

## Engaging Students in 'Real World' Energy Conservation



## Introductions

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Questions related to specific materials, methods, and services will be addressed at the conclusion of this presentation.

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## COURSE DESCRIPTION

Energy conservation and efficiency play a large role in a campus sustainability program. FSU's infrastructure system is complex, technical, and mostly hidden from view; yet, it provides the largest gains in savings for the University and most of our campus community is unaware of how utilities are managed on campus.

Two programs (Energy Fellows and Utilities internships) aim to introduce students to potential careers in energy conservation and management practices in support of our sustainability goals.



## LEARNING OBJECTIVES

As a result of participating in this session, attendees will:

- Learn the history of partnership and program development
- Identify similar opportunities within their own organizations
- Identify potential campus partners
- Understand how to fulfill project needs / fill staffing gaps with student interns



## AGENDA

- Introduction to Florida State University & Siemens
- Shared Goals
- Partnership Perspective – FSU / Siemens
- Sustainability Education
- Energy Fellows
- Unintended Consequences
- Professional Development
- Looking to the Future



## FLORIDA STATE UNIVERSITY



- About FSU
  - Urban, R1 Institution
  - ~42,000 Students / ~6,900 Faculty & Staff
  - TLH Footprint – 1,500 Acres / 2 Campuses
- Facilities
  - ~700 Employees
  - Wide Range of Campus Services Provided
- Siemens Relationship



## SIEMENS



- About SIEMENS
  - ~370,000 Employees
  - ~80B Revenues
  - ~4B Annual Research & Development (R&D)
- About SIEMENS Smart Infrastructure (SI)
  - Building Automation, Fire, & Security Products & Services
  - Electric Distribution Products & Services
  - Energy Efficiency & Sustainability Solutions
  - Digital Solutions

**Trends**

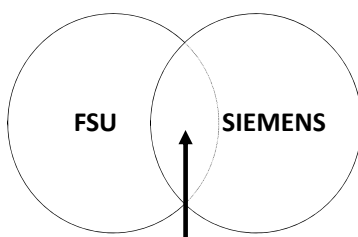
- Decarbonization
- Decentralization
- Urbanization
- Sustainability
- Digitalization

## STRATEGIC GOALS for FSU / SIEMENS



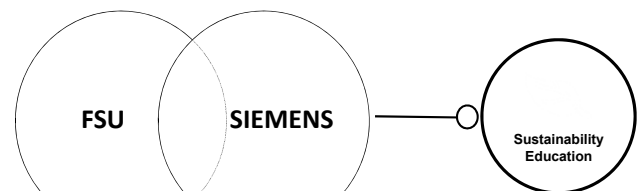
FSU	Siemens	Initiative
<ul style="list-style-type: none"> <li>• Top 25 Public University</li> <li>• Make Buildings Work</li> <li>• Improve Research Space</li> <li>• Process Simplification</li> <li>• Sustainability Leadership</li> <li>• Financial Innovation</li> <li>• Reduce Costs / Save Energy</li> </ul>	<ul style="list-style-type: none"> <li>• Top Regarded Company</li> <li>• Innovation</li> <li>• Customer Satisfaction</li> <li>• Growth</li> <li>• Sustainability Leadership</li> <li>• Solutions Leadership</li> <li>• Deliver Value</li> </ul>	<ul style="list-style-type: none"> <li>• Partnership Initiative</li> <li>• Commissioning Projects</li> <li>• Infrastructure Projects</li> <li>• Quality Initiative</li> <li>• Energy Fellows</li> <li>• Performance Contracting</li> <li>• Drive Costs Out</li> </ul>

## PARTNERSHIPS



Technology Development & Beta Testing  
Campus Technical Support / Educational Initiatives  
Energy Efficiency / Building Performance / Strategic Plan Alignment

## SUSTAINABILITY EDUCATION

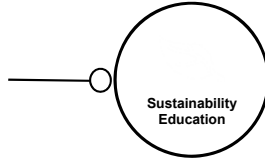


## SUSTAINABILITY EDUCATION



### Mission

To provide customizable, value-added resources (e.g. seed grants and expert consultation) that enable our higher education, K12, and municipal customers to address strategic STEM, energy efficiency, sustainability, staff development, workforce and community outreach goals



## INTERNAL DISCUSSIONS



- What training and experiences are students receiving to supplement the classroom?
- What jobs / careers are available for students interested in sustainability?
- How do students break into the world of energy conservation?
- Can FSU facilities and campus serve as a training ground?
- How can we help students understand that sustainability is not just solar panels and wind turbines?



## ENERGY FELLOWS



- 2014 – Siemens Grant
  - Energy Fellows
  - Green Fund



**ENERGY FELLOWS**

## ENERGY FELLOWS



- Out-of-classroom Learning
- Building Knowledge + Job Skills
- Critically Challenge Notions and Assumptions
- Rethink Sustainability & Energy Conservation at the “Street Level”
- Real World Vantage Point (FSU Utilities & Sustainability)
  - Day-to-day operation of a University campus
  - Day-to-day application to broader goals
  - Introducing industry job opportunities

**ENERGY FELLOWS**

## INTENTIONAL DIVERSITY



Cohort	Applicants	Race	# Academic majors represented	# Completed program	# Interns
Spring 2015	32 total F:12; M: 17; U:3	Asian Black/AA Hispanic/Latinx White Two or more Unknown	14 (applications) 9 (cohort)	10 accepted, 9 completed	4
Spring 2016	25 total F: 17; M: 8	Asian Black/AA Hispanic/Latinx White Unknown	14 (applications) 8 (cohort)	10 accepted, 8 completed	2
Fall 2018	24 total F: 16; M: 8	Black/AA Hispanic/Latinx White Two or more Unknown	7 (applications) 4 (cohort)	6 accepted, 4 completed	1

## CURRICULUM



- Discussion-based Seminar
- Field Trips
- Career Panel
- Professional Mentorship
- Applied Sustainability
- Reflection



**ENERGY FELLOWS**



## REFLECTION



- "I thought that the diversity on the [career] panel added to the value of what each person said. I thoroughly enjoyed the discussion and feel like I've gained a lot of useful knowledge and reassurance. I am so grateful for this program. I cannot express to you how much this program is pushing me to think critically. I have found myself questioning more, and actually researching the context of my questions in attempts of finding an answer, but finding so much more." – 2018 Energy Fellow
- "Energy Fellows showed me the large and complex network of energy management: all that goes into it and all that comes out." – 2016 Energy Fellow
- "... the study of energy conservation is an important piece of environmental planning that would not have otherwise been addressed." – 2015 Energy Fellow

## ENERGY FELLOW



Leslie Dunn: Energy Fellow – Intern – Engineer - Future Sustainability/Facilities professional - Guitarist

### Footprint

I've been looking for an answer in my home  
Tryin' take the steps toward my career  
I wanted to be the savior of the universe...  
But maybe that is too ideal.

I'm trying to cut out more of my hypocrisy  
Being American and all  
Cause I've been basking in the air of luxury  
But I don't want to be a part of our downfall.

I want to change the country  
But I don't know how to change your mind  
I want to change our progression  
So in a hundred years it won't be the end of all our time



## INSTITUTIONAL BENEFITS



- Bridge the gap between curricular programs and energy-related careers
- Ambassadors developed for energy conservation on campus
- Bridge the gap of understanding the role Facilities departments play in energy conservation and sustainability

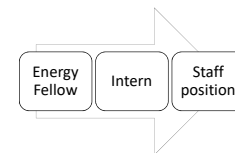
ENERGY  
FELLOWS



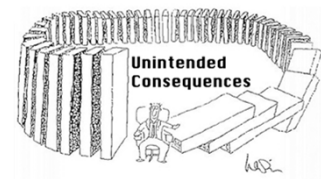
## UNINTENDED CONSEQUENCES



- Pipeline for Talent



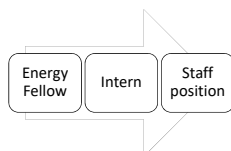
Yes, and...



## LEVERAGING RESOURCES



- Modern Facility Systems are Complex
- Many Organizations Cannot Effectively Manage the Technology
- Intern Program Initiated as a Result of Energy Fellows
- Introduces Skill Sets Required to Help Manage New Technology



## INTERNSHIP PROGRAM



- Expanded to Train Students with Less Technical Knowledge
- Mentoring Focused
- Meeting Career Development Needs for Technical Students
- Tangible Projects with Real Job Opportunities
- Waiting List of Applicants

- Central Utilities
- Engineering
- Sustainability
- Maintenance
- GIS Mapping



## INTERNSHIP PROGRAM – WHY?



- Provide Students Experience in Career Fields
- Many Degree Programs Require Internships
- Provide Sharp, Cost Effective, “**System Focused**” Support to Existing Staff
  - Fume Hood Air Measurements
  - Storm Water Program Enhancement
  - BAS Programming Support
  - Technical Training Program
- Bridges Recruiting Gaps



## INTERNSHIP PROGRAM – BENEFITS



### FSU Benefits

- Assess Candidate Capabilities, Work Ethic, Character, Potential
- Familiarity with Workplace, Co-workers, Task Variety
- Salary (while important) is Not Sole Motivation

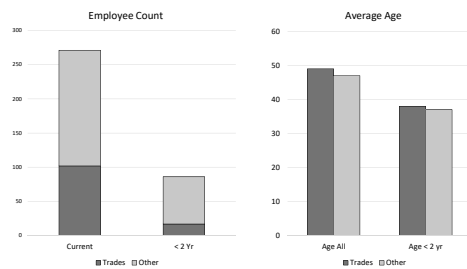
### Student Benefits

- Free Grad School Classes
- Prep with Campus Professionals for PE Exam or Other Certifications
- Work for Alma Mater

## PROFESSIONAL DEVELOPMENT



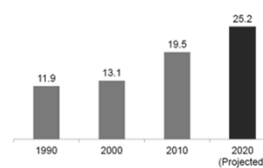
### Evolution of Energy Fellows – Interns - FSU Staffing



## PROFESSIONAL DEVELOPMENT



### Percent of the labor force 55 years & older



### THERE ARE REAL GAPS IN SKILLS

#### Actual Skills Gap

Difference between skills required and skills obtained.

#### EMPLOYERS SAY

82% ▶ 61%  
Difficult to fill positions  
Have hired under-qualified people

#### STUDENTS SAY

83% ▶ 62%  
No job lined up after graduation  
Job search is “frustrating” or “very frustrating”

## UNPLANNED OUTCOMES



### Changing Workforce at FSU

- Increased Awareness of Facilities Positions
- Hiring More Early Career Team Members
- Reversing the Aging Workforce Trend
- Intern Pool is More Diverse – Introducing New Ideas
- Interns and Early Career Full Time Employees Learn Faster
- Culture is Changing – Traditional Employees are Sharing Knowledge and New Team Members Provide a Technology Bridge



## PROGRAM SUCCESS



- 8-15 Interns Per Year Supporting the FSU Mission
- 4 Full Time Positions Filled with 3 Additional Planned
- Conversion of Traditional Positions to Maintenance Engineers
  - Carpenter
  - Plumber
  - Electrician
- Creation of Specialist Roles that Leverage Intern Traits and Interests
  - Storm Water Management
  - Technical Training Specialist

## LOOKING TO THE FUTURE



- Continue Energy Fellow Success
- Continue Intern Program
- Filling of Full Time Positions with Talent
- Focus on Shared Goals with Siemens
  - Improve Research Space
  - Reduce Costs / Save Energy
  - Sustainability Leadership
- Implementation of Expanded Sustainability Education Initiatives



This concludes The American  
Institute of Architects Continuing  
Education Systems Course



Thank you!

Questions / Discussion

