Net-Zero Energy Residential Buildings Workshop

September 14, 2011 ● National Institute of Standards & Technology ● Gaithersburg, MD

Sponsored by the NIST Engineering Laboratory

Optional

Sign Up Now!
Tour and Networking Dinner
September 13, 2011

Registered participants in the September 14, 2011 ***NIST Workshop to Identify Strategies to Get to Net Zero Energy Homes*** are welcome to sign up for one or both optional activities taking place on Tuesday, September 13, 2011:

BRIEFINGS AND TOUR — **4:00-5:45 pm**

• Water Heater Test Facility/Guarded Hot-Plate	Bill Healy
• VOC Emissions Lab	Andy Persily
• Building Integrated Photovoltaic Test Facility	Brian Dougherty
• Net-Zero Energy Residential Test Facility	Hunter Fanney

NO-HOST NETWORKING DINNER — **6:00 pm**

Dogfish Head Alehouse
800 West Diamond Ave., Gaithersburg, MD, 20878
301-963-4847

You may sign up by emailing Nancy McNabb at nancy.mcnabb@nist.gov no later than Friday, September 9, 2011. Advance sign-up is required to enable access to the NIST campus.

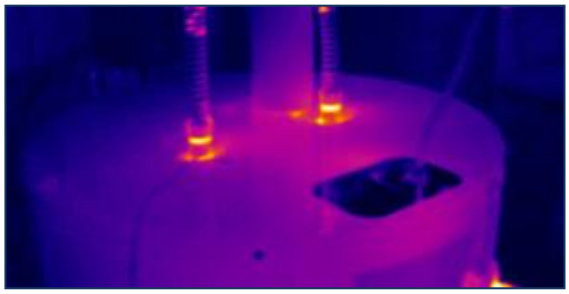
- Please indicate which activities you wish to participate in.
- You will receive details of these activities before the workshop. If you signed up and do not receive a message **by September 12**, please contact Nancy McNabb to be sure you are on the security list and can get through the NIST gate.

Workshop Website and Registration:

http://www.nist.gov/el/building_environment/netzerowkshp.cfm

1st Stop Water Heater Test Facility ~ Bldg. 226, Room B05

William Healy, Leader, Heat Transfer & Alternative Energy Systems Group



NIST works with DOE to develop test methods that are used to rate appliances. One such activity is carried out in the water heater test facility, where research takes place to improve the test procedure used to determine the First Hour Rating and the Energy Factor of residential water heaters. The market growth of newer technologies, such as tankless water heaters and heat pump water heaters, however, has caused concerns that the current test procedure is not adequate to provide equitable ratings of different types of water heating technologies. NIST is currently working in conjunction with the ASHRAE Service Water Heating Committee to investigate alternative methods of test, and this tour will show a typical facility used to improve the measurement method to rate the efficiency of building equipment.

2nd Stop VOC Emissions Lab ~ Bldg. 226, Room A310

Andy Persily, Leader, Indoor Air Quality & Ventilation Group

The VOC Emissions Lab is being used to perform research studies to increase the reliability of measurements of VOC emissions from building materials. NIST has been conducting research to determine the uncertainty associated with these measurements and to develop a reference material that can be used by emissions testing laboratories to calibrate their systems. The candidate reference material is a polymer film loaded with known VOCs using a diffusion process. Initial results show that the "loaded" film simulates the emission rate of a real building material and can be measured in a traditional chamber test, as well as independently verified using material/chemical properties and a fundamental diffusion model. Next steps include development of appropriate material packaging, an inter-laboratory study with the prototype material, and expanding the reference material's emission profile to include more VOCs and to simulate more building product types.

3rd Stop Building Integrated Photovoltaic Test Facility ~ Bldg. 226, Room B109/A110

Brian Dougherty, Chief, Building Environment Division

The laboratory tour will include an overview of building integrated photovoltaics, a discussion of the measurements that are needed to characterize their performance, and a tour of the NIST Solar Tracker Facility. A clear concise role for NIST has been defined as providing high quality measurements to capture the performance of building integrated photovoltaic technologies and to assist in the development and validation of performance prediction models. An excellent example of building integrated photovoltaics in action can be seen on the roof that connects the main Administration Building to its adjoining conference and cafeteria facilities. The laboratory tour will include an overview of building integrated photovoltaics, a discussion of the measurements that are needed to characterize their performance, and a tour of the NIST Solar Tracker Facility.

4th Stop Net-Zero Energy Residential test Facility

Presentation in Building 226, Room B221

A. Hunter Fanney, Chief, Building Environment Division

The Net Zero Energy Residential Test Facility, located at the National Institute of Standards and Technology (NIST) in Gaithersburg, MD, will enable the development and demonstration of measurement science needed to achieve net-zero energy residential homes. The facility will initially be used to demonstrate that a residence, typical in size/features of homes in the metropolitan D.C. area, can produce as much energy from renewable energy resources as it consumes on an annual basis. It will subsequently be used to provide "real world" field data to validate and improve energy models and to improve laboratory-based measurements of systems and components to better represent field performance. This facility, designed to achieve LEED Platinum certification, represents the joint efforts of NIST's Engineering Laboratory, Building Science Corporation supported by the Department of Energy's Building America Program, and NIST"s Chief Facilities Management Office. The facility is currently under construction; therefore, this tour stop will consist of a presentation that describes the objectives, features, and status of the facility.