

TCIPG

TRUSTWORTHY CYBER INFRASTRUCTURE FOR THE POWER GRID | TCIPG.ORG

Sparking Interest in Smart Grid Stuff

Jana Sebestik and Tim Yardley
University of Illinois

February 6, 2015 at 1PM/CT
NCSA Auditorium | Webcast



Securing the smarter grid of the future ...

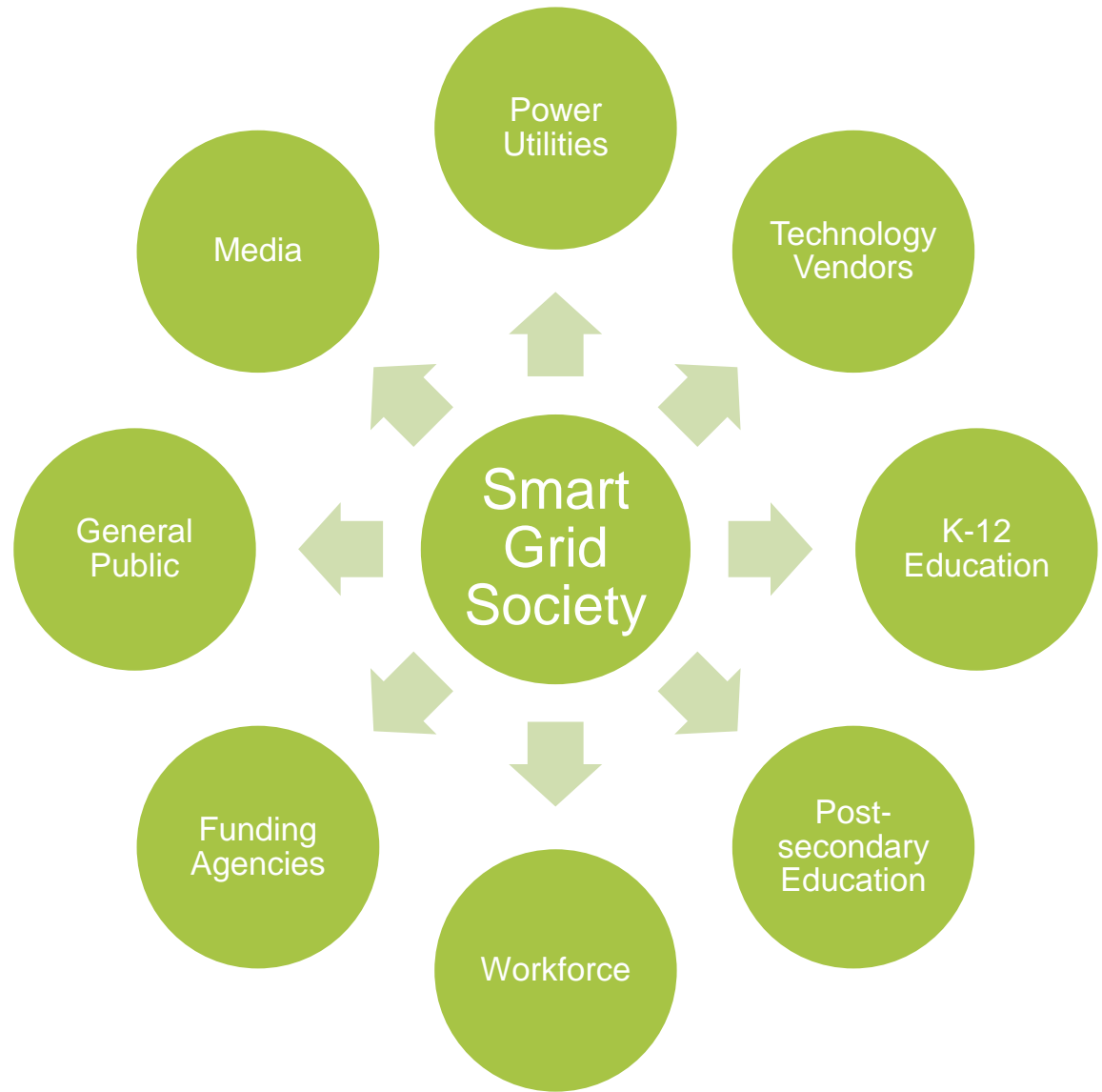


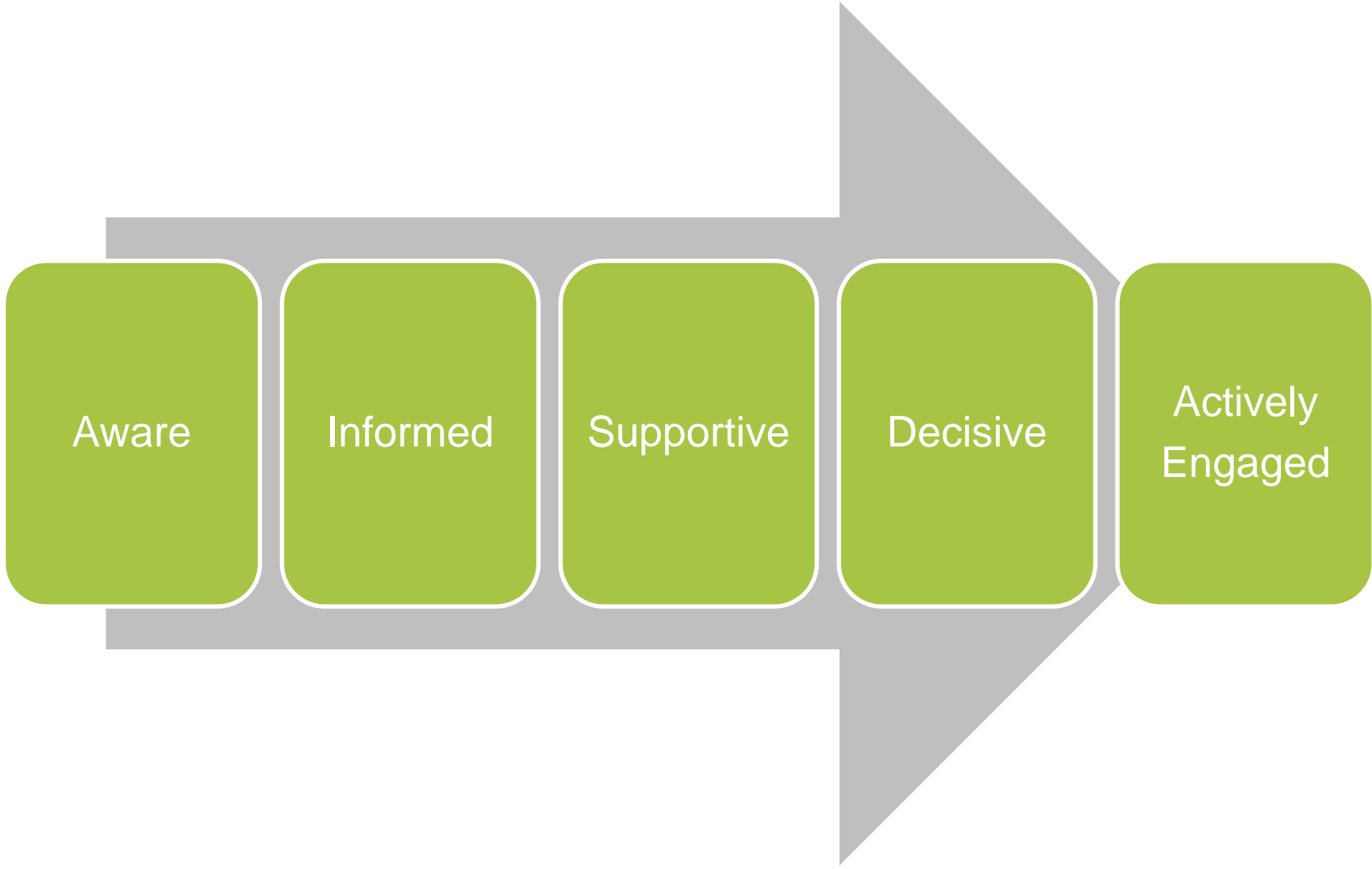
requires an engaged
and informed society.

How do we
spark interest?

Who wants or
needs to know
what?

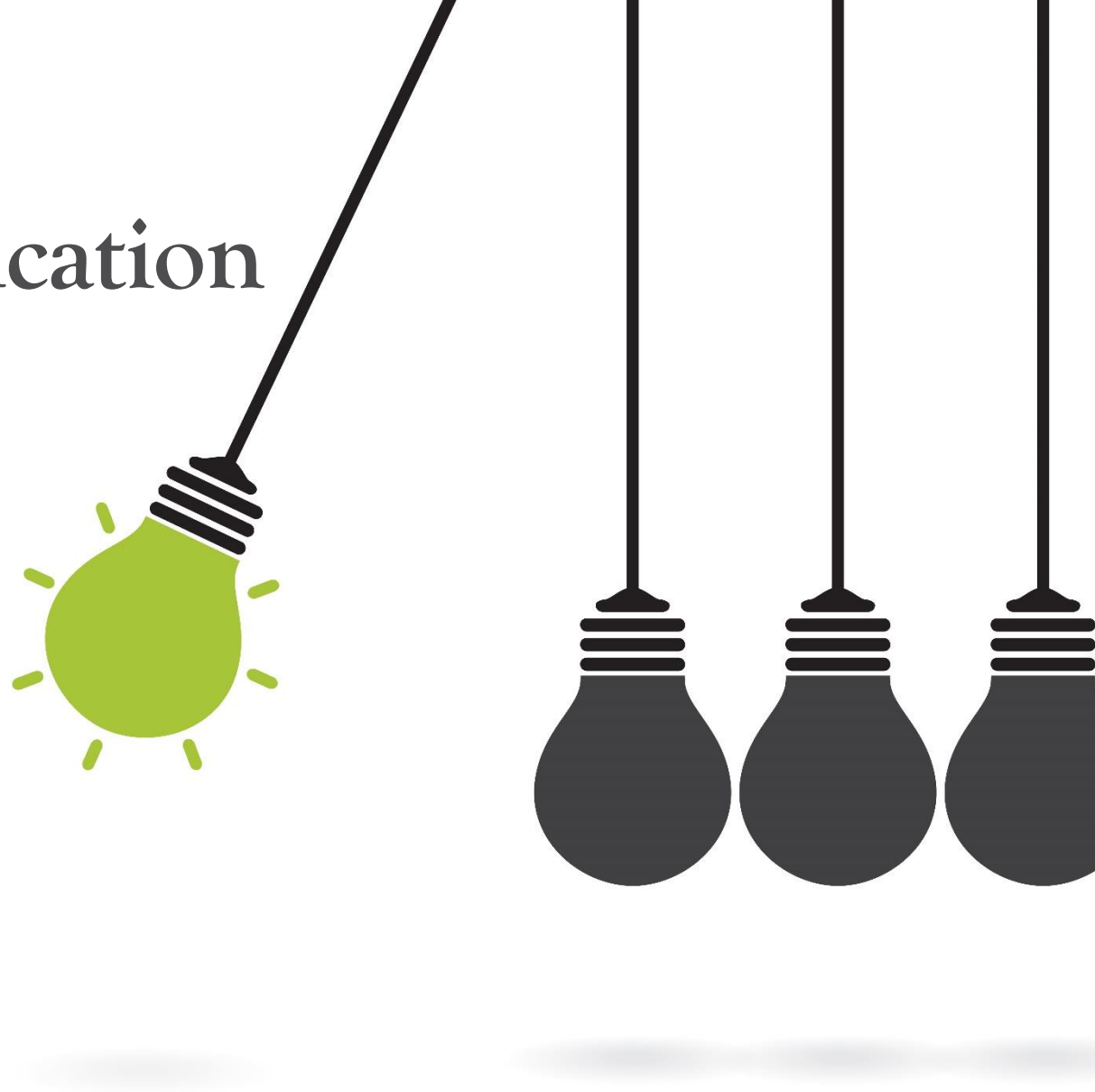
How do we
define impact?





TCIPG and smart grid education

- Efforts
- Impact
- Participate

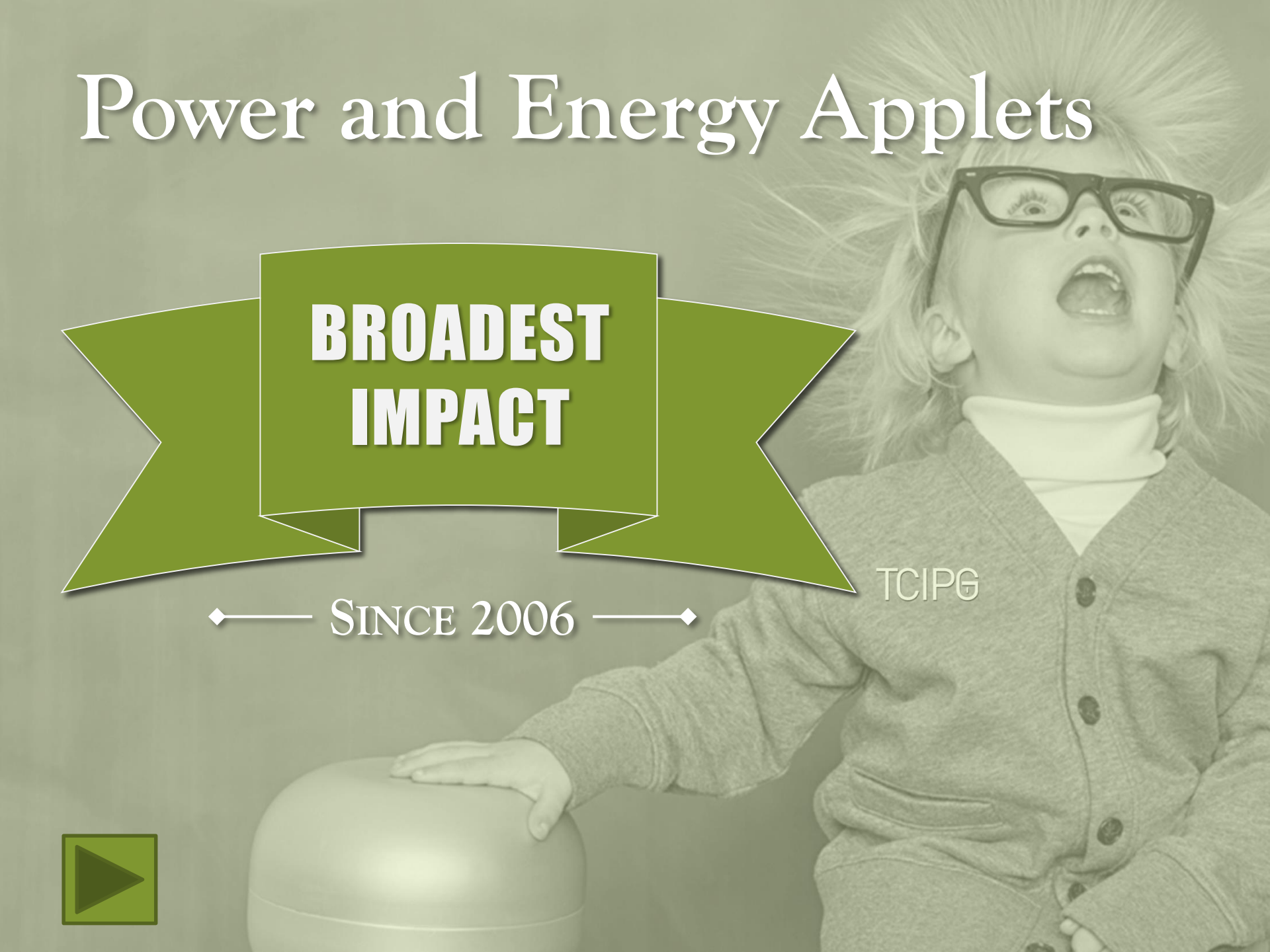


Power and Energy Applets

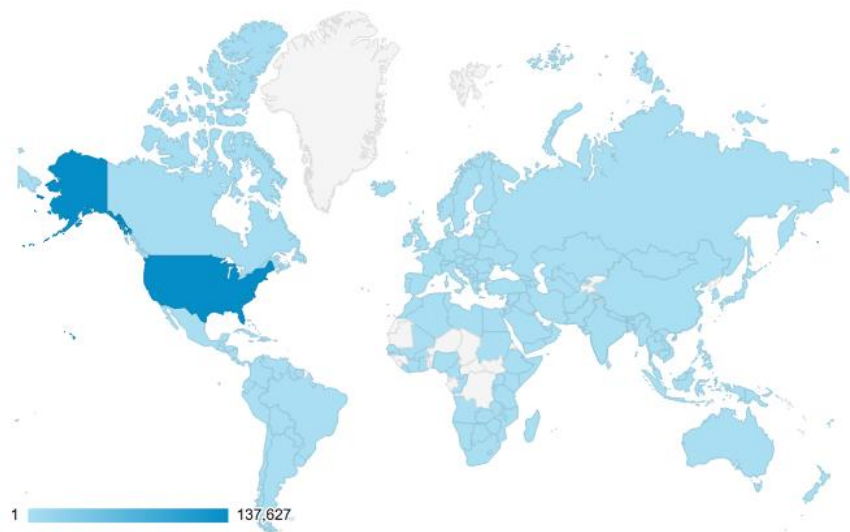
**BROADEST
IMPACT**

◆ — SINCE 2006 — ◆

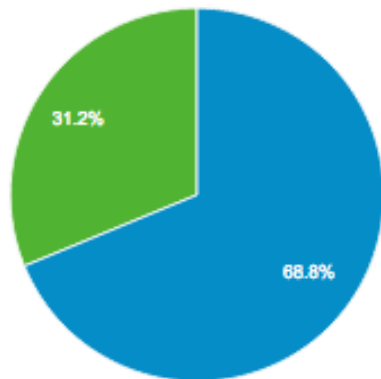
TCIPG



Power and Energy Applets – National and Global Reach



■ New Visitor ■ Returning Visitor



- Nationwide adoption in curriculum projects and career programs
- STEM teacher training
- Can run from portable media
- Versatile, adaptable
- Since 2006 and still in big demand!
- Accessible online

<http://tcipg.org/education/online-applets>

Over 160,000 sessions and 410,000 page views since January 2008

“When students understand how their education is relevant to their lives and future careers, they get excited ...”

- Project Lead The Way

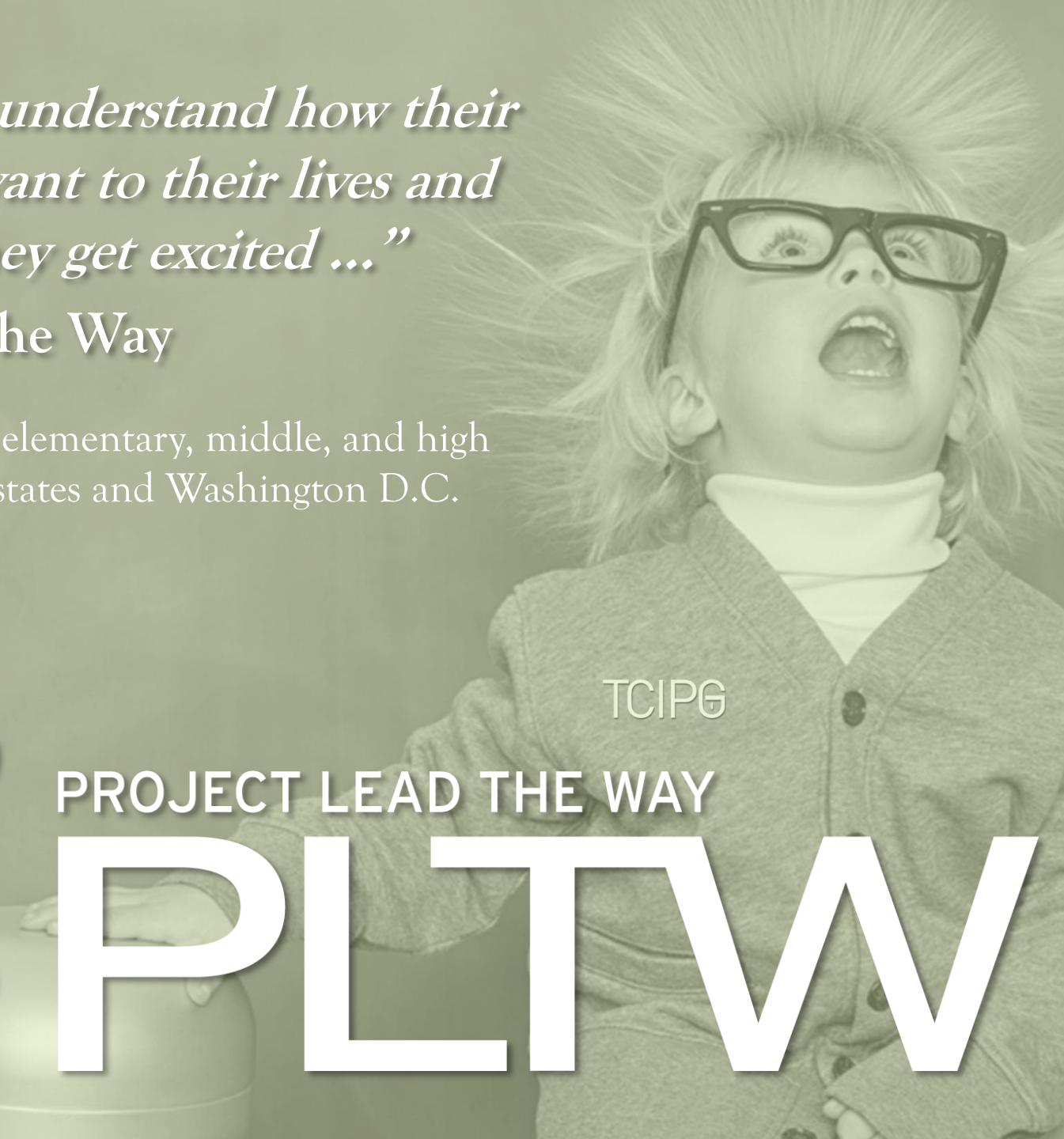
more than 6,500 elementary, middle, and high schools in all 50 states and Washington D.C.



TCIPG

PROJECT LEAD THE WAY

PLTW





College or { Why not both? } career?

SREB

High Schools
That Work

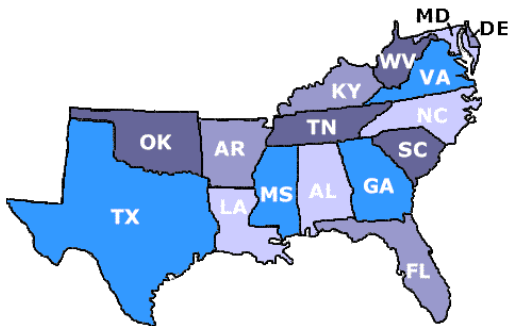
ADVANCED CAREER

Energy and Power Foundations – Career Training

SREB

Southern Regional Education Board
592 10th St. N.W.
Atlanta, GA 30318-5776
(404) 875-9211

SREB.org



Advanced Career better prepares students for more options

{ The New Approach }

Advanced Career

A rigorous and relevant blend of technical and academic skills in authentic projects

- ▶ Advanced Training
- ▶ Community/Technical College
- ▶ Jobs (*more options*)
- ▶ College

{ The Old Approach }

COLLEGE TRACK → College

OR

CAREER TRACK → Jobs
→ Training

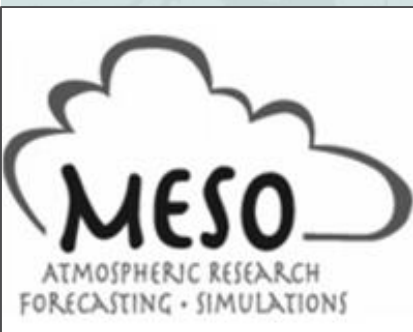
Improving Bridges for Clean Energy Training

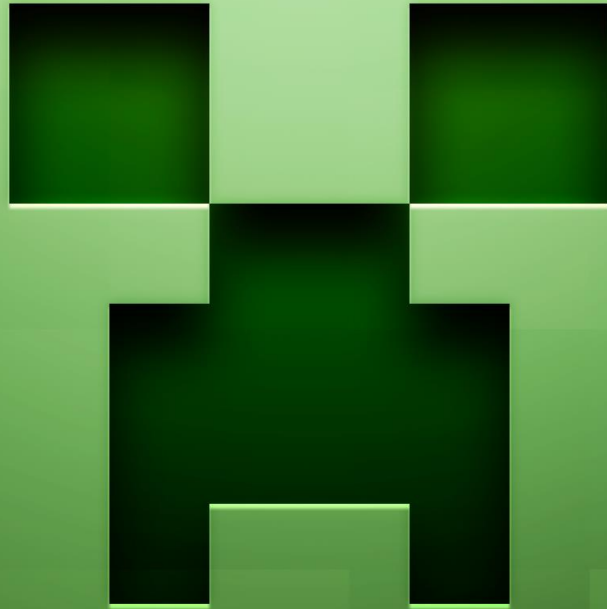


WORKSHOPS CHALLENGES RESOURCES STORE

Explore brighter energy options with KidWind

We equip inquisitive learners and educators with renewable energy resources for the classroom and beyond.





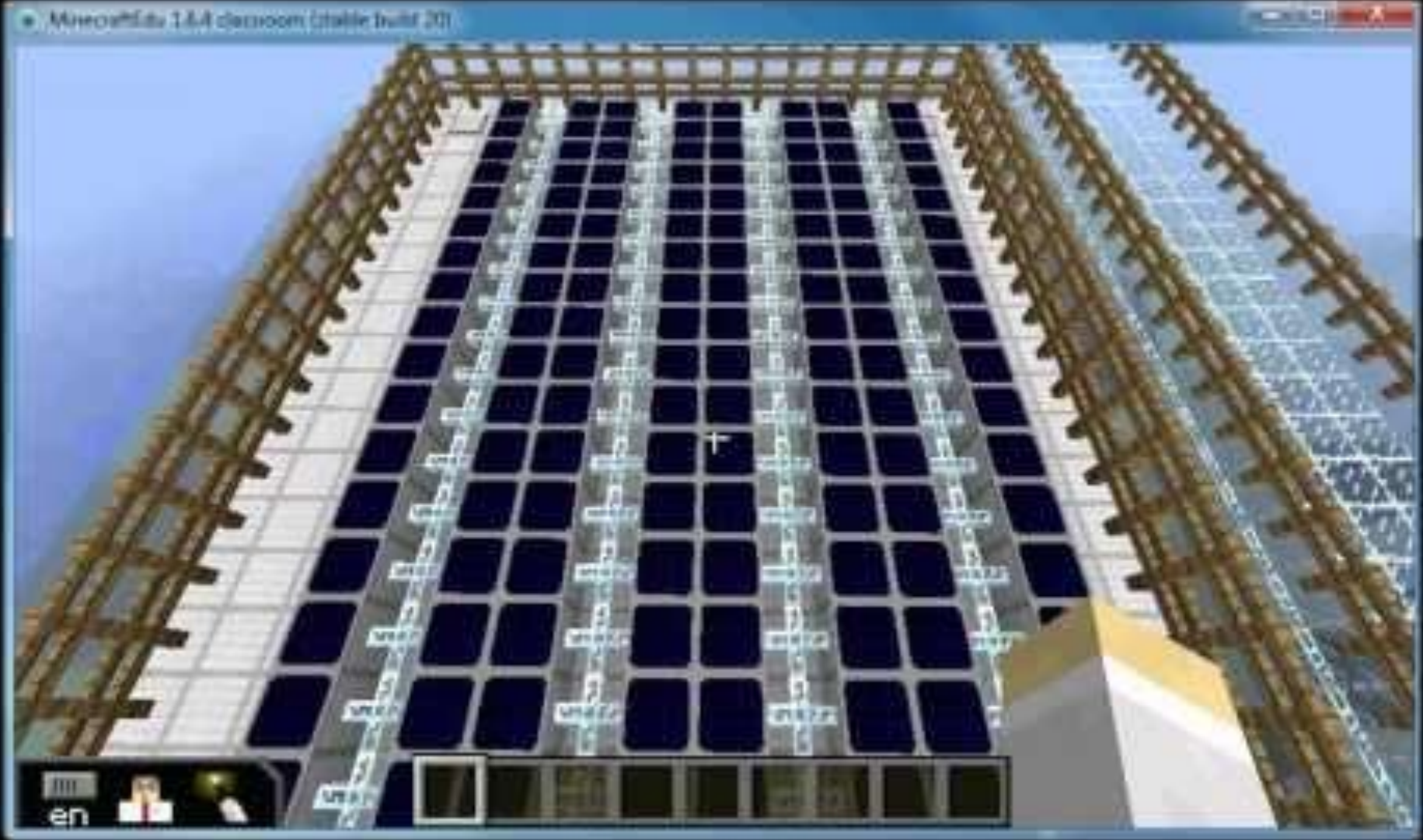
TCIPG Minecraft World of Power

**NEW and
EXCITING!**

TCIPG

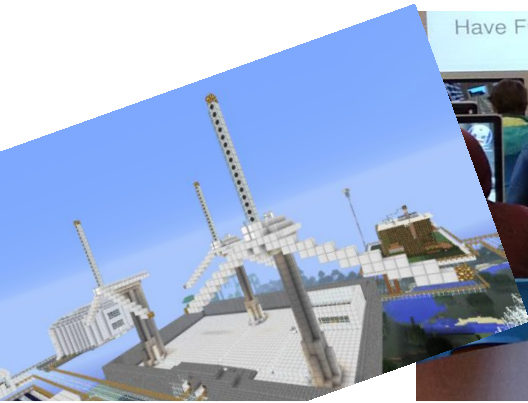


<http://tcipg.mste.illinois.edu/minecraft>



<https://www.youtube.com/watch?v=LMZD9h8wkEA>

TCIPG Minecraft World of Power – Early Impact



- Urbana Middle School After School Program
- University Laboratory High School Agora Days Workshop
- USA STEM Festival
- MinecraftEdu World Library

<http://tcipg.mste.illinois.edu/MinecraftEdu>

Fun Learning Kits

**Can I have
seconds?**

TCIPG

A young child with blonde hair that is static-charged and standing on end. The child is wearing black-rimmed glasses and a grey cardigan over a white turtleneck. They have a surprised or excited expression with their mouth open. A green speech bubble with white text is positioned to the left of the child. The child's right hand is resting on a white, rounded object. The background is a plain, light-colored wall.

Solar House and Car Kits



Download PDF docs with patterns, supply lists, and instructions from <http://tcipg.org/education/outreach-tools>.

4-H Mall 

We are partnering with National 4-H to sell ready-to-use kits.

Market at the Square in Urbana



Solar-powered Dollhouse

Solar-powered Outdoor Playhouse

Illinois State Fair



Solar-Powered Dollhouse at Local Events



Orpheum Children's Science Museum

Sustained Play = Fun Learning!



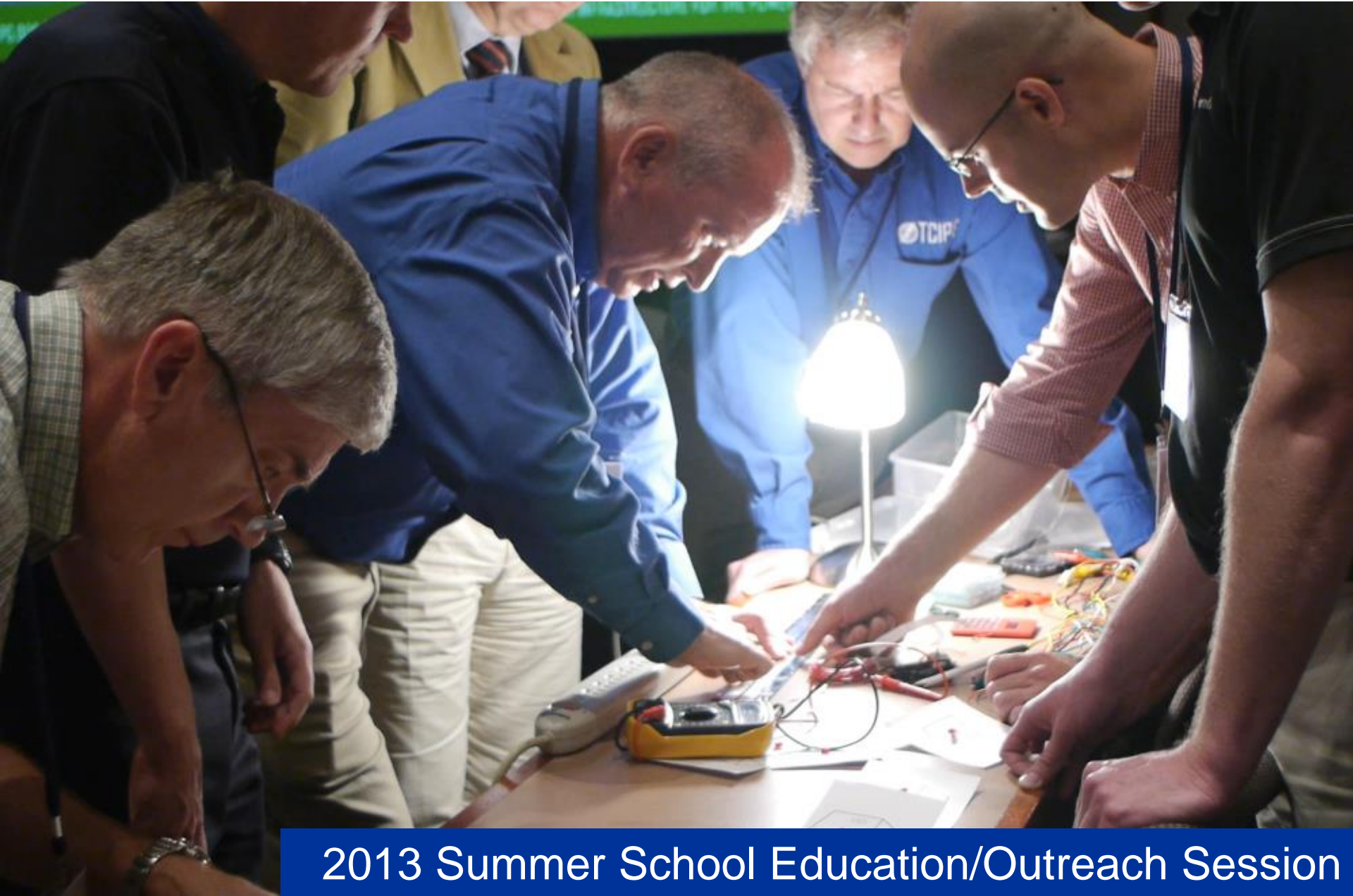
PowerPark

many pieces | gender-neutral
no single/correct way to play

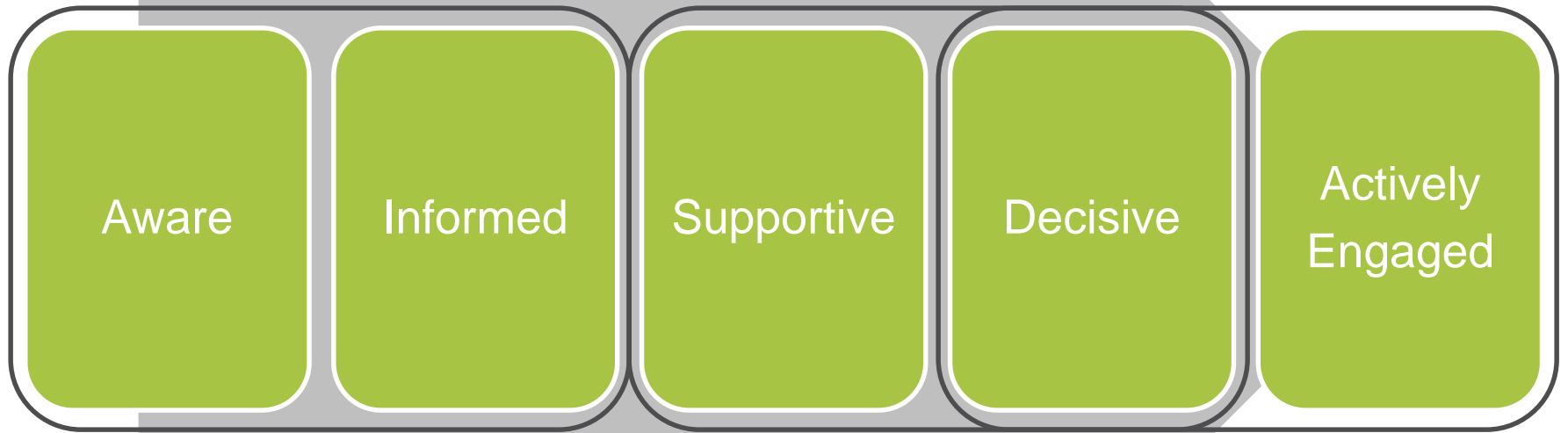


FABLAB

All ages enjoy learning when it's fun AND games!



2013 Summer School Education/Outreach Session



Become an outreach ambassador

Workforce Training and Development

Graduate
Education

Internships

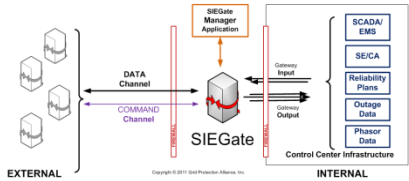
Summer
Schools

Industry
Workshops

Short
Courses



TCIPG Technologies Provide Impact



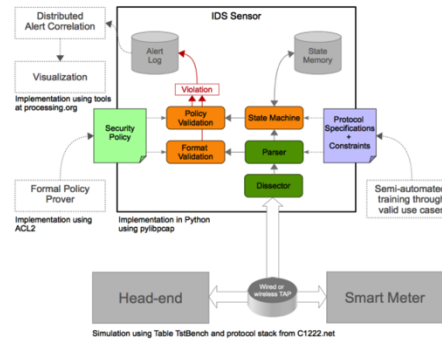
SIEGate: Gateway that improves security posture and reduces the cost of information exchange amongst utilities.



NP-view: Automated and comprehensive network path analysis of firewall and router configurations against a global policy.



Möbius: Model based environment for validation of system reliability, availability, security, and performance.



AMIlyzer: Specification based intrusion detection system for Advanced Metering Infrastructure (AMI).



GridStat: Middleware framework providing secure, flexible, robust and timely real time data for the electric power grid.



River Loop Security: Providing tools for ZigBee auditing, improvement, and evaluative research.

Graduate Research and Education

Student-led Reading Group



Fill the knowledge gap between computer and power engineering.



Provide a common knowledge base to facilitate interdisciplinary research and collaboration.

ASU ARIZONA STATE UNIVERSITY

Dartmouth

ILLINOIS

WASHINGTON STATE UNIVERSITY

Internships and Job Placement



- Relationships with industry and government to get these highly sought-after students into the right positions
- Opportunities for exchanges of ideas
- Facilitates technology transfer

Professional Development



ONLINE PROGRAM

Professional Master's Degree in Electric Power Engineering



ONE-YEAR PROGRAM

Master of Engineering in Energy Systems

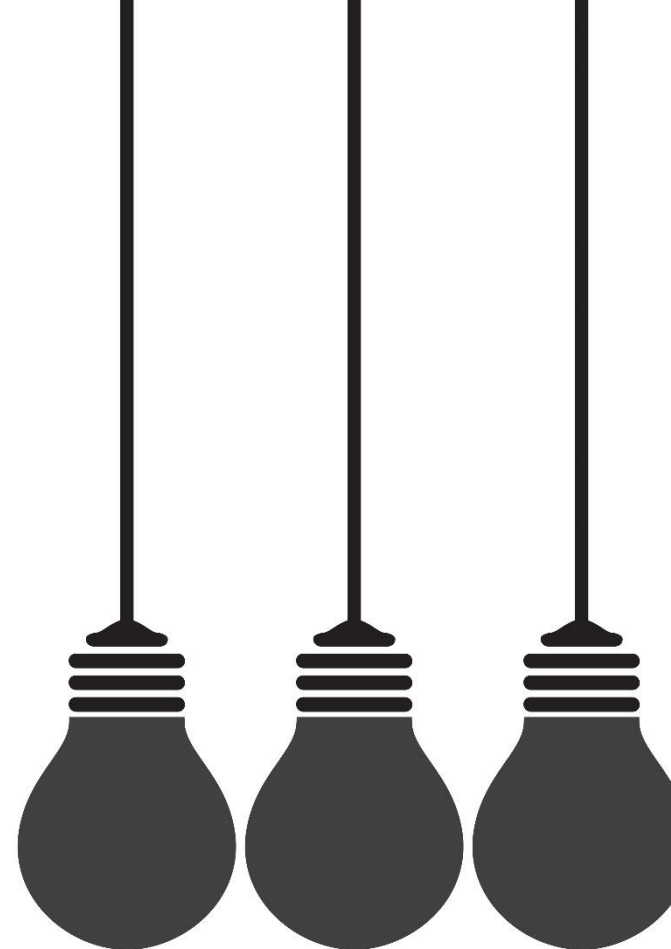


Short Courses

- Smart Grid Bootcamp
- Smart Grid Cyber Security
- Power Engineer Primer



- Program Manager Primer
- Open Curriculum
- Ethical Assessment in Critical Infrastructure



Audiences

- Industry
- Government
- Academia

2013 Hands-on Security Training/Lab

- A utility-like virtual environment
- Included typical security flaws
- Provided an introductory demonstration of ethical assessment techniques within a SCADA environment.

File Edit View History Bookmarks Tools Help

TCIPGco

www


BackTrack Linux Offensive Security Exploit-DB Aircrack-ng SomaFM

Recent News

- 17 JUNE** **Security Assessment**
TCIPGco has begun a security assessment to secure your future ...
- 10 JUNE** **Summer Party**
A kick off to a great summer season ...
- 3 MAY** **Investor Meeting**
TCIPGco is trying to expand, and meeting with investors ...
- 1 APRIL** **Gotchal**
No, this isn't the revolution, we still have power! ...

Welcome to Our Utility Company!

TCIPGco was formed to help you...



June 17-21, 2013, Q Center, St. Charles, Illinois

This website has several pages: [Home](#), [About us](#), [Privacy Policy](#), [Gallery](#), [Contact us](#) (note that the contact us form – doesn't work), [Site Map](#).

TCIPGco Leaders



Tim
Yardley



Jeremy
Jones

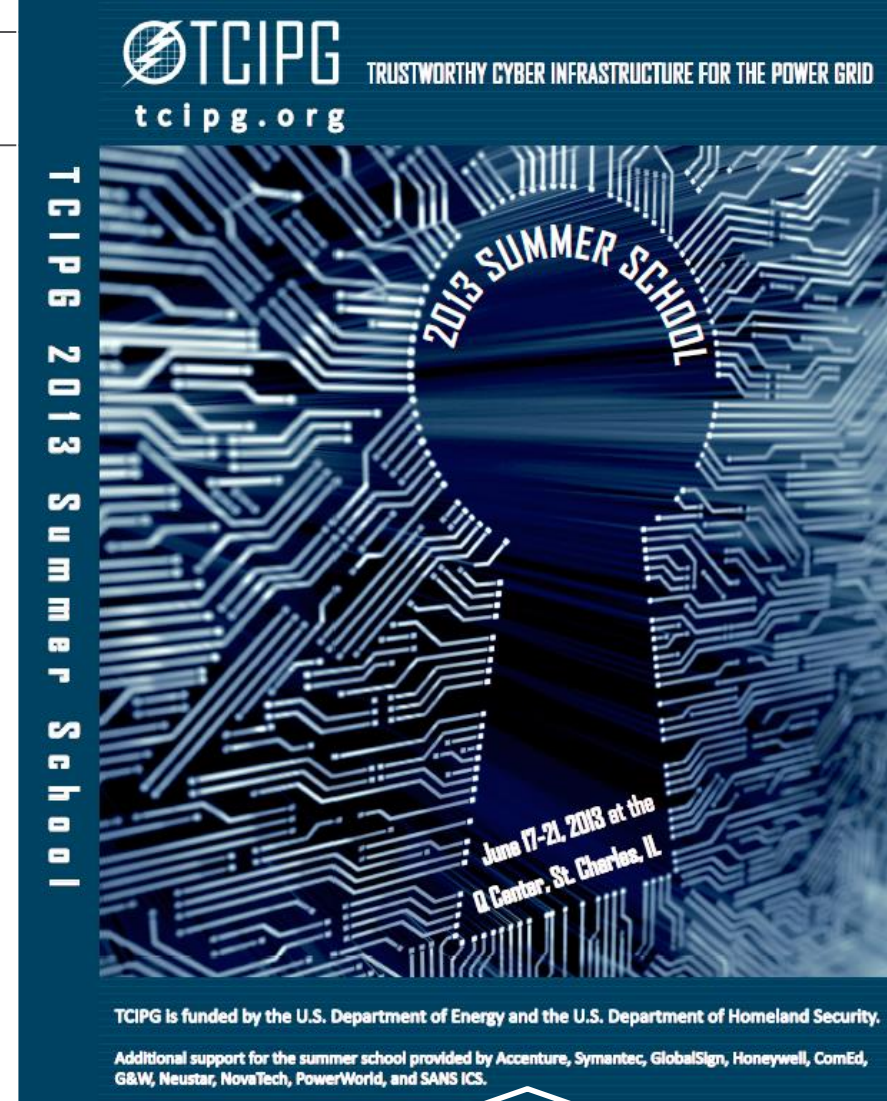


Edmond
Rogers

TCIPG Summer Schools

Intensive, engaging, and value-packed week of topics and activities focused on cybersecurity for power and smart grids.

- Utility and industry practitioners
- Researchers from industry and national labs
- Academic instructors and researchers
- Graduate and undergraduate students
- 2013, 2011, 2008*
- ~ 150 attendees each

The poster features a dark blue background with a complex white circuit board pattern. At the top left is the TCIPG logo, a stylized lightning bolt inside a circle, followed by the text 'TCIPG' and 'tcipg.org'. To the right of the logo is the tagline 'TRUSTWORTHY CYBER INFRASTRUCTURE FOR THE POWER GRID'. On the left side, the text 'TCIPG 2013 Summer School' is written vertically. A large, dark blue, stylized shape resembling a keyhole or a shield is in the center, with '2013 SUMMER SCHOOL' written in a curved path along its top edge. At the bottom right of this shape, the text 'June 17-21, 2013 at the Q Center, St. Charles, IL' is written. At the bottom of the poster, there are two lines of text: 'TCIPG is funded by the U.S. Department of Energy and the U.S. Department of Homeland Security.' and 'Additional support for the summer school provided by Accenture, Symantec, GlobalSign, Honeywell, ComEd, G&W, Neustar, NovaTech, PowerWorld, and SANS ICS.'

**SUPPORT FROM INDUSTRY
VENDORS AND POWER UTILITIES.**

*2008 was during the TCIP grant.



TCIPG

SUMMER SCHOOL



JUNE 15-19, 2015

Q CENTER, ST. CHARLES, ILLINOIS

Registration Opens Soon
Student Scholarships
Sponsorship Opportunities

<http://tcipg.org/2015-summer-school>

Program Features*

- Comprehensive core material
- Modular talks providing deeper detail
- Lightning talks on emerging areas
- Reinforced learning approach
- Integrated exercises reaffirming the topics
- Foundational knowledge
- Topic specific knowledge
- In-depth exploration
- Extended lab and learning opportunities
- Networking socials
- Job Fair

A banner for TCIPG Summer School. The background is dark blue with light blue sunburst rays emanating from the bottom center. The text "TCIPG" is in large white letters, followed by "SUMMER SCHOOL" in smaller white letters. Below that, a green padlock icon with a white lightning bolt is followed by "JUNE 15-19, 2015" in white. At the bottom, "Q CENTER, ST. CHARLES, ILLINOIS" is written in white.

TCIPG SUMMER SCHOOL

 **JUNE 15-19, 2015**

Q CENTER, ST. CHARLES, ILLINOIS

*Program is subject to change.

Funding support for TCIPG is provided by:

- Department of Energy
Office of Electricity Delivery and Energy Reliability
<http://energy.gov/oe/office-electricity-delivery-and-energy-reliability>
- Department of Homeland Security
Science and Technology Directorate
<http://www.dhs.gov/science-and-technology-directorate>

- TCIPG Education

<http://tcipg.org/education>

<http://tcipg.mste.illinois.edu/>

- 2015 Summer School

<http://tcipg.org/2015-summer-school>

- Master's Degree in Electric Power Engineering

(Online Program)

<http://vcea.wsu.edu/graduatestudy/professional-science-masters-degree/>

- Master of Engineering Program in Energy Systems

(1-year Program)

<http://ease.illinois.edu/>

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