



## **TREEDC – University of Tennessee at Chattanooga University Forum: October 12, 2012**

### **University Center, Chattanooga, Tennessee**

From: Warren Nevad, MTAS Municipal Management Consultant

On October 12, 2012, the Tennessee Renewable Energy and Economic Development Council (TREEDC) partnered with the University of Tennessee at Chattanooga, Tennessee Gas Association (TGA), Signal Energy Contractors, Michael Brady, Inc., and the University of Tennessee (UT) Institute for Public Service (IPS) to conduct a community-wide renewable energy forum in Southeast Tennessee. A total of 71 attendees learned about the various renewable energy related initiatives by UTC and prominent area businesses including Alstom Power, Volkswagen, Wacker Polysilicon and Global Green Lighting. Attendees also learned about creative renewable energy related financing measures for public entities and TREEDC members in alternative energy. UTC Professors Prakash Dhamshala, James Hiestand and MTAS Consultant Warren Nevad developed the agenda which also included educational presentations from representatives with the UT Center for Industrial Services, Ameresco, Piper Communications, and ARiES Energy.

TREEDC Director/MTAS Consultant Warren Nevad welcomed the crowd and expressed his appreciation for the leadership of TREEDC Chairman/UT President Emeritus Dr. Joe Johnson and UTC for growing the TREEDC membership in the Southeast Tennessee region. UTC Interim Chancellor, Dr. Grady Bogue, welcomed the crowd and expressed his admiration of TREEDC's grassroots approach to advance renewable energy for communities in the Chattanooga region. Pam Ladd, Chair of the Chattanooga City Council also welcomed the crowd and shared some of the recent accomplishments of the Chattanooga Office of Sustainability. This department is responsible for guiding Chattanooga toward a sustainable economy, environment, and community. The department is developing the physical resources of the city, working with businesses who want to become sustainable enterprises, and promoting projects that save taxpayers money.

Dr. Ronald Bailey, Director of the UTC Center for Energy, Transportation and the Environment gave an overview of his department's hydrogen hybrid bus project. He explained that the hydrogen hybrid internal combustion engine shuttle bus has great potential to bridge the gap between existing range limited electric shuttles and the long-term deployment of fuel cell powered buses. The project is being conducted by the Center

in partnership with Chattanooga Area Rapid Transit Authority (CARTA). Dr. Bailey's powerpoint along with the other powerpoints can be viewed at [http://www.treedc.us/newsletters\\_reports/forum\\_presentations/index.html](http://www.treedc.us/newsletters_reports/forum_presentations/index.html)

Dr. Dhamshala gave an overview of the various research initiatives in renewable energy in UTC's Mechanical Engineering Department. He stated that a net zero building produces as much energy as it uses when measured at the site. He also discussed the thermal energy benefits associated with the PV/T SAHP solar system for residential and commercial buildings. Dr. Dhamshala also gave an overview of UTC's graduate level course on engineering analysis of renewable energy. This course covers renewable energy resources such as solar, wind, biomass and geothermal. Energy storage options, hybrid systems, and computer simulations using hourly weather, component models and costs data are also covered. Signal Energy Vice-President Robbin Russell discussed their wind energy projects in Oklahoma and also their work with the 5 megawatt solar farm in Haywood County. The Signal Energy team has completed dozens of full design/build renewable energy projects across the United States, and in Canada, including over 10% of the wind turbines domestically, and over 130MW of solar power capacity.

The next set of speakers discussed opportunities for renewable energy in Tennessee. Bobby Hicks and Jay Baker representing Alstom Power gave a summary of the geothermal, ocean energy, biomass, hydroelectric and wind projects conducted by Alstom Power all over the world. Alstom Power has over 6,000+ permanent employees in 45 states and the District of Columbia. They are a pioneer in geothermal power with more than 50 years of experience. Alstom also recently installed a 56 kilowatt solar array at its Chattanooga facility. Due to the grants and economic incentives, this project will have a 2.2 year payback period. TREEDC Founding Member Ameresco Regional Director Stu Shunk informed the group that over the past decade, Ameresco has implemented \$100 million dollars of Energy Savings Performance Contracting in the State of Tennessee alone. He also reviewed their partnership with the University of Kentucky (UK) and their work with the Energy Conservation and Sustainable Behavior Program. The UK empowered program is fully customizable and has been designed to:

1. Pinpoint wasteful behaviors
2. Educate individuals on the importance of reducing waste
3. Educate and train individuals on targeted waste reduction strategies
4. Incentivize individuals to take action

The UK program is a model program that can be replicated at the colleges and universities in Tennessee.

Keith Ridley, Lynn Reed and Earl Pomeroy with the UT Center for Industrial Services (CIS) gave a powerpoint presentation that demonstrated their comprehensive work in assisting Tennessee's industry representatives with energy audits and assessments. CIS also works to assist TREEDC member local governments to help them become more energy efficient particularly with their schools, correctional facilities and public buildings. CIS is also involved in solar system training and consulting.

Cortney Piper, President of Piper Communications, gave a thorough historical overview of the progress made in the Tennessee solar industry since 2000. She reviewed the significant players in the state's solar value chain including TREEDC member Tennessee Valley Authority (TVA) and alerted everyone that all solar energy stakeholders including local officials need to remind policy makers that organizations like Hemlock Semiconductor, Wachter Polysilicon and Sharp Solar brought their business operations to Tennessee due to our favorable business/tax climate and availability of a diversified skilled work force.

TREEDC Financial Consultant, Bill Owen, gave a presentation about the Energy Fund. TREEDC is partnering with TREEDC Gold Member TGA to develop a pooled bond program to fund capital costs relating to conversions and compressed natural gas vehicles across the state. Potential borrowers will be strictly screened to determine the optimal amount of capital needed. Loans will be sized to fall within existing revenue streams and will be repaid through the savings enjoyed by the borrower.

During the networking lunch session, UTC Dean of College of Engineering and Computer Science, Dr. Will Sutton, thanked the audience for their participation and expressed his appreciation to the many UTC project partners including TREEDC, Volkswagen and Alstom Power. He introduced the lunch keynote speaker: David Gustashaw with Volkswagen. Gustashaw explained that Volkswagen's Chattanooga manufacturing plant received a platinum LEED certification from the U.S. Green Building Council. The facility is the first and only automotive manufacturing plant in the world to receive the Platinum certification. He reviewed the following features of the plant that helped Volkswagen earn this distinction:

- 1) Green power from the local hydroelectric operations;
- 2) Installation of LED lighting on the exterior results in 68% less energy used, up to 250,000 kilowatts per year;
- 3) Rainwater collected and reused to flush toilets;
- 4) White roof membrane is highly reflective, minimizing heat island effect by up to 50 degrees Fahrenheit; and

- 5) Low-flow water fixtures and no-touch sensors throughout the plant reduce water usage by 30%.

He also reviewed the 9.5 megawatt solar power park which will be the state's biggest solar array. He concluded his remarks by inviting the TREEDC mayors and members to tour the Volkswagen manufacturing plant.

The afternoon panel consisted of presentations regarding future trends in Southeast Tennessee.

Bob Patterson of the Tennessee Gas Association and PBG Energy highlighted the environmental and economic benefits of natural gas as an alternative transportation fuel for local government's fleets. He encouraged the local elected and university officials to explore the feasibility of using compressed natural gas as a more cost effective alternative than petroleum. He advised the crowd that the TREEDC energy fund program would aid local governments to bundle their developmental projects regarding the construction of compressed natural gas stations and vehicle conversions.

Global Green Lighting President, Don Leopard, informed the audience that in April 2011 Chattanooga was the First City in the United States to deploy on a large scale, low energy lighting with Smart Grid technology, creating additional energy saving, further maintenance cost reduction, increased reliability, and security features to make the environment safer. The Chattanooga North Shore and Coolidge Park was the first beta test site for this most advanced lighting system in the country to be demonstrated on a large scale basis. Over 300 LED and Induction lights, all containing the wireless Lighting Control system have been successfully deployed and monitored. With average annual savings of over \$2,750,000, the Chattanooga system pays for itself within 7 years and provides ongoing environmental and community benefits at no charge.

Dr. Erika Burke, Human Resources Director of Wacker Polysilicon, explained that the corporation is a global leader in the production of hyperpure polycrystalline silicon. Its product portfolio also includes pyrogenic silica, chlorosilanes and salt. Polysilicon is used throughout the semiconductor industry and in the growing photovoltaics sector. In 2010, the Wacker division of Wacker Chemie AG generated around 25 percent of the company's sales. The plant in Charleston, Tennessee, is scheduled to begin operation by the end of 2013. The plant will employ some 650 full-time workers. Harvey Abouelata, President of ARiES Energy also gave a detailed powerpoint illustrating the significant environmental progress exhibited by Wampler's Sausage. The Wampler's 30kW and 500kW solar systems produce a total of 694,410 kilowatt hours annually. The Cellulose to hydrogen energy system (CHyP) being developed for Wampplers will produce 3,985,800 kilowatt hours

annually. According to Abouelata, the combined 4,680,210 kilowatts of clean energy will be enough to annually power 325 average sized homes in the TVA region.

The CHyP system uses a thermal gasification process that converts cellulosic material such as switchgrass into syngas by reacting it at very high temperatures. Abouelata concluded his remarks by stating that the new tagline for Wampler's Sausage is: **"Established in 1937 and Energy Independent in 2012"**.

A newscast of the TREEDC-UTC forum is linked here:

[http://www.wdef.com/news/story/UTC-Hosts-Energy-Conference/Q-Frt5T8q0iHDHyjv\\_6FBA.csp](http://www.wdef.com/news/story/UTC-Hosts-Energy-Conference/Q-Frt5T8q0iHDHyjv_6FBA.csp)

The next forum will be in Memphis on November 16<sup>th</sup>. Check website for details.

