



# Volunteer State Solar Initiative

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# Volunteer State Solar Initiative

- ▶ \$62.5 million ARRA funds
  - DOE grant to ECD, State Energy Program
- ▶ Two related projects:
  - West Tennessee Solar Farm near Brownsville (\$31 M)
  - Tennessee Solar Institute – Solar Opportunity Funds (\$29.2 M)
- ▶ Designed to leverage existing solar base, support recent solar recruits, and attract new solar investments



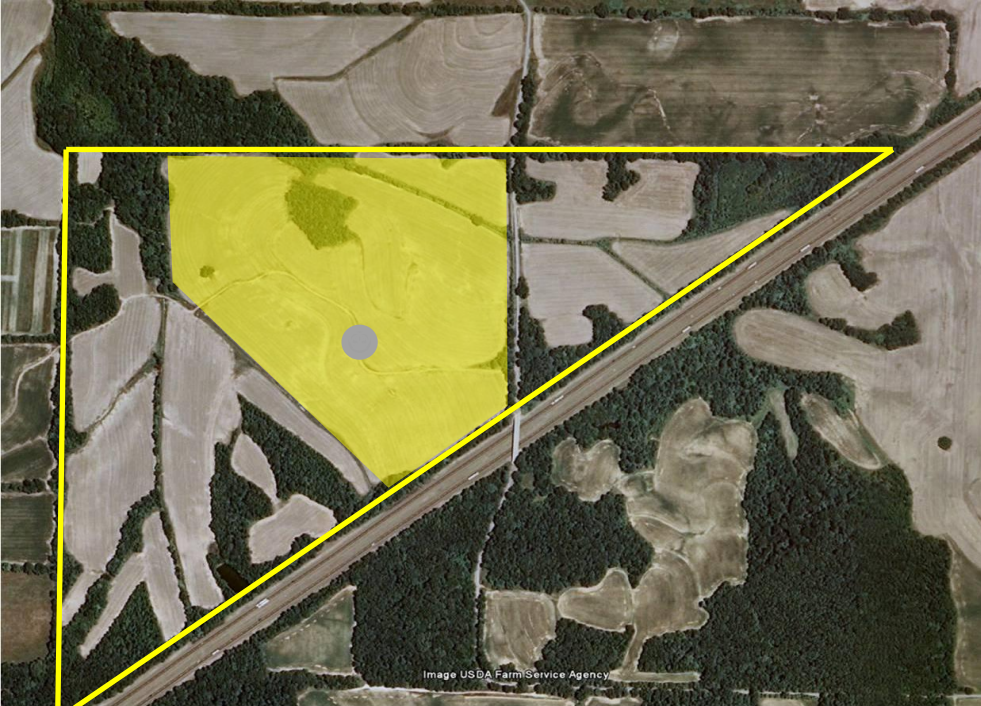
# West Tennessee Solar Farm Objectives

- ▶ Utility–scale solar power production
  - 5 megawatts, one of largest in Southeast
  - Fixed mount, multicrystalline or monocrystalline photovoltaic panels
- ▶ Connect to TVA power grid through local distributor
- ▶ Educate the public concerning solar energy
  - Re–invest revenue from power sales in array expansion, improvements, education programs
  - Integrate with TDOT Interstate Education & Welcome Center to be co–located with Solar Farm
- ▶ Future demonstration of emerging technologies, materials
  - Faster commercialization of Solar Institute innovation





# Solar Farm Concept



Expect fixed mount solar panels and small scale demonstration of next generation technologies



**FOR ILLUSTRATIVE PURPOSES ONLY**



# Preliminary Solar Array Layout



# Solar Farm Project Schedule

- ▶ **June, 2010**
  - Award Contract for Design/Build of Solar Array /Utility System Impact Study
- ▶ **September, 2010**
  - Public Hearing for Environmental Assessment
  - Conduct System Impact Study for Utility Connection
  - Initiate Subcontract Activities
  - Education and Welcome Center Program Planning
- ▶ **October, 2010**
  - Issue RFP for Design/Build Utility Upgrade
  - Award Contract for Utility Upgrade
- ▶ **November, 2010 – May, 2011 (Post-FONSI)**
  - Site Preparation
  - Equipment Procurement and Receipt
  - Array Installation
  - Utility System Improvement Installation
  - Array Commissioning and Startup
- ▶ **Spring, 2011 Education and Welcome Center Construction (TDOT)**



# Tennessee Solar Institute





# Solar Installation Grant Program

## Goal: Speed the deployment of solar energy in Tennessee

- \$9M available funding
  - Reimbursement based on installed capacity
  - Open to any Tennessee for-profit or 501(c)3 company
- ▶ **Eligible Systems**
- Rooftop solar systems on existing structures can have a nameplate capacity of 1 kW or greater up to 200 kW (appropriately sized for the building)
  - Ground-mounted systems adjacent to existing structures must have a nameplate capacity <60 kW



# Solar Installation Grant Program Status

- Program opened  
June 21<sup>st</sup>
- As of September 14<sup>th</sup>,  
> 100 projects approved
- ~5.8 MW
- ~\$33M total system  
costs (average  
\$5.50/watt)
- System sizes range from  
4.2 – 200.0 kW



Photo courtesy of  
Oak Ridge National Laboratory

# Solar Innovation Grants Program

**Goal: To encourage growth of Tennessee's solar industry**

- Technical Assistance
- Facilities and Equipment Improvements
- Renewable Energy Products
- Process Improvements
- Technology Improvements
- Workforce Development



# Solar Innovation Grants Program

## Request for Proposals (RFP)

- Released August 24, 2010
  - <http://solar.tennessee.edu>
- Due Dates
  - Form of Intent – September 17, 2010
  - Full Proposal – September 24, 2010
  - Anticipated notice of award – November 1, 2010
- Competitive awards
- Third party peer review process
- Any Tennessee company in the solar value chain, or seeking to enter the solar value chain, is eligible



# Industry Assistance and Workforce Development

- Develop and manage partnerships to support commercialization
- Create and Maintain a database of industry resources and contacts
- Conduct partnering retreats, meetings and seminars
- Provide “on the ground” assistance to industry
- Conduct industry needs assessment for workforce needs
- Provide workforce development training opportunities
  - Planning for three 5-day NABCEP training courses (September – November 2010)
- Coordinate engineers, scientists and manufacturers in solving specific technical problems and improving cost effectiveness

# Tennessee Solar Institute



# *TN Solar Conversion and Storage Using Outreach, Research and Education (TN–SCORE)*

- ▶ Creating a “culture of collaboration”
  - Creation of network nodes
  - Integration of individual researchers, institutions and organizations
- ▶ Plans for better development of a well prepared, STEM–enabled workforce
- ▶ Programs to sustain competitive research across the state
- ▶ Contribution to state economic development priorities





# TN-SCORE research theme



- ▶ **Alternative Energy Technologies: emphasis on solar**
  - **Thrust 1: Advanced Solar Conversion and Innovation** (Barry Bruce:UTK, Kane Jennings:VU)
  - **Thrust 2: Components and Devices for Energy Storage and Conversion** (Tom Zawodzinski:UTK, Cynthia Rice-York:TTU)
  - **Thrust 3: Nanostructures for Enhancing Energy Efficiency** (Sandra Rosenthal:VU, Nate Smith:MTSU)



# Statewide programs offered



- ▶ Research Stimulation Awards – available to new faculty (hired within the past five years) at non-research institutions (>\$40M federal research)
- ▶ Support for M.S. students at TSU/Fisk to enter into a BRIDGE program to Ph.D. at UTK or Vanderbilt
- ▶ “Meetings-in-Miniature” – *promote natural intrastate collaboration and partnering beyond the timeline and scope of the proposal*
- ▶ Grants for networking/cyberinfrastructure enhancements
- ▶ K-12 outreach



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# Workforce development offerings



- ▶ Corporate summer internship opportunities
- ▶ Summer research experience for undergraduate students or rising freshman
- ▶ Summer mini-sabbaticals for faculty at 2-year community colleges or 4-year undergraduate institutions
- ▶ Summer mini-sabbaticals for faculty Tennessee high schools
- ▶ Thrust leaders will visit high school classrooms
- ▶ Yearlong undergraduate training program
- ▶ Council for Undergraduate Research workshop



# TN-SCORE impact



- ▶ Proposal specifically ...
  - Builds on Tennessee's strengths
  - Leverages state investments
  - Aligns with recent industry recruitment success
  - Addresses identified barriers
- ▶ Award will allow for a large statewide research collaboration – build the foundations and relationships needed to enhance success
- ▶ Identified metrics will be monitored to measure outcomes/success

