

Tennessee Department of Environment & Conservation Office of Energy Programs







Tennessee Energy Education Network (TEEN)

- TEEN is a K-12 Energy Education Program focusing on students, educators, and school communities that is funded under SEP Annual.
- In 2008, TEEN partnered with the University of Tennessee to launch the 4-H Energy Program.
- The program initially involved 23 counties and has grown to more than 77 of the 95 counties.
- Counties participating in the program for the first time receive \$2,000 to purchase National Energy Education Development Project (NEED) curriculum kits developed for 4H, including chemical, light, heat & motion energy.
- The 2012-13 program included 49 counties and reached 53,729 students.





Tennessee Energy Education Network (TEEN)

- 4-H professionals attend energy training workshops and incorporate energy activities into their 4-H club meetings.
- Returning counties receive a program stipend of \$600 \$1,000 to support their energy program for the year.
- The 4-H Energy Program educates students and community members and encourages parents to become more energy efficient in their homes and community.
- 4-H students promote the Tennessee Valley Authority Home Energy Survey and the "Change the World, Start with Energy Star" campaign.
- Performance metrics include number of lessons taught, students reached, community events held and attendance, and the number of families participating in the TVA and Energy Star Programs.





Tennessee Energy Education Network (TEEN) Energy Camp for Teachers

- Each year, TDEC OEP's hosts two to three camps for k-12 teachers. This 4-day
 professional development experience helps teachers "energize" their classrooms
 and empower their students to be leaders in their schools and communities.
- 82 teachers attended the 2013 camps. All camp costs are covered by TDEC OEP.
- Campers learn how to help their students apply energy content knowledge while using the school as a real world lab, collecting and analyzing data and making observations in order to evaluate and improve school energy usage.





Tennessee Energy Education Network (TEEN) Energy Camp for Teachers

- Campers also learn ways to assist students with team-building and developing leadership skills as they work together to educate fellow students, school staff, family members, and members of the community about the importance of energy conservation. Each camp includes a full day field trip to energy-related sites in the area.
- Campers receive a stipend to purchase energy education materials for their classrooms. Monitoring visits are conducted to teachers' classrooms to observe their use of the materials purchased and the impact on the students.





- TDEC OEP is the State coordinator for NEED. At Energy Camp, teachers learn how to participate in the NEED Youth Awards for Energy Achievement competition.
- Schools combine their energy education activities for the year and submit a scrapbook of their efforts to be judged. State winners are selected and submitted for judging on the national level. Since the program's inception, TN has always had national winners.
- Fifteen TN schools participated in the annual NEED Youth Awards for Energy Achievement competition reaching 16,679 students and 28,683 community members statewide.





- TN received two national awards in the 2013 NEED Youth Awards for Energy Achievement competition. Lipscomb Academy Elementary School was selected as the "National Primary School of the Year" and Franklin County High School was selected as the "National Secondary School of the Year."
- In addition to these 2013 national winners, Unicoi County 4-H was a finalist in the "Special Projects" category.
- Connie Bond, a special education teacher at Huntingdon Primary School, was honored with the NEED Project's Distinguished Service Award on June 24 at the NEED Development Conference in Washington, D.C.





THE UNIVERSITY of TENNESSEE

- 5 MW, multi-acre power generation facility
- Located in Haywood County just North of I-40
- Zero-carbon production of electricity
- Largest SEP-ARRA funded solar installation
- Demonstration tool for educational, research, and economic development
- TDOT Info & Welcome Center will house SPECTRUM Exhibit
- http://solarfarm.tennessee.edu/







Tennessee Solar Institute

Grant Programs

- 156 Installation Grants to speed deployment of solar energy
- 80 Innovation Grants to encourage growth of TN's solar industry

Education

- Solar PV Workforce Development
- Advanced Sciences Workshops with ORNL

Additional Activities

- Solar Industry Database
- Technical Assistance



Harrison Dairy – Loudon County 109.98 kW roof mount



TENNESSEE ENERGY EDUCATION INITIATIVE

Power. Positive. Progress.



Tennessee Energy Education Initiative (TEEI)

- TDEC Office of Energy Programs launched TEEI in the Spring of 2013.
- TEEI is being delivered in conjunction with Pathway Lending, a CDFI, and other statewide energy resource providers.
- TEEI's mission is to provide in-depth training and educational tools to support the implementation of energy efficiency, renewable energy, and energy management projects in all sectors.







Tennessee Energy Education Initiative

- Funding for TEEI is provided by the U.S. Department of Energy through the State Energy Program / American Reinvestment and Recovery Act.
- Under the current funding source, TEEI is providing "tuition paid" workshops and conferences throughout the State through September 2013.
- TEEI has leveraged relationships with State Agencies, Local Governments, TVA, Oak Ridge National Lab, and Non-profits including the Industrial Energy Efficiency Network, Southeast Energy Efficiency Alliance, and Tennessee Renewable Energy Economic Development Council.





Tennessee Energy Education Initiative

- Specific event topics range from multi-family housing to industrial energy efficiency **and** building energy codes to TVA's incentive and audit programs.
- Other events have had a broader approach to sustainability, project management, and project financing.
- Popular repeat topics include:

Employee Engagement Telling the Story -- Sharing the Benefits of EE, RE, & EM Projects Monetizing Energy Improvement Projects





Tennessee Energy Education Initiative (TEEI)

- 46 events and activities
- Highlights Include:
 - 4 QECB Workshops
 - 4 Business / Industry Lunch & Learn Sessions
 - 6 Energy Efficiency in Water & Wastewater Systems Workshops
 - 3 Summits
 - Memphis Healthcare, Education, & Multi-Family Housing
 - Nashville Industrial Energy Efficiency
 - Knoxville ORNL's 3rd Annual Southeast Sustainability Summit
 - 2 Upcoming Webinars





Tennessee Energy Education Initiative

- >2500 attendees / participants from March through September 2013
- Select presentations and materials and other resources are available on the Online Resource Center at <u>www.tnenergy.org</u>.
- TEEI will continue under our SEP Annual funding.
- Efforts for the upcoming program year include the State and Local Government EM&V Project, which will provide Portfolio Manager and EE Behavioral Change Training.





E.D.G.E. Project

Get the E.D.G.E. on Phantom Loads.

Participants pledge to <u>Educate</u> themselves regarding Phantom Loads and the impact

they have on electricity usage, **Discover**

where they exist in the home or business, Gather data

using the Kill-A-Watt® Meter, and Execute a plan to

eradicate Phantom Loads.



E.D.G.E. Project

*Use the meter to measure "in use" and "standby power" of at least 5 devices or appliances at home or work

*Report findings to TEEI and identify behavioral changes

*Pass the meter along to a family member, neighbor, coworker, or k-12 school teacher who will also sign a pledge to participate in the *E.D.G.E. Project*

*Track and measure the difference in the amount of energy consumed prior to using the meter and after instituting behavioral changes

*Report consumption findings to TEEI at least twice within a one year period

This project is brought to you by TDEC Office of Energy Programs and supported by the Department of Energy under Award Number DE-EE0000160.

Calendar of Events <u>www.TnEnergy.org</u>

Date	Event	City	# Attendees
March 13	TDEC Environmental Conference – TEEI Energy Sessions	Kingsport	75
April 10	Tennessee Solar Summit	Chattanooga	81
April 22	TREEDC / Jackson Energy Authority Forum	Jackson	60
May 2	TCCI Manufacturing Energy Conference	Nashville	121
May 2-3	UT Baker Center Electric Vehicle Symposium	Knoxville	120
May 8	Chattanooga Manufacturing Association Energy Efficiency Conference	Chattanooga	41
May 17	TREEDC / Bethel University Forum	McKenzie	75
June 12	TREEDC / Columbia State College Forum	Franklin	53
June 13	Business and Industry Workshop w/ Clarksville Dept of Electricity	Clarksville	33
June 25-26	Memphis and Shelby County Sustainability Summit	Memphis	201

Calendar of Events <u>www.TnEnergy.org</u>

Date	Event	City	# Attendees
July 9	TREEDC Austin Peay University Forum	Clarksville	64
July 12	Solar PV Codes Training for Inspectors and Firefighters	Goodlettsville	18
July 17-18	Industrial Energy Efficiency Summit	Nashville	126
July 22 -25	Energy Efficiency in Water and Wastewater Systems (6 events)	Jackson, Murfreesboro, Knoxville	229
July 22 – 26	NABCEP Solar PV Certificate of Knowledge Training	Spring Hill	9
July 22 – 23	2012 IECC Residential Energy Conservation Building Energy Codes Instructor Training	Bell Buckle	10
July 25	National Association of Women Business Owners - Nashville Chapter - Focus on Energy Efficiency	Nashville	67
July 26	TREEDC Tennessee Tech University 3 rd Annual Forum	Cookeville	65
July 29	Solar PV Codes Training for Inspectors and Firefighters	Milan	12
July 30	Untapped Opportunities for Energy Efficiency in Multifamily Housing	Nashville	47

Calendar of Events <u>www.TnEnergy.org</u>

Date	Event	City	# Attendees
August 6-8	2012 IECC Duct Envelope Tightness Building Energy Codes Instructor Training	Bell Buckle	10
August 9	Solar PV Codes Training for Inspectors and Firefighters	Bristol	8
August 15	Untapped Opportunities for Energy Efficiency in Multifamily Housing	Knoxville	43
August 21-22	Oak Ridge National Laboratory's 3 rd Annual Southeast Sustainability Summit	Knoxville	248
August 26-29	2012 IECC Commercial Energy Conservation Building Energy Codes Instructor Training	Bell Buckle	12
August 29	Business and Industry Workshop with area Distributors	Murfreesboro	40
August 29	Energy Pro 3: Prosperity, Progress, Productivity	Nashville	40
September 3	Qualified Energy Conservation Bonds (QECB) Workshop	Nashville	21
September 5	2012 IECC Residential Energy Conservation Building Energy Codes Inspector Training	Bell Buckle	6
September 6	2012 IECC Duct Envelope Tightness Building Energy Codes Inspector Training	Bell Buckle	3
September 6	Qualified Energy Conservation Bonds (QECB) Workshop	Knoxville	15

Calendar of Events <u>www.TnEnergy.org</u> (*registration fee)

Date	Event	City	# Attendees
September 9-13	NABCEP Solar PV Certificate of Knowledge Training	Johnson City	
September 11	Qualified Energy Conservation Bonds (QECB) Workshop	Jackson	10
September 12	Qualified Energy Conservation Bonds (QECB) Workshop	Chattanooga	14
September 16 – 20	NABCEP Solar PV Certificate of Knowledge Training	Jackson	
September 17	Business and Industry Workshop with MLGW	Memphis	
September 18	Tracking Energy & Water Use with Energy STAR'S Portfolio Manager®	Webinar	
September 19	Business and Industry Workshop with Area Distributors	Morristown	
September 22- 24	*American Council for an Energy Efficient Economy - National Conference on EE as a Resource	Nashville	
September 26	Tennessee Economic Development Council (Energy Session)	Brentwood	
September 26- 27	2012 IECC Commercial Energy Conservation Building Energy Codes Inspector Training	Bell Buckle	
September 25 – 29	National Plug-In Day Activities	Statewide	
September 30	Learning to Monetize Energy Improvement Projects and Take Advantage of Energy Related Tax Incentives	Webinar	

Partners

BLT SUSTAINABLE ENERGY

THE UNIVERSITY OF TENNESSEE













Tennessee 3-Star

Industrial Assessment Center

Shelton^{Grp}



PARTNERS



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Tennessee Energy Education Initiative

Communications Efforts



About Shelton Group

- Strategic communications firm solely focused in energy efficiency and environmental sustainability
- Responsibilities for the initiative included:
 - Market research to analyze the opportunity for non-residential energy improvements across the state, including prioritizing market segments based on size, need or proclivity and geographic distribution
 - Development of all digital and printed marketing communications materials, including flyers, HTML email campaign, programs and signage
 - Market outreach to promote the event and post-event follow up
 - Development and ongoing management of online resource center (<u>www.TnEnergy.org</u>)

Shelto

Website



Event Flyer – Schedule of Events

ENERGY EDUCATION







Event Flyer – Memphis Specific

The road to energy improvements starts here.

Join us for a two-day Sustainability Summit presented by the Tennessee Energy Education Initiative:

Memphis and Shelby County Sustainability Summit June 26–27, 2013 Memphis Botanic Garden

The State of Tennessee Department of Environment & Conservation, the Memphis & Shelby County Office of Sustainability, and other partners are convening regional and national experts to share insights, case studies, and practical knowledge needed to implement energy efficiency, renewable energy, and energy management projects. At the summit, you will be introduced to technologies that can be used to save energy in ways you never thought possible, and you will learn about energy solutions that you can put to work today.

Admission is free, but seating is limited. Register today at TnEnergy.org.





Healthcare

Moving Your Healthcare Facility Forward on Energy Management
 A Blueprint for Reducing Your Hospital Energy Use
 When Emergency Preparedness Yields Energy Savings:
 Combined Heat and Power
 Indoor Environment: Addressina Air Quality Issues

ducation

How Schools Are Reaping the Rewards of Smarter Energy Practices
 Financing Energy Upgrades for K–12 Schools
 A Blueprint for Reducing Your Campus Energy Use

Multi-Family Housing

Best Practices in Sustainable Multi-Family Housing
 Financing Energy Efficiency Projects: A Guide to Lending Options,
 Tax Credits, and Available Incentive Programs

Roadmap to Successful Energy Practices

 Tools for Connecting with Resources, Identifying Advocates, and Communicating Successes
 Technology Roundtables: Advanced HVAC, LED Lighting, and Solar at Work in Your Facility

Energy Forward

 A Glimpse into What's on the Horizon, Including Information on Prospective Legislation and New Trends in Energy Management & Renewable Technologies







Keynote Speakers



Dr. Marilyn Brown, Professor, School of Public Policy, Georgia Institute of Technology Prior to joining the Georgia Institute of Technology, Dr. Brown held various

leadership positions with Oak Ridge National Laboratory. While leading major research initiatives focused on energy efficiency, renewable energy, the electric grid, and energy engineering projects, Dr. Brown's emphasis has been on the design and impact of policies aimed at accelerating the development and deployment of sustainable energy technologies. Dr. Brown has delivered numerous high-level briefings before committees of both the U.S. House of Representatives and the U.S. Senate.

Co-founder of the Southeast Energy Efficiency Alliance, Dr. Brown has also served on the boards of directors of the American Council for an Energy-Efficient Economy and the Alliance to Save Energy, among other distinctions.



David Rivas, Facilities Engineer, Mayo Clinic David Rivas serves as a Facilities Engineer for Mayo Clinic in Arizona. He holds an undergraduate degree in Mechanical Engineering

from the Rochester Institute of Technology and is responsible for energy management, computerized maintenance management systems, infrastructure design, and facilities technical support. Prior to joining Mayo Clinic, Mr. Rivas honed his craft of facility management at the Centers for Medicare and Medicaid Services Headquarters building, Goddard Space Flight Center, Department of Homeland Security Research Facility, and Motorola



Mitch Jackson, Staff Vice President, Environmental Affairs and Sustainability, FedEx Corporation Responsible for FedEx sustainability strategy, Mr. Jackson ensures that

FedEx minimizes its environmental footprint while still delivering outstanding customer service. He spearheaded the implementation of hybrid electric vehicles for FedEx, launching commercial hybrids in the marketplace. In conjunction with the FedEx Government Affairs department, he was instrumental in successfully pushing legislation for fuel economy standards in commercial trucking.

Named to both the 2012 and 2010 Top 100 Thought Leaders in Trustworthy Business Behavior by Trust Across America, Mr. Jackson sits on The Keystone Center's national Energy Board, served as environmental juror for the Heira Awards, and is a past chairman of the Global Environmental Management Initiative (GEMI).

Funding is provided by the U.S. Department of Energy through the American Reinvestment and Recovery Act. This project is funded under an agreement with the State of Tennessee. This material is based upon work supported by the Department of Energy under Award Number DE-EE000160. CFDA 81.041.

For more information, visit TnEnergy.org



HTML Emails



Postcard

Harness the power of energy improvementsregister for the Industrial Energy Efficiency Summit today.



Join us for the Industrial Energy Efficiency Summit supported by the Tennessee Energy Education Initiative in partnership with the Industrial Energy Efficiency Network.

Specifically designed for the energy manager, energy champion, or facility manager within the manufacturing sector, this two-day summit will feature insights, case studies, and practical knowledge needed to implement energy efficiency projects and energy management programs. This event will provide content specific to a manufacturing setting while providing opportunities to network among peers facing similar challenges.

- · Energy manager roundtable on current issues and opportunities
- · Interactive session on energy efficiency best practices
- · Success stories from Eastman Chemical and Schneider Electric
- Topics like steam system optimization, energy value stream mapping, and optimizing energy consumption
- Networking with peers

Event Industrial Energy Efficiency Summit

 Date
 Begins July 17 at 10:30 am CDT
 Ends July 18 at 2:30 pm CDT

 Location
 Airport Marriott Hotel (group rate available)
 Nashville, TN

 Admission
 Free of charge, exclusively for energy managers and/or energy decision makers within manufacturing organizations. Seating a limited!

To register for this event, visit TnEnergy.org/industrialee.

For additional information about the Industrial EE Network, visit industrialee.org.

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Program





The Tennessee Energy Education Initiative provides training. to energy improvements starts here.

tools, and local events to help organizations in Tennessee take control of their energy usage. By connecting you with the right resources, expertise, peer experience, and potential funding actions, the Tennessee Energy Education Initiative provides a roadmap to successfully navigate the changing energy landscape.

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This initiative is brought to you by the Tennessee Department of Environment and Conservation Office of Energy Programs. Pathway Lending, and other statewide energy resource providers. Funding is provided by the U.S. Department of Energy through the American Reinvestment and Recovery Act.

About This Event

We have convened regional and national experts to share insights, case studies, and practical knowledge needed to implement energy efficiency, renewable energy, and energy management projects. Over the next two days, you will learn about technologies that can be used to save energy in ways you never thought possible and energy solutions that can be put to work today.



Keynote Speakers



Dr. Marilyn Brown | Professer, School of Public Policy, Georgia Institute of Technology Pror to pinning the Georgia Institute at Technology, Dr. Brown tetch various leadership positions with Calk Ridge National Laboratory. While leading major research initiatives focused on energy efficiency, renewable energy, the electric grid, and energy engineering projects. Dr. Brown's emphasis has been on the design and impact of policies aimed at accelerating the development and deployment of sustainable energy technologies. Dr. Brown has delivered numerous high-level briefings before committees of both the U.S. House of Representatives and the U.S. Senate.

Co-founder of the Southeast Energy Efficiency Alliance, Dr. Brown has also served on the boards of directors of the American Council for an Energy-Efficient Economy and the Aliance to Save Energy, among other distinctions.

Anne Evens | Executive Director, OAT Everyy



Anne Evens has worked in energy efficiency and affordable housing for 20 years in the nonprofit and government sectors. As executive director of CNT Energy, a nonprofit dedicated to helping households and communities control energy costs, she provides oversight for one of the country's largest and most accessful multi-family housing reforit programs, as well as programs related to post-accupancy building performance, regional energy, and smart grid and dynamic electricity pricing initiatives.

Ms. Evens serves on the regional APRA coordinating committee as energy efficiency lead and coordinates an energy efficiency working group in Chicago. She is the board chair of the Allance for Healthy Hernes and on the boards of several other organizations.



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Event Signage





Tennessee Energy Education Workshop

Session 3: Electroly Learning Year Energy Efficiency and Sustainability Story

Session 1: The National Deversors Association Palicy Academy: Enhancing Industry Braugh Industrial Energy Efficiency & Cembined Heat and Power

Speaker: Sur Condut, Division Director, Environment, Environ & Transportation

Session 2: Energy Management Best Practices: A Real-Time Discussion

Speakers: Rick Marsh, Olivector, Industrial Energy Efficiency Network Dr. Ken Clarke, Director, Center for Manufacturi Research - Termessee Tech University

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Nametag



Name of the Owner of the Owner

A Look at the Numbers

HTML Emails

- 8,550+ addresses in database
- 17 eblasts sent as of 9/12/13
- 28% average open rate (vs. 19% industry average)
- 14% average click through rate (vs. 5% industry average)

Post Event Surveys

- **12** surveys sent to 1300+ attendees at prior events
- 16% average completion rate (vs. industry average of 2%)

Market Survey

- 200 surveys completed regarding EE, RE, & EM projects
- Representing: automotive, healthcare, education, real estate, transportation/logistics, wholesale/distribution, chemicals/plastics, hotels, restaurants, retail

Event Attendance Goals & Actuals

- Memphis & Shelby Co Sustainability Summit: 250 / 201
- Industrial Energy Efficiency Summit: 150 / 126
- ORNL's 3rd Annual SE Sustainability Summit: 300 / 248

Tennessee Energy Education Initiative Market Survey



Almost eight out of ten organizations surveyed consider energy usage important.

Q10 - How important is energy consumption and conservation in your organization's daily business purchase choices and activities?



Respondents in organizations with more than one facility were more likely to consider energy consumption important than those with only one facility (83% vs. 73%).

In contrast, organizations in newer facilities (less than five years old) were more likely to consider energy consumption unimportant (38% vs. 5%).

While not statistically significant, respondents in the technology & electronics segment were more likely to consider energy consumption unimportant.

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About two-thirds consider their facility efficient.

Q11 - Overall, how would you rate the energy efficiency of your current facility(ies)?



Regionally, organizations in East TN (75%) and Middle TN (63%) were more likely to consider their facilities energy efficient than those in West TN (51%).

Organizations in facilities over 20 years old were more likely to consider their facilities inefficient than those in newer facilities (19% vs. 3%).

While not statistically significant, respondents in the technology & electronics segment were more likely to consider their facility inefficient (30% vs. 13% overall).

n=200

Shelto

Spending less on energy and saving money are the top reasons cited for improvements.

Q17 - What would be your one top reason for your organization to participate in energy-related improvements?





Energy-Related Priorities



Lighting and HVAC top the list of energy-related priorities.

Q13 - What are your organization's top three energy-related priorities?





Companies surveyed have completed an average of 3.3 of these improvements.

Q18a - Which improvement(s) has your organization completed on your primary facility in the past five years? Q18b - Does your primary facility need any of these improvements? Q18c -Does your organization plan to do this in the next 12 months?



Installed more energy-efficient light fixtures, controls or occupancy sensors

Installed a more efficient mechanical and/or HVAC system

Installed more efficient appliances or refrigeration

Installed a more efficient water heating system

Added an energy management system or controls to make the facility more energy efficient

Added insulation, air sealing or ductwork

Installed more efficient manufacturing equipment

Installed a reflective / cool roof

Added a renewable energy generation system

Shelto

Energy management, insulation, and renewable energy top the list of activities companies think they need to do.

> Q18b - Does your primary facility need any of these improvements? Q18c - Does your organization plan to do this in the next 12 months?



Add an energy management system or controls to make the facility more energy efficient

Add insulation, air sealing or ductwork

Add a renewable energy generation system

Install a reflective / cool roof

Install a more efficient mechanical and/or HVAC system

Install a more efficient water heating system

Install more efficient appliances or refrigeration

Install more energy-efficient light fixtures, controls or occupancy sensors

Install more efficient manufacturing equipment

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Plan to do

Challenges/Barriers



Overall, lack of funding and other priorities top the list of challenges/barriers.

Q12 - What would you say are the key challenges or barriers your organization faces in making energy-related improvements?

Lack of budget/funds

Lack of time/too busy/other priorities

Your organization believes it has done all the energy-related improvements possible. The payback period on energy-related improvements is too long. Your organization isn't sure what to do to save more energy. Implementing energy-related improvements is too complicated, inconvenient and/or too disruptive. Decision makers haven't considered it or don't

You don't plan to be in the facility very long.

believe it would really help much.

Not applicable/lease improvements not allowed or very unlikely

Some other reason



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www.TnEnergy.org



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