Agenda

Presented by Michael Duclos

Understanding the Energy Efficiency of Conventional Construction
- Facts and figures on residential energy use
- History of energy-conserving residential construction
- Energy language primer, and introduction to thermal bridging
- Building code requirements, energy efficiency incentives

Passive House Standard: Purpose, Principles and Development
- History of certifying agencies in US: PHI and PHIUS
- Passive House Standard: energy, IAQ, comfort, durability
- Energy calculations: how and when to perform them
- Energy calculation tools: introduction and functionality
- Passive House Certification process
- Assembling and managing a project team
- Design features of single and multifamily Passive Houses
- Critical factors for floor-planning, windows and ventilation

Architectural Elements of Passive Houses
- Siting, sizing, insolation, shading and orientation
- Super-insulated envelope with minimized thermal bridging
- Critical elements - windows, ventilation, dehumidification
- Ultra-efficient lights, fixtures and appliances
- Multifamily design considerations
- Winter solar gain and heat retention strategies
- Integrating renewable energy – single and multifamily

Mechanical Systems in Passive Houses
- Optimizing heat gains
  - Passive solar heating, with actual data from 3 buildings
  - Indoor environmental heat gains
- Heat & Energy Recovery ventilation systems
- Supplemental heating systems
- Energy-efficient appliances
- Multifamily mechanical systems considerations

Evaluating Passive House Case Studies
- Adapting Passive House for Massachusetts
- Case studies: single and multifamily projects

Learning Objectives

You’ll be able to:
- Identify Passive House certifying agencies in the US, and be able to describe Passive House standards for energy, indoor air quality, indoor comfort and durability.
- Perform energy calculations during the Passive House certification process.
- Describe design elements of Passive Houses, including sizing, shading and orientation.
- Identify energy-conserving features common to Passive Houses, including super-insulated envelopes, doors and windows, and efficient ventilation systems.
- Select mechanical systems for Passive Houses.
- Consider building both single-family and multi-family projects to the Passive House Standard.

Passive House: Planning and Design
Natick, MA - Tuesday, March 3, 2020

Understand the energy efficiency of conventional construction
Identify the purpose, principles, and development of Passive House
Examine the architectural elements of Passive Houses

Continuing Education Credits

Architects
6.5 HSW Contact Hours
6.5 AIA LU|HSW

Professional Engineers
6.5 Contact Hours (PDHs)

Learn about mechanical and electrical systems in Passive houses
Explore Passive House case studies
Consider Passive House design for single and multifamily projects

PHIUS
Pending

Contractors
Non-Credit Continuing Ed.

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Michael Duclos is a principal and founder of THE DEAP Energy Group, LLC. He is a non-profit promoting high performance building, including Passive House. He is a member of the Northeast HEERS Alliance Technical Committee and was on the MassSave New Construction Program HERS Rating Panel.

Mr. Duclos monitors the delivered performance of his projects using a variety of real-time electricity monitors, temperature, RH and CO2 loggers and correlates this data to the expected performance predicted by his models. The actual data, and the stories behind the data are made available to the public in speaking engagements in a variety of public venues, and in publications like Home Energy Magazine.

Mr. Duclos is an ITE-certified building science infrared thermographer, and he is the certified Passive House consultant responsible for the design and certification of the second Passive House in Massachusetts. He holds a B.A. degree in Electrical Engineering from UMass Lowell, and two patents. Mr. Duclos consulted on the first multifamily Passive House certified in New Hampshire, a 24-unit affordable senior housing facility near Laconia, New Hampshire.