



# FLORIDA SOLAR ENERGY CENTER®

*Creating Energy Independence*



***Dr. James Fenton, Director***  
***November 7, 2012***

A Research Institute of the University of Central Florida



# Regional Test Center (RTC)

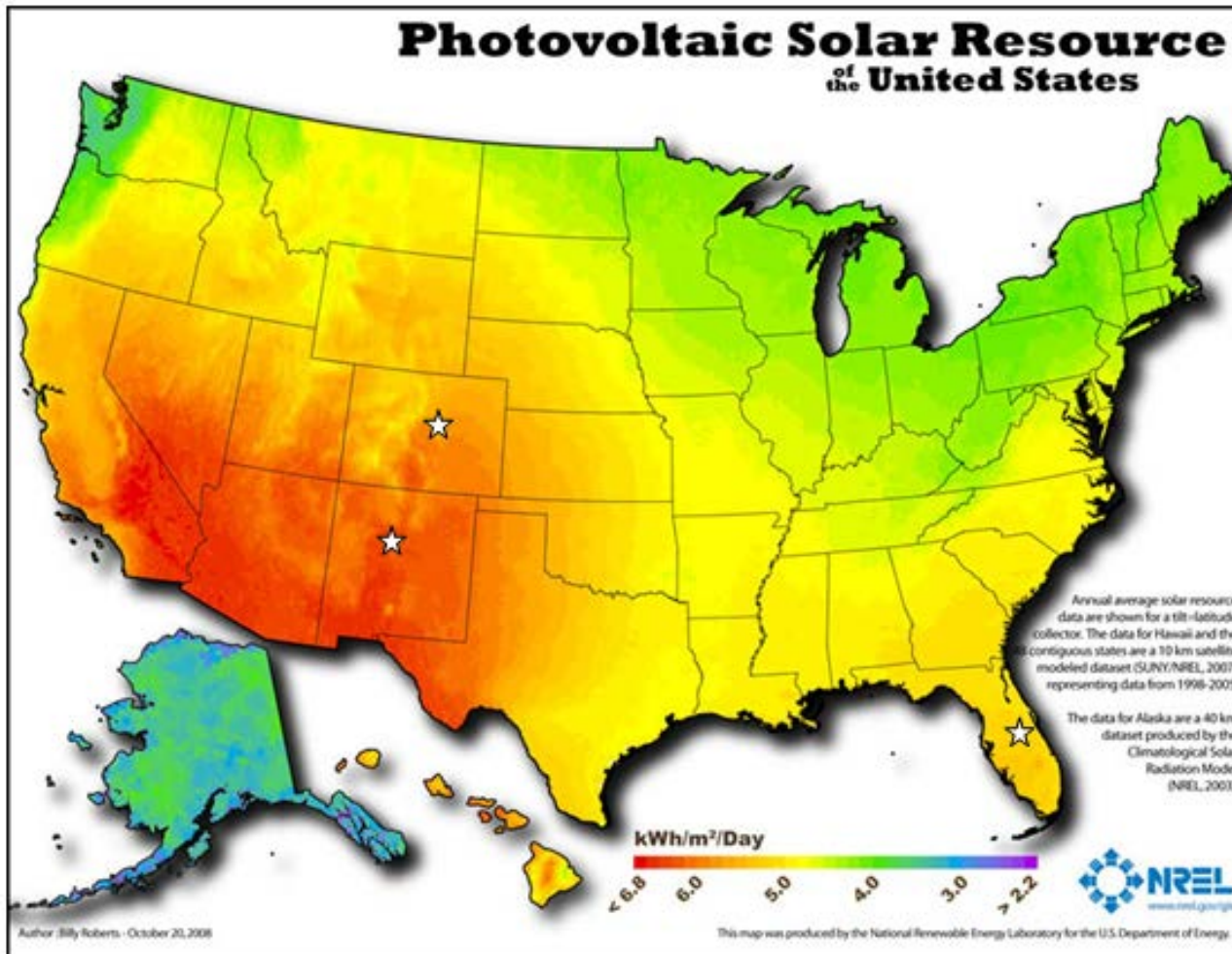


Figure 1: Location of DOE's Regional Test Centers: 1. Denver, CO at the SolarTAC facility, managed by the National Renewable Energy Laboratory (NREL) (Steppe climate); 2. Albuquerque, NM at the National Solar Thermal Test Facility managed by Sandia National Laboratories (Sandia) (hot-dry climate); and 3. Orlando, FL at the University of Central Florida managed by the Florida Solar Energy Center (FSEC) (hot-humid climate)



# Regional Test Center (RTC)



RTC Site Concept

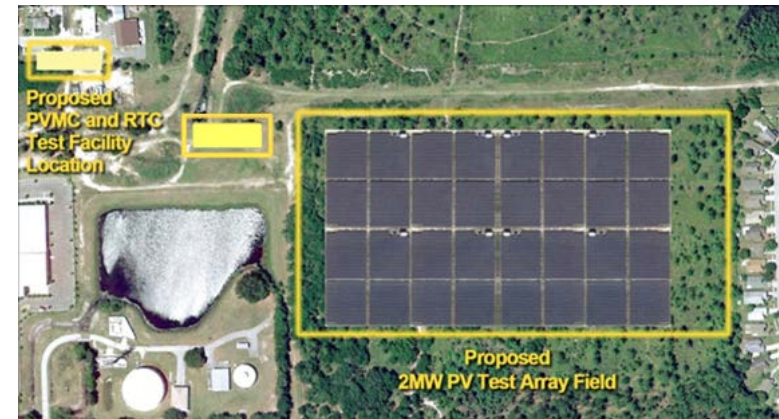
- 20-acre site at the southeast corner of campus
- Capacity of 2MW+ of PV
- DOE's go-to locations for independent testing
- Accelerate new technology pathway development
- Major presence on the UCF main campus
- Expansion of existing FSEC test facilities
- Large-scale system performance studies
- Equipment and Materials reliability studies
- Close interaction with counterparts and the National Labs



# Regional Test Center (RTC)

## Bankability and Validation Studies

- Creating the standards for field validation of PV Systems
  - Early failures modes
  - Commissioning processes
  - Degradation rates
  - Operation and Maintenance costs
- Building models
  - Performance models based on field results
  - Incorporating the geographical differences
  - Bridging the gap between technical and financial worlds



RTC Site Concept

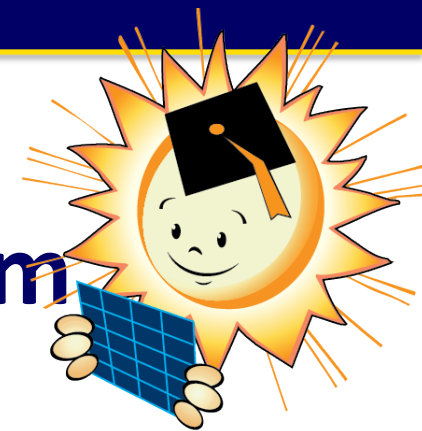
## Dissemination to Stakeholders

- Provide standards for others to test and validate systems
- Provide common models for performance and bankability





# SunSmart Schools Emergency Shelter Program

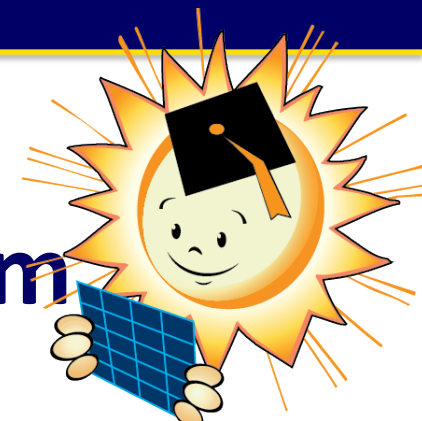


10-kW PV systems with battery back-up





# SunSmart Schools Emergency Shelter Program

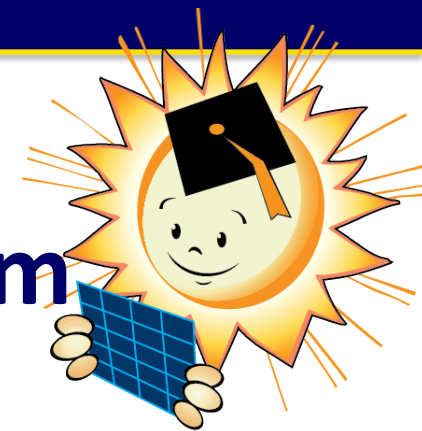


- Installed on 90 Florida emergency shelter/schools using ARRA funds
- 109 installed by Feb. 2013 including Progress & TECO funded schools





# SunSmart Schools Emergency Shelter Program



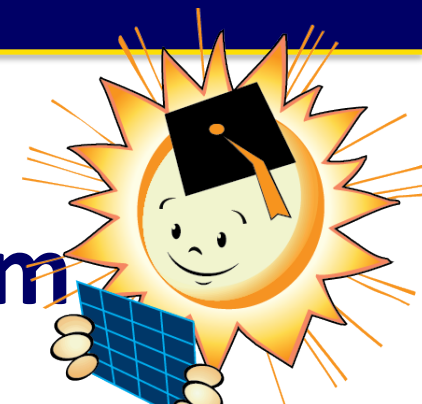
## Critical Loads

- Circuits connected to the critical load panel
- Emergency electrical outlets
- Strategically located lights





# SunSmart Schools Emergency Shelter Program



320 Teachers & Facilities  
Personnel Learn About  
Solar Technology



Geneva Elementary

Key West High School





# FSEC Continuing Education Workshops

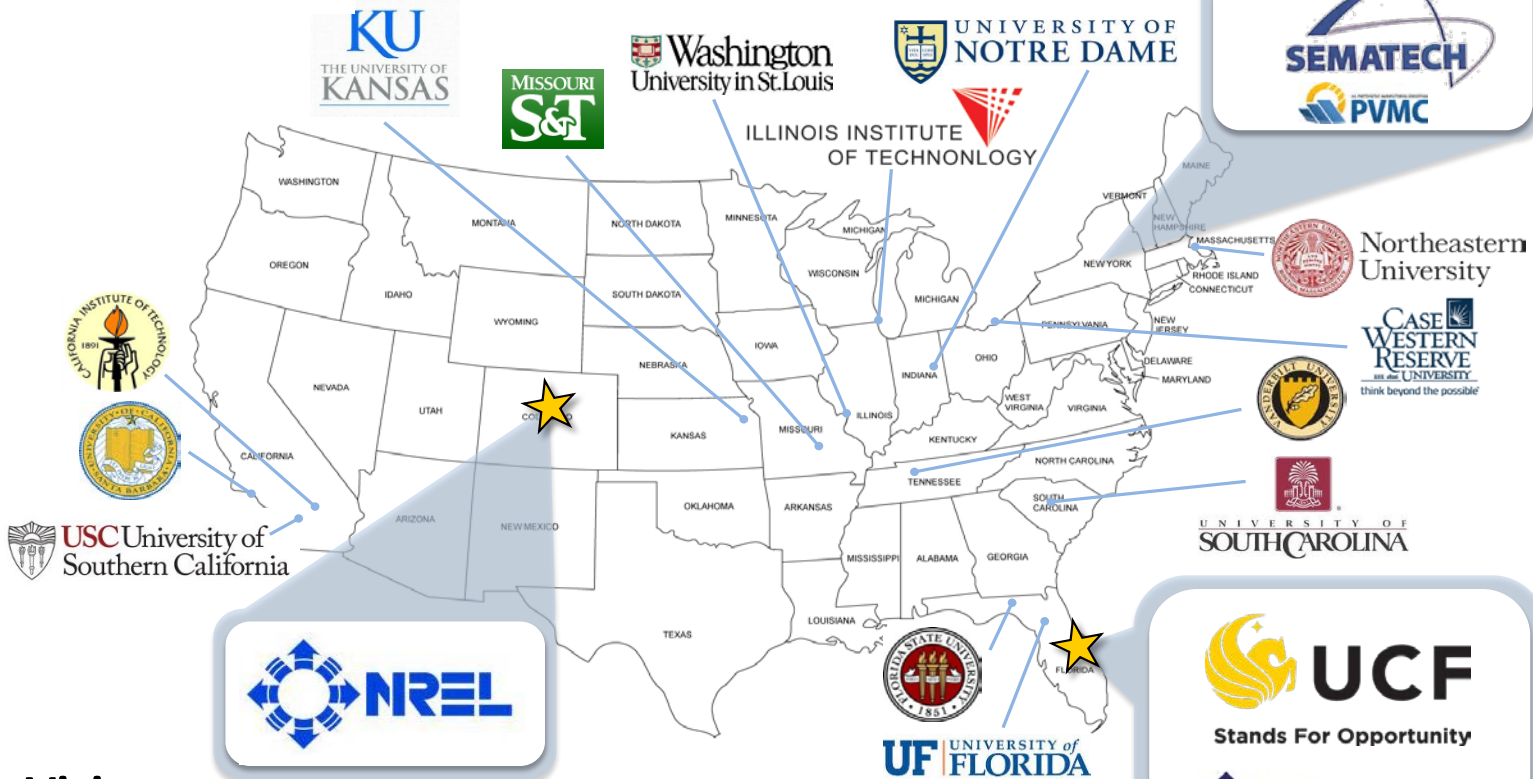
- PV Systems (2,340 students since 2003)
- PV Technologies and Business Opportunities (70 students since 2011)
- Solar Water Heating Systems (355 students since 2008)
- Residential Energy Raters (over 200 students)
- ENERGY STAR Training (over 100 students)
- Weatherization Agencies (over 110 students from 29 agencies)





# Battery and Electrochemical Storage Technology (BEST) Hub

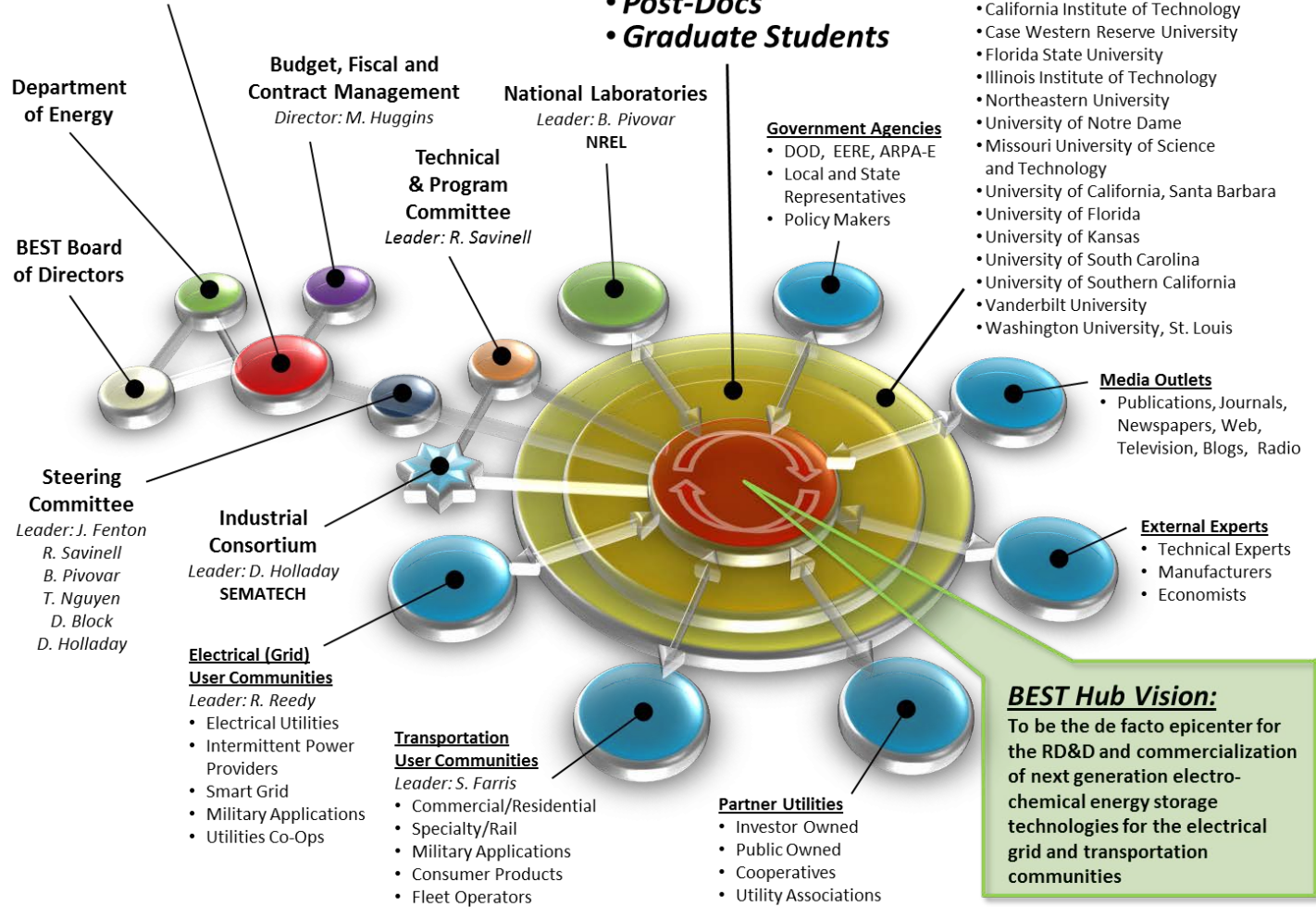
Enabling America's Energy Self-Sufficiency



**Vision:** To be the de facto epicenter for the RD&D and commercialization of next-generation electrochemical energy storage technologies for grid-scale storage and transportation.



**Director: J. Fenton**  
University of Central Florida



- Faculty
- Post-Docs
- Graduate Students

**University Partners**

- University of Central Florida (**Hub Location**)
- California Institute of Technology
- Case Western Reserve University
- Florida State University
- Illinois Institute of Technology
- Northeastern University
- University of Notre Dame
- Missouri University of Science and Technology
- University of California, Santa Barbara
- University of Florida
- University of Kansas
- University of South Carolina
- University of Southern California
- Vanderbilt University
- Washington University, St. Louis

**Government Agencies**

- DOD, EERE, ARPA-E
- Local and State Representatives
- Policy Makers

**Media Outlets**

- Publications, Journals, Newspapers, Web, Television, Blogs, Radio

**External Experts**

- Technical Experts
- Manufacturers
- Economists

**BEST Hub Vision:**

To be the de facto epicenter for the RD&D and commercialization of next generation electro-chemical energy storage technologies for the electrical grid and transportation communities

**Electrical (Grid) User Communities**

- Leader: R. Reedy
- Electrical Utilities
  - Intermittent Power Providers
  - Smart Grid
  - Military Applications
  - Utilities Co-Ops

**Transportation User Communities**

- Leader: S. Farris
- Commercial/Residential
  - Specialty/Rail
  - Military Applications
  - Consumer Products
  - Fleet Operators

**Industrial Consortium**

- Leader: D. Holladay
- SEMATECH

**Steering Committee**

- Leader: J. Fenton
- R. Savinell
  - B. Pivovar
  - T. Nguyen
  - D. Block
  - D. Holladay

**Budget, Fiscal and Contract Management**

- Director: M. Huggins

**Technical & Program Committee**

- Leader: R. Savinell

**National Laboratories**

- Leader: B. Pivovar
- NREL

Department of Energy

BEST Board of Directors



# 5-Year Budget

	Amount (\$M)	% of Total
Salary + Fringe (76.7 FTE)	\$52.6	44%
Expense	13.7	11%
Facilities Renovations*	2.0	2%
Future Allocations*	13.3	10%
Equipment*	5.3	5%
Overhead	33.1	28%
<b>Total</b>	<b>\$120M</b>	<b>100%</b>

*\*No overhead charges*

# DOE FY 2013 Budget Request

