

## **DRURY B. CRAWLEY**

### **ASHRAE DL LECTURE TOPICS**

#### **BUILDING PERFORMANCE SIMULATION: WHAT'S IN THE BLACK BOX?**

approved for 2 LU/HSW by AIA, course number is CRAWLEY07; approved for 2 CE by GBCI, course number 0920010371. (presentation can range from 45 minutes to 2-hour lecture, or half-day workshop)

Over the last 50 years, building simulation has evolved into a powerful tool for evaluating the energy performance of potential or existing buildings. Building simulation allows easy comparison of the energy and environmental performance of many hundreds of design or retrofit options. This presentation provides an overview of building performance simulation fundamentals and history, Building Information Modeling, what's in the black box of key simulation programs, as well as comparing underlying simulation methods. Because much of the data that building simulation tools require already exists in the BIM models, it's critical that simple methods for sharing that data are available. This presentation also describes the opportunities and challenges for sharing data between BIM and SIM and demonstrates recent advances in data exchange.

#### **ENERGYPLUS: A NEW GENERATION BUILDING ENERGY SIMULATION PROGRAM**

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With the interest in green building certification and requirements that new buildings achieve 30%, 50% or even zero-energy performance levels, simulating the energy performance of buildings has become increasingly important. EnergyPlus includes many building energy simulation features that have not been available together in a mainstream building energy simulation program--including variable time steps, configurable modular systems integrated with a heat balance-based zone simulation, on-site power, hybrid natural/mechanical ventilation, UFAD, and VRF. This presentation introduces the types of simulation tools available today and provides an overview of EnergyPlus simulation methodologies, capabilities and utilities and interfaces.

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