets will grow and how new nanotechnology products will impact sustainability.

Nanotechnology underlies many different industries, so forecasting its impact won’t be easy. To make those judgments, we’ll have to balance gains in efficiency and performance against the net energy, environmental, carbon and other costs associated with the production, use and end-of-life
disposal or recycling of nanotechnology products. There is tremendous potential for this to serve as a prism through which to view clean-energy issues.

Another way we’re looking forward: Vehicle lightweighting for energy efficiency is an area that holds much promise. The Southeast’s aerospace- and automotive-materials supply chains, with Georgia Tech’s support, are invested as part of the lightweighting ecosystem. Through lightweighting, we can reduce the weight of a product, component, or system to enhance: performance, operational support, and survivability.

Novelis is an international aluminum-rolling company with sales offices and production sites in 11 countries on four continents. It is deeply involved in lightweighting. The Novelis global headquarters are in Atlanta, and it’s recently established a Global Research & Technology Center just north of here in Kennesaw, Georgia.

I should also mention Southern Company, one of the nation’s premier energy-supply companies. Georgia Tech and Southern Company have partnered on many initiatives, and it recently joined the other many innovation centers locating in Tech Square.

Georgia Tech is the Southeastern regional coordinating institution for the Materials Genome Initiative (MGI). MGI wants to enable the materials science community to design, develop, manufacture, and deploy advanced materials at least twice as fast as possible today and at half the cost.

We work with companies not only in response to, but in anticipation of, industry challenges. Some of you probably know Larry Alford, who is EI’s South Metro regional manager. EI’s experts have worked with a number of west Georgia manufacturers to help them improve their production and quality. A few examples:

- **Southern Aluminum Finishing** in Villa Rica. We have assisted them in the area of quality systems, facility layout, and lean manufacturing. Penn McClatchey (co-CEO with his brother Jim) serves on our GaMEP advisory board.
- **International Component Repair** in Villa Rica. Assisted with the layout and workflow in a new facility.
- **Chemstar Corporation** in Lithia Springs. Helped them develop a value-stream map to identify areas for improvement.
- **ALP Lighting** in Lithia Springs. We have assisted them for many years in Lean Manufacturing and connected them to campus resources to assess and remedy a quality concern.
- **Dawn Foods** in Douglasville. Performed lean and energy assessments.
- **Von Roll Austral Inc.** Performed an energy assessment.

One of our country’s founders, Alexander Hamilton, said that “Not only the wealth, but the independence and security of a country, appear to be materially connected with the prosperity of manufacturers.” That statement is perhaps even more relevant today than it was 200 years ago. How do we get back to “made in America?” The answer is that the same spirit of innovation and collaboration that once gave us pre-eminence in manufacturing can help us regain our competitiveness, thereby creating jobs, increasing exports and serving as a catalyst for a healthy economy. In today’s global environment, "made in America" is not enough. We need “invented in America” or, better yet, "invented and manufactured in Georgia."

Georgia Tech is committed to boosting the continuum of learning, keeping your workforce globally competent, and partnering with you to create a brighter future for individuals, companies, and your community.
Thank you for your attention, and now I think we have time for a few questions.