

2009 GREEN BUILDING Summer Workshops



The Connecticut Energy
Efficiency Fund
invites you to a series of workshops
presented by building science
experts from
Steven Winter Associates.

Workshop 1: Building America and the Builders Challenge: An Overview and Case Studies

In this workshop we will discuss the Department of Energy's initiative to improve the energy performance of American homes and will preview the workshops to come.

When: Tuesday, June 9th. 8:30-12

Cost: Free



Workshop 2: High Performance Building Envelopes

This workshop will cover all topics related to the thermal envelope, including air sealing, insulation, windows, foundations, attics and ceilings, and alternative wall systems.

When: Tuesday, July 7th. 8:30-12

Cost: \$50

Workshop 3: HVAC and Water Heating

Topics will include all aspects of mechanical system efficiency including combustion, distribution, load calculation and proper sizing, as well as ventilation options.

When: Tuesday, August 11th. 8:30-12

Cost: \$50

Workshop 4: Solar Energy Systems for Homes

This session will cover everything related to residential solar PV and hot water applications, including design, operation and maintenance, and cost and savings.

When: Wednesday, September 9th. 8:30-12

Cost: \$50

Location: Lyceum Center, 227 Lawrence St., Hartford. Free parking is available at the site. Light breakfast will also be included.

RSVP: Justin Lindenmayer, CL&P, 860-832-4915 or lindej@nu.com
Workshop 1, **RSVP by June 5th.**

All other workshops, RSVP at least one week in advance.
Registration is required. We cannot accommodate walk-ins

Payment: Payment accepted at check in. Checks only, payable to CL&P— no cash or credit cards.



Connecticut
Light & Power

The Northeast Utilities System



The United Illuminating Company



Southern
Connecticut
Gas

Service First!



The Northeast Utilities System

Connecticut's Energy Efficiency Programs are funded by a Charge on Customer energy bills.
The Programs are designed to help customers manage their energy usage and cost.

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WORKSHOP DETAILS

Workshop 1: Building America and Builder's Challenge **Tuesday, June 9th 8:30-12 ■ RSVP by June 5th ■ Cost: Free**

The U.S. Department of Energy's Building America program is a public-private partnership with the mission of dramatically – and cost-effectively – improving the energy performance of American homes. By 2020, DOE plans to have "zero energy" homes be cost-effective through combining practical efficiency technologies with solar energy systems.

Through the Building America program, Steven Winter Associates, Inc. is researching building systems and technologies that can help builders get nearer to the zero energy goals. SWA works with builders around the northeast and around the country to help design and build homes with exceptional energy performance. To builder partners, SWA provides design assistance, engineering support, on-site construction training and support, and evaluation and monitoring of homes.

DOE has also recently unveiled the "Builder's Challenge" program which provides guidelines and quality criteria to earn the EnergySmart Home Scale label, which provides a clear way to highlight top performers in energy efficient home construction.

This workshop will provide an overview of the Building America program along with case studies of successful projects in the region. The workshop will also include an overview of the Builder's Challenge program, and there will be ample time for questions and discussion about projects, technologies, and building trends. Subsequent workshops will provide much more detailed information to several key topics: envelope systems, HVAC, and renewable energy for homes.

Workshop 2: High-Performance Building Envelopes **Tuesday, July 7th 8:30-12 ■ RSVP by June 30th ■ Cost: \$50**

Building a high-performance, energy-efficient home begins with a high-performance building envelope. Providing a durable, cost-effective enclosure with high levels of insulation and air-sealing is the first critical step in reducing heating and cooling loads, which are typically the largest energy uses in a home. Walls, ceilings and attics, and foundations all play significant roles and need to be addressed. From traditional systems to newer materials and methods, this workshop will present options and alternatives for getting the basics right.

Topics will include:

- Traditional Frame Construction: If It Ain't Broke, Fix it Anyway
 - Advanced Framing Overview
 - Air-sealing, Air-Sealing and More Air-Sealing
 - Insulation: Lots of Options
- Alternative Wall Systems
 - Structural Insulated Panels
 - Super-Insulated Walls
- Foundations
 - Critical Issues
 - Strategies and Solutions
 - Alternative Solutions
- Windows: What's Important?
 - U-Values
 - Solar Heat Gain Coefficient (SHGC)
 - Interior Comfort and Median Radiant Temperature
- Attics and Ceilings: Insulation Material and Placement Options
 - Traditional Ceiling Insulation
 - Insulation at the Roof Deck
 - Cathedral Ceilings and Life Under the Rafters
 - Unvented Attics

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WORKSHOP DETAILS

Workshop 3: HVAC and Water Heating for High Performance Homes **Tuesday, August 11th 8:30-12 ■ RSVP by August 4th ■ Cost: \$50**

The best way to reduce HVAC energy consumption in homes is through good site planning and superior envelopes. There are many ways to meet these potentially very small loads very efficiently and cost-effectively. In this workshop, SWA will present an overview of high-performance HVAC and water heating systems.

Topics will include:

- Purposes of HVAC Systems
 - Importance of Efficient Envelopes
 - Fuel Basics
 - Combustion Basics
 - HVAC Distribution (hydronic, forced air, etc.)
 - Load Calculations
- Heating and Cooling Equipment
 - Combustion Heating Equipment (boilers, furnaces, condensing appliances)
 - Air Conditioning
 - Heat Pumps (ground source, air source, mini-splits)
 - Ventilation
 - Ventilation goals and standards
 - Exhaust ventilation
 - Supply ventilation
 - ERV's and HRV's
 - Water Heating
 - Fuels and combustion
 - Tankless water heaters
 - Hot water use
 - Hot water distribution

Workshop 4: Solar Energy Systems for Homes **Wednesday Sept 9th 8:30-12 ■ RSVP by September 2nd ■ Cost: \$50**

Residential solar energy systems – providing water heating or electricity – have been around for decades. Both can provide substantial energy savings. With rising energy prices, tax credits and incentives, and increased demand for renewable energy, builders around the country are integrating such systems into new homes with much greater frequency.

Working with builders and utilities around the country, SWA engineers have designed, installed, commissioned, repaired, and monitored hundreds of residential solar systems. This workshop will cover the basics of both solar water heating and solar electricity.

Topics will include:

- Solar Electricity (Photovoltaics, or PV)
 - Brief History – How PV works
 - Home applications
 - Key components and nomenclature
 - Generation – predicted and measured
 - Key factors in design and performance
 - Operation and maintenance
 - Cost and savings
- Solar Water Heating
 - Domestic water heating basics
 - Basic solar components
 - Collectors
 - Storage
 - Piping
 - Controls
 - Circulators
 - Auxiliary water heating
 - Freeze protection
 - Operation and maintenance
 - Monitored performance
 - Costs and Benefits