



FLORIDA SOLAR ENERGY CENTER®

Creating Energy Independence

The State of FSEC

FSEC Advisory Board Meeting

October 21, 2016

FSEC Advisory Board Meeting

AGENDA

10:00 a.m.	Welcome and Introductions	Jim Fenton
10:10 a.m.	Introduction to Elizabeth Klonoff, VP Research and Commercialization and Dean of Grad School	Elizabeth Klonoff, By SKYPE
10:20 a.m.	Approval of October 23, 2015 Meeting Minutes	Dave Winslow, Vice-Chair
10:30 a.m.	Election for New Chair and Vice-Chair. Dave Winslow and Michael Faas have agreed to serve. Any candidates from the floor?	Jim Fenton
10:45 a.m.	Status of FSEC Programs	Jim Fenton
10:55 a.m.	Discussion of Federal, State and Local Energy Policy Report of Florida Energy Office	Louis Rotundo, Tommy Boroughs, Kelley Burk, Chris Castro
11:20 a.m.	EVs Today and Tomorrow	Britta Gross, GM
11:40 a.m.	FSECs New Energy Systems Integration Division	Issa Batarseh (Prof. Electric Engr. & FSEC)
12:05 p.m.	Lunch (Buffet)	
12:55 p.m.	Grid-Scale Storage with Increasing PV	Paul Brooker FSEC
1:20 p.m.	Future of FSEC Board, “A Board of Partners” A look at the By-Laws	Jim Fenton
1:50 p.m.	Board Business <ul style="list-style-type: none"> ▪ Date and Agenda for Next PAB Meeting ▪ Other Board issues 	New Chair Jim Fenton
2:00 p.m.	Adjournment	



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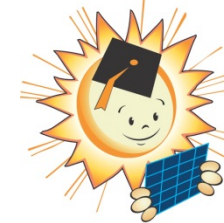
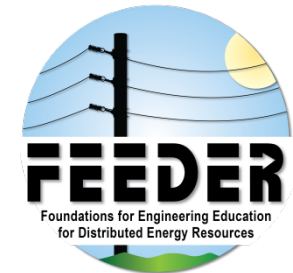
EV TRANSPORTATION & TECHNOLOGY SUMMIT 2016

The premier event for EV transportation planning,
technology, infrastructure and policy analysis.

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EV Transportation & Technology Summit
October 17-20, 2016
Cocoa, Florida

UCF's FSEC Leads in Energy Industrial Collaborative Partnerships



ENERGYWHIZ
Connecting Schools, Teachers,
and Students with Solar Energy



PV, EVs, Energy Efficient Buildings, Load Management, Batteries, Alternative Fuels, Hydrogen, Fuel Cells, Smart Grid Electronics, V2X, Training & Education



FSEC's FUTURE

- Energy Systems Integration - New division will provide increased R&D and partnerships with utilities and industry
- UCF Sustainability (facilities and faculty led)
- FSEC and two UCF Energy Faculty Clusters (Energy Conversion and Propulsion and Renewable Energy Systems) truly collaborating
- Expand DOE PV RTC to include Energy Storage
- **Integrated Smart Building Energy Storage (IS-BEST) NSF ERC
 - *Creating the tools and processes for Net-Zero Energy Communities*
 - EV/PV Demonstration projects at main campus, FSEC (Cocoa) and new Downtown Campus**



Energy Systems Integration

- New **Energy Systems Integration (ESI)** Division to focus our solar energy R&D on systems that integrate renewable energy and storage into the built environment and grid
- The ESI Division will work closely with related UCF departments and initiatives
- Professor Issa Batarseh will serve as director and will support these and other campus-wide academic collaborations



UCF Sustainability

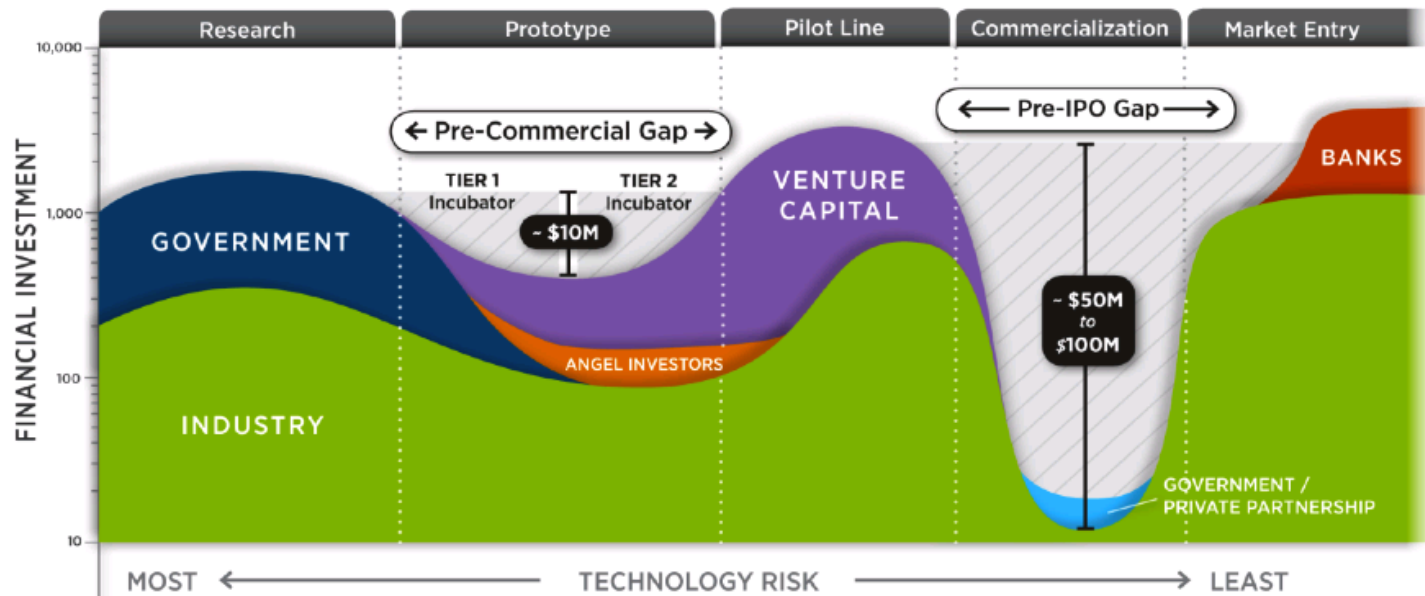
15% Renewable by 2020

SUSTAINABILITY ADVISORY COMMITTEE (SAC)	SUSTAINABILITY WORKING ADVISORY TEAM (SWAT)	
<p>Amy Childs Claire Knox, Dr. Curtis Wade David Norvell Debra Reinhart, Dr. James Fenton, Dr. John Weishampel Omer Tatari, Dr. Patrick Bohlen, Dr. Peter Jacques, Dr. <u>Yara Watson</u></p>	Academics & Engagement	Chair: Dr. Peter Jacques Dr. Claire Knox; Rick Falco
	Buildings & Land	Chair: <u>Muthusamy Swami</u> Dr. Patrick Bohlen; <u>Rob Vieira</u>
	Energy	Chair: Curt Wade David Norvell; Duane Siemen; <u>Dr. James Fenton</u> ; <u>Dr. Issa Batarseh</u>
	Food & Livability	Chair: Maureen Hawkins Jennifer Elliott; Hannah Hollinger; Amy Childs; Dave Norvell; Kevin Sowers; Albert Manero
	Transportation	Chair: Ronald Tarpley Anand Rampersand; Dr. Essam Radwan, Krishna Singh; Dr. Hatem Abou-Senna; <u>Collen Kettles</u>
	Waste	Chair: Dr. Debra Reinhart John Weaver; Brian Wormwood Amy Childs; Catherine Ninah
	Water	Chair: Chris Kennedy Curt Wade; Saul Santiago; Larry Eflin

Energy Storage Opportunity



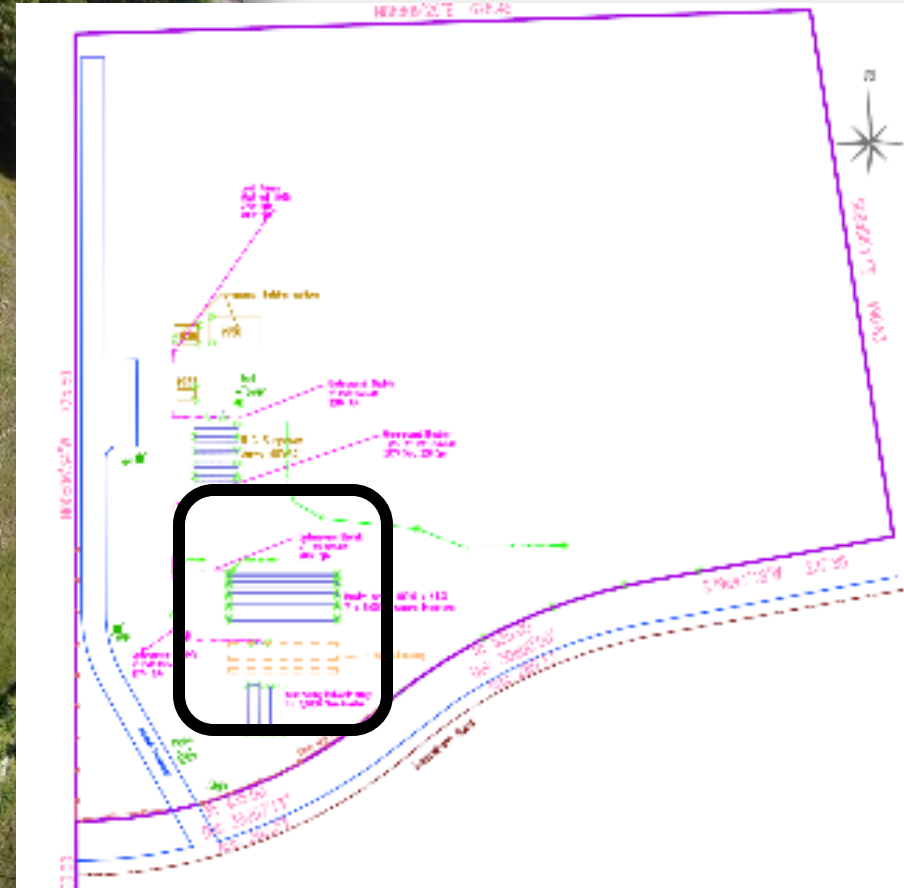
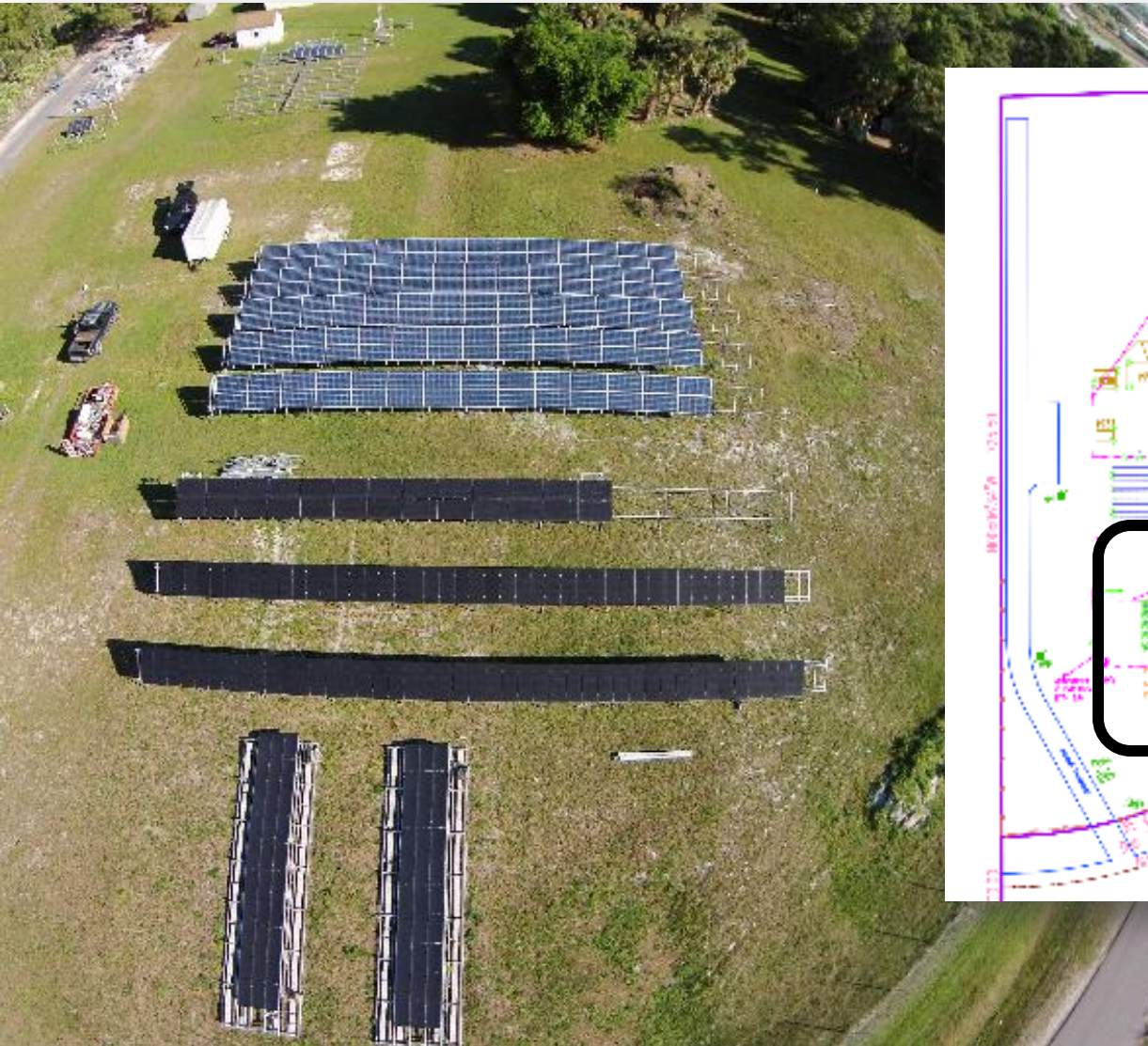
- Developed to support the DOE SunShot Initiative
- Helping accelerate technological evolution
- Increasing PV deployment



1. Albuquerque, NM	hot, dry climate	Sandia National Laboratories
2. Denver, CO	steppe climate	National Renewable Energy Laboratory
3. Cocoa, FL	hot, humid climate	UCF's Florida Solar Energy Center
4. Williston, VT	cold, humid climate	IBM
5. Las Vegas, NV	hot, dry climate	Univ. of Nevada–Las Vegas



10-Acre Florida RTC Site



Integrated Smart Building Energy Storage (IS-BEST) NSF ERC

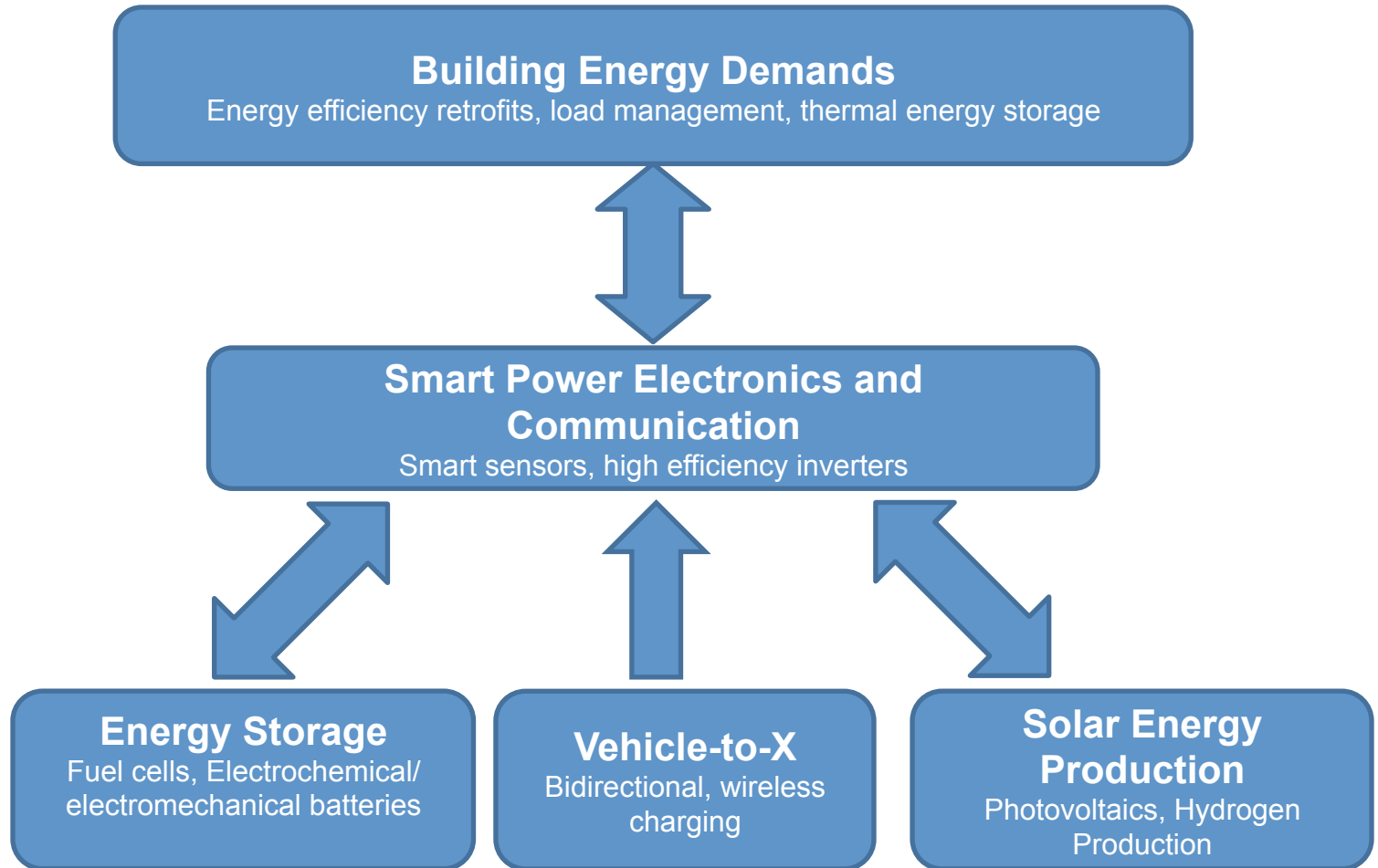
Vision of ERC: *Create the tools and processes for Net-Zero Energy Communities* through the integration of next-generation smart energy storage, solar energy production, electric vehicles and advanced high frequency power-electronics systems, for increased energy efficiency of community buildings and transportation, and improved grid resiliency.



Integrated Smart Building Energy Storage (IS-BEST) NSF ERC

Creating the tools and processes for Net-Zero Energy Communities

Thrust areas for IS-BEST ERC



Awards

- **Best Paper Award**

- Researchers **Ali Raissi** and **Nazim Muradov**, and their Texas A&M University co-authors
- International Conference on Hydrogen Production in Hangzhou, China in May 2016
- “Solar reactor investigation for the thermochemical steps of the sulfur-ammonia water-splitting cycle”
- Illustrates the novel approaches in solar hydrogen production.

- **Fenton Elected Secretary of The Electrochemical Society**

6000 International Researchers

Batteries and Energy Storage; Electrochemical Engineering; Fuel Cells, Electrolyzers, and Energy Conversion; Physical and Analytical Electrochemistry, Electrocatalysis, and Photoelectrochemistry; Sensors; Carbon Nanostructures and Devices; Dielectric Science and Materials; Electronic Materials and Processing; Electronic and Photonic Devices and Systems; and Luminescence and Display Materials, Devices, and Processing.



Contract Awards

- UCF and ICAMR Capture DOE Award for Cost-Competitive Solar Energy

Kris Davis, PI

A University of Central Florida-led team will receive \$1.1 million to develop new manufacturing processes using a specialized tool that will bring the U.S. a step closer to achieving its goal of affordable photovoltaic energy.

- Solar Ready Vets

Colleen Kettles, PI

UCF Partnership with Solar Foundation at Eglin Air Force Base

-  — No news yet



UCF researcher, Kris Davis, stands next to the ACPVD system that deposits metal oxide material onto silicon wafers.