**Emergent Technology Institute (ETI)**

**John Woolschlager, ETI Director and Backe Chair**

**July 27, 2017**

**Background**

The Emergent Technologies Institute (ETI) is a 6.5-acre research-and-development complex that designed to support new educational initiatives, enhance regional workforce and economic development, and foster collaboration involving higher education, government and industry. The 25,000-square-foot ETI includes research labs, classrooms, offices and public rooms. The ETI also is the first project in the Innovation Hub (IHub), a 240-acre development planned as a magnet for technology and research companies. The ETI building opened in January of 2016.

The Backe Foundation Inc. donated the ETI land to FGCU. John D. Backe also donated $1 million to FGCU to establish the Backe Chair to be an eminent scholar to support the ETI. With the existing State matching gifts program, this endowment will total $1,750,000. The Backe Chair’s leadership, knowledge and cutting edge research will enhance the learning experience of FGCU students, and bring prominence to FGCU and the research park. Joe Simmons served as the Backe Chair from 2010 to 2016. John Woolschlager took over as the Backe Chair and ETI Director as of August 8, 2016.

The ETI facility was funded by the State to benefit Southwest Florida by expanding the economic base from the present focus on tourism, healthcare, education, and construction to a more diversified economy that includes new innovation and technology development, especially those focused on sustainable energy, water quality, pollution control and other green and biotechnologies. It is anticipated that the project will create over 5000 new jobs and have an economic impact of over $700 million dollars within a 10 year period.

**ETI Goals**

The current goals for the ETI are as follows:

1. Increase applied research across the FGCU campus, especially research focused on innovation, new technology development, and job creation.
2. Develop and support graduate degree programs at FGCU.
3. Increase community engagement focused on technology transfer and economic development, including workforce development and University fundraising.

All three of these goals support the vision of the ETI becoming a catalyst for technology and economic development in Southwest Florida. The following sections include plans for current and projected usage of the ETI organized the ETI goals.

Goal 1: Increase applied research across the FGCU campus, especially research focused on new technology development. Current and planned research, technology development, and other funded actives that are expected to be conducted at the ETI are included below. These projects represent partnerships among the ETI and the U.A. Whitaker College of Engineering (WCE), Lutgert College of Business and Institute for Entrepreneurship (LCOB/IFE), and the College of Arts and Sciences (CAS).

*Funded Projects:*

* Joe Simmons and Joe Cuiffi (WCE/ETI) in cooperation with IBM: “Watt-Sun: A Multi-scale, Multi-Model, and Machine-Learning Solar Forecasting Technology.” Funded by the Department of Energy, $278,775. January 2015-August 2016.
* Sandra Kauanui (LCOB/IFE) and Joe Cuiffi (WCE/ETI): “The Florida VETS Entrepreneurship Program.” Funded by the Veterans Florida, Network Partner, $135,000. December to May 2015.
* Tanya Kunberger (WCE) and Joe Cuiffi (WCE/ETI): “Creating Learning Experiences and Addressing Needs of Watersheds and Aquifers through Entrepreneurial Research.” Funded by the US Environmental Protection Agency, $120,430. August 2016 to Present.
* Sandra Kauanui (LCOB/IFE): “FGCU Runway Program Supporting Student Entrepreneurship Development.” Funded by the Florida Department of Economic Opportunity, $250,000. August 2016 to Present.

The Department of Marine and Ecological Sciences and the Coastal Watershed Institute are in need of additional research space to support the work of their faculty and students until their new building (AB-9) is completed. Expected completion of AB-9 is within 4-5 years. Below are some of the projects and associated faculty that can utilize space at the ETI starting in the fall of 2016:

* Serge Thomas (CAS): The Thomas Lab has been investigating the use of plants in the remediation of water quality in lakes and ponds. Example funded projects include:
  + “Developing a water and nutrient budget for Lake Trafford, Florida, U.S.A.” Funded by the Florida Department of Environmental Protection, $117,587. With J. Y. Kim (WCE).
  + “Settling and entrainment properties of STA particulates.” Funded by the SFWMD, $121,154. August 2016 to Present. With D. Fugate (CAS).
  + “Limnological assessment of the ponds of Burnt Store Lakes POA.” Funded by City of Punta Gorda, Florida. $10,543. August 2016 to Present.
  + Limnological health assessment of Carlton Lakes (Naples, FL). Part B. Carlton Lakes HOA. $15,346. August 2015 to August 2016.
* Mike Parsons (CAS): The Parsons Lab currently conducts research on Harmful Algal blooms (HABs) and the toxins they produce (projects details to be provided).
* Toshi Urakawa (CAS): The Urakawa Lab is working on a number of projects related to the role of microbes in coastal and inland waters and the use of microbes in bioremediation, such as the impact of the BP Deep Water Horizon oil spill on microbial communities (projects details to be provided).

Goal 2: Develop and support graduate degree programs at FGCU. Current and planned graduate degree programs that will be conducted at the ETI are included in the following paragraphs.

* A new Master of Engineering (MSE) program with an emphasis area in Environmental and Renewable Energy Engineering will admit the first class of students in the Fall of 2017. Other emphasis areas will be launched each year in Bioengineering, Civil Engineering, and Software Engineering pending approval of faculty positions to support the programs. The goal is to have all emphasis areas offed by the Fall of 2020.
* Beyond providing support for the Institute for Entrepreneurship funded projects, the ETI can be used to support Entrepreneurship graduate education initiatives. The Lutgert College of Business and Institute for Entrepreneurship are planning to launch a graduate certificate in Entrepreneurship that could be supported by the ETI as needed. Some undergraduate Institute for Entrepreneurship class activities are supported by the ETI as well, including the Runway program, past classes associated with the Florida VETS Entrepreneurship Program, the New Venture Laboratory supporting the Entrepreneurship minor.
* The Department of Marine and Ecological Sciences and the Coastal Watershed Institute are in need of additional space to teach some of their graduate courses in the M.S. Environmental Science program.

Goal 3: Increase community engagement focused on technology transfer and economic development, including workforce development and University fundraising. Table 1 shows a summary of the community engagement, workforce development, and fundraising events held or planned for the ETI. Additional events not shown include fundraising events hosted by the President’s office and ETI/CTGRI open house events.

**ETI Faculty and Staff**

***ETI Director:*** John Woolschlager, Ph.D. joined the U. A. Whitaker College of Engineering in August of 2016 as the Backe Chair, Professor of Environmental Engineering, Director of the Emergent Technologies Institute (ETI), and Director of Engineering Graduate programs. Dr. Woolschlager's major responsibilities as the Backe Chair will include leading the continued development of a university-wide Emergent Technologies Institute, significantly increasing collaborative external research funding, leading the development of new graduate engineering programs, organizing and conducting outreach activities, and supporting the efforts to attract industry partners in renewable energy and other technologies to Southwest Florida. Dr. Woolschlager has Ph.D. and M.S. degrees in Environmental Engineering from Northwestern University and a B.S. in Civil Engineering from Southern Illinois University Edwardsville. Prior to joining FGCU, Dr. Woolschlager was the Director of the Center for Sustainability at Saint Louis University (SLU), an interdisciplinary graduate degree granting unit. Dr. Woolschlager joined SLU as the Founding Chair of a new department of Civil Engineering in 2010 and he led that program through its initial ABET accreditation. Dr. Woolschlager held prior faculty appointments at Arizona State University and the University of North Florida. Dr. Woolschlager’s research focus on biotechnology using complex models to simulate biological, chemical, and physical processes. Dr. Woolschlager applies his modeling work to water quality, environmental systems optimization, and bioenergy projects. Some examples of his funded projects include the neural-network optimization of urban drinking water systems to improve water quality and save energy; process optimization of wastewater treatment plants to achieve nutrient pollution reduction and reduce energy consumption; applied research addressing global energy and sanitation issues in developing nations; and analysis of regional sustainability issues using advanced GIS modeling tools to create smarter, more energy efficient and sustainable cities.

***ETI Laboratory Manager:*** Christrian Bokrand became Engineering Laboratory Manager in January 2014. He first joined FGCU as Research Engineer under the direction of the Backe Chair for Renewable Energy after receiving his B.S. degree in Environmental Engineering from the University in 2012. In this position, he managed research projects in renewable energy, sustainability and energy storage and helped develop STEM education and outreach programs. Christian's earlier background includes ten years as a project manager and general contractor.

***ETI Office Manager*:** Gill Medena was recently hired as the ETI Office Manager. Gill brings many years of FGCU experience to the important position.