FLORIDA SOLAR ENERGY CENTER®

Creating Energy Independence

Engaging Students in Solar Thermal Technology Experimentation

Solar Cooker International Conference

Gujarat, India 2017

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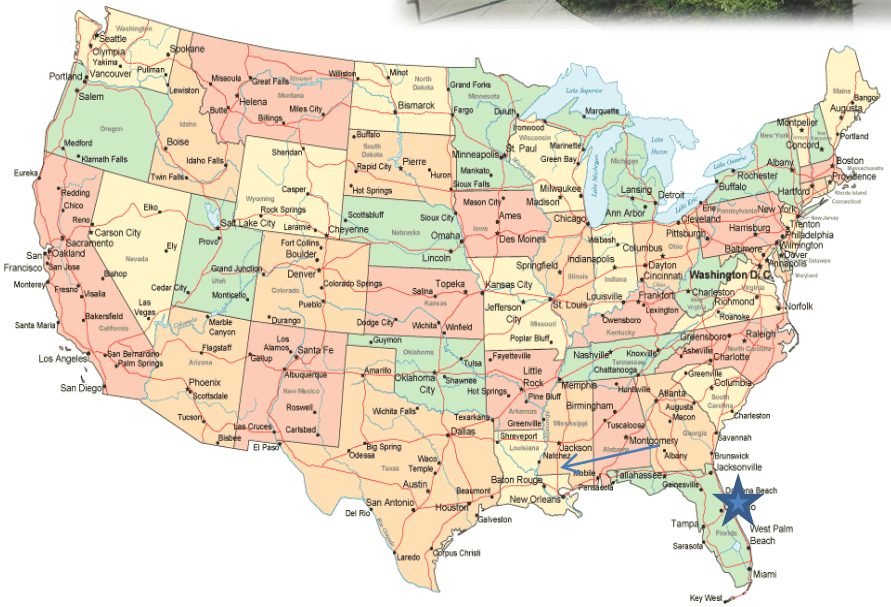
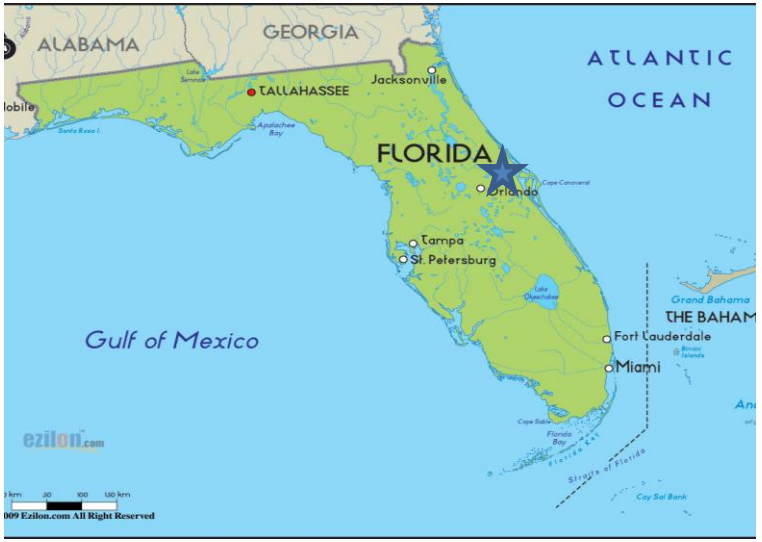




FSEC Research & Activities

- Solar
  - Photovoltaics
  - Solar Thermal
- Hydrogen
- Buildings
  - Energy Efficiency
  - Energy Audits
- Electric Vehicles
- Workforce Development
- **K-12 Education**

FSEC K-12 Education

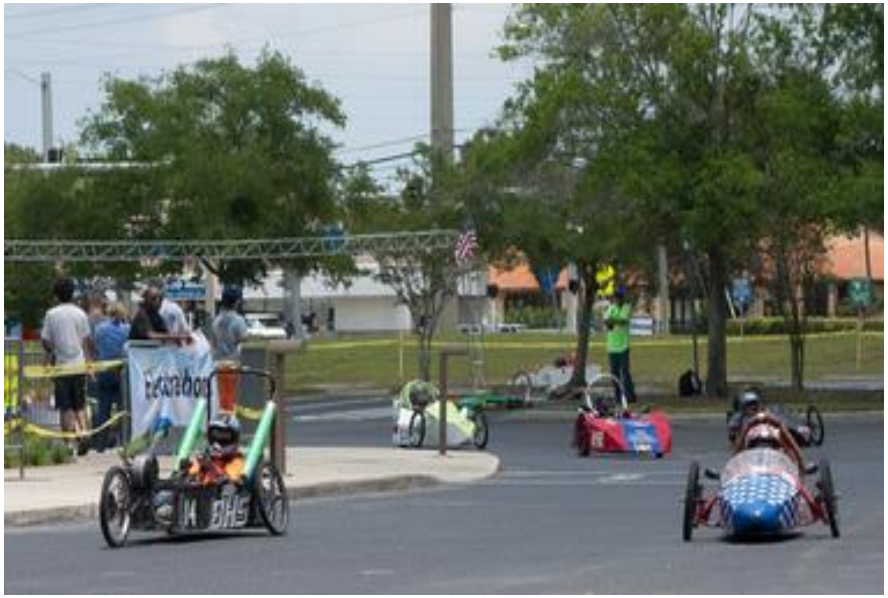
- **Curriculum & Resources**
  - www.fsec.ucf.edu & www.energywhiz.com
  - Lending Library
- **Professional Development for Teachers**
  - Solar (photovoltaics and solar thermal workshops), Hydrogen, Biofuels, Energy Efficient Building Sciences and Environmental Issues
- Student Outreach – Hands-on, Project-based learning

Student Outreach Education

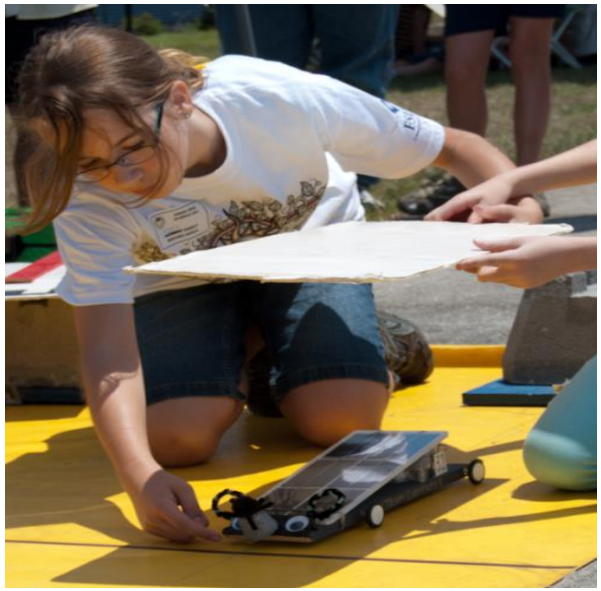
- Project-based learning with a focus on renewable energy technologies and use of STEAM (Science, Technology, Engineering, Arts and Mathematics) to solve real world energy and environmental problems

- EnergyWhiz is a forum where students showcase their hands-on, energy-related projects and their STEAM capabilities.

EnergyWhiz Activities

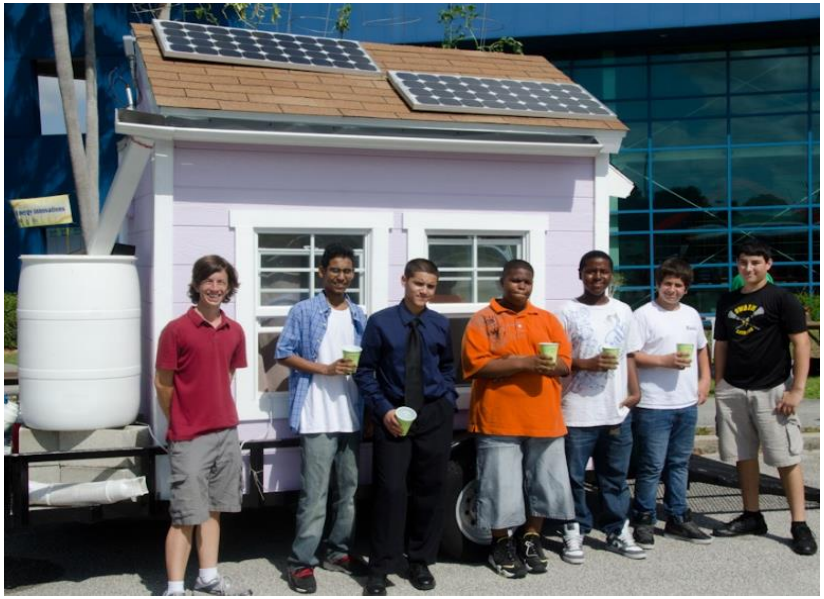


Electrathon

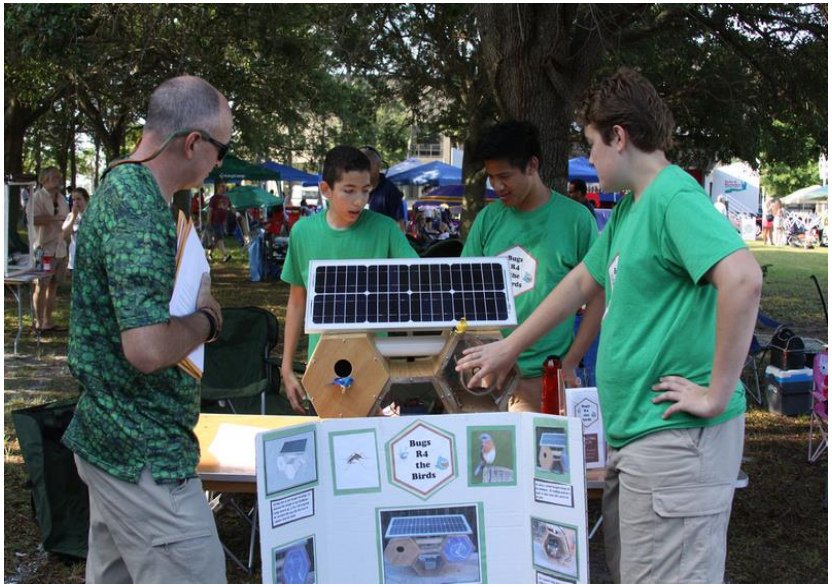


Junior Solar Sprint

EnergyWhiz Activities

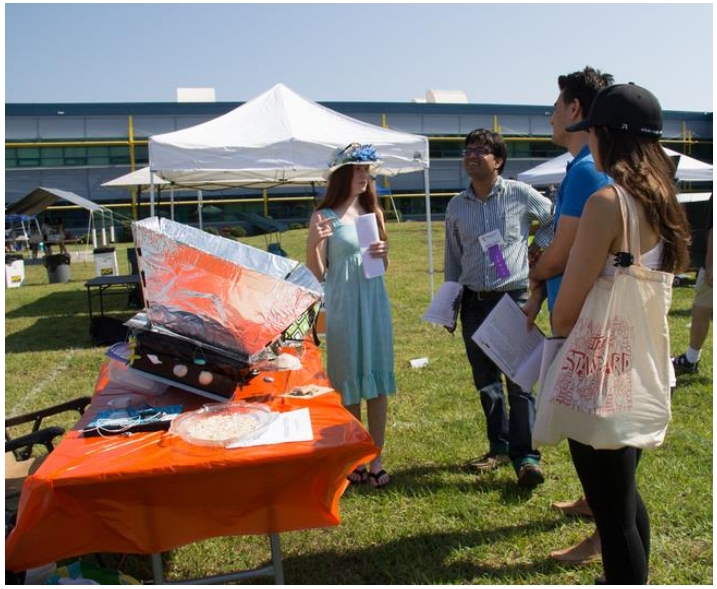


Energy Innovations



Critter Comfort Cottage

EnergyWhiz Activities



Solar Energy Cook-off

Solar for Underserved Populations (Solar UP)

Purpose:

- To engage students in solar thermal experimentation.
- To find real-world solutions to the problem of access to safe drinking water across the globe.

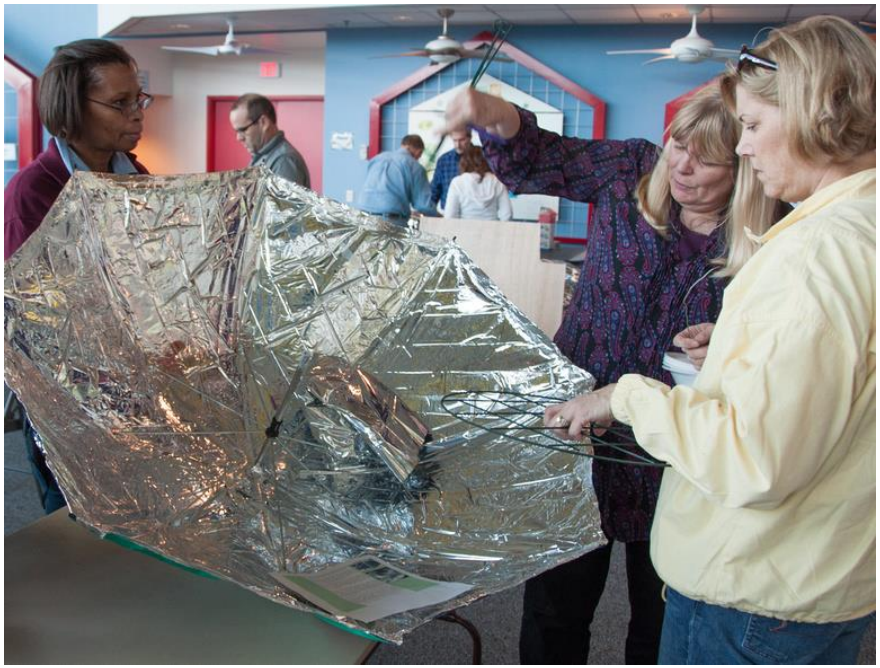
Solar for Underserved Populations (Solar UP)

Methodology:

- Provide Professional Development for Teachers
- Develop supplemental curriculum
- Integrate this “project” within the successful solar energy cook-off program within EnergyWhiz

Solar UP
Professional Development for Teachers

- Coordinate hands-on workshop
- Design experiment protocol
- Build solar designs for testing
- Test at local schools



Solar UP
Professional Development for Teachers

- Solar Thermal Workshop for Teachers
- January 21, 2017 at FSEC
- 35 teachers are registered to attend
- Four solar thermal designs will be explored and built during the workshop
- Use of Fresnel lens will be introduced
- Teachers will be issued two challenges.

Solar UP

Challenge 1-

- Using a Fresnel lens, adapt one of the solar cooker designs from the workshop to more rapidly pasteurize water for a specific human population within a geographic area of the world.

Challenge 2-

- Develop a testing protocol to determine the effectiveness of the enhanced solar cooker design and implement the testing protocol.

To meet above challenges We have defined roadmap in five steps- A to E

Solar UP

Teachers will implement the testing protocol at their schools with students	A
Students will research the geographic area and refine the design based on the human population using the enhanced solar cooker	B
Students will do additional testing and evaluation of their solar cooker.	C
Students will submit their cooker designs with associated research information as part of the Solar Energy Cook-off within EnergyWhiz	D
Designs will be reviewed and evaluated by solar scientists and researchers from FSEC	E

Conclusion

It is expected that students will:

- develop a better understanding of solar cookers and their effectiveness.
- Understand the importance of access to clean water.
- Identify places in the world where life-saving solar thermal technology would be of great benefit.

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Thank you for your patience!
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