RESNET
Residential Energy Services Network

Setting the STANDARD for QUALITY

# Rating Commercial and High-Rise Residential Buildings

## Effort to Develop National Rating Software Verification Standards – An Overview

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# 2009 RESNET Priority

**Develop a consensus-based commercial building energy performance and rating protocol that can be widely accepted and which is useful to the large variety of building performance and beyond code programs currently in the marketplace.**

# RESNET Action Plan

- Establish procedures for accreditation of commercial building software tools
- Establish minimum standards for the certification of Raters (field verifiers, analysts, etc.)
- Establish minimum quality assurance requirements for commercial building Rating Providers
- Establish minimum requirements for field testing and commissioning of buildings

# RESNET Steering Committee

**Organizations represented include:**

- Architectural Energy Corporation
- Environmental Protection Agency
- Florida Solar Energy Center
- Natural Resources Defense Council
- New Buildings Institute
- Renewable Energy Resources Laboratory
- Steven Winter Associates
- U.S. Green Building Council

# Relevant Existing Standards

- **ANSI/ASHRAE/IESNA Standard 90.1** – *Energy Standard for Buildings Except Low-Rise Residential Buildings*
- **ANSI/ASHRAE Standard 140** – *Standard Method of Test for the Evaluation of Building Energy Analysis Computer Programs*
- **California Title 24** – *Nonresidential Alternative Calculation Manual (ACM)*

# ASHRAE 90.1 Challenges

- Code compliance requirements (Chapter 11) not well suited for performance-based “percent better than” comparisons
- Comparison method (Appendix G) considered by some to treats reference building window area in arbitrary manner
- Reference Building HVAC performance mapping considered by some to be less than adequate
- Reference building lighting loads for residential buildings may less than adequate.

# ASHRAE 90.1 Opportunities

- Provides a national, consensus-based model code standard for minimum building energy performance
- Provides a semi-comprehensive “rule set” for configuration of the “reference” building as a function of climate
- Provides a mechanism for determining the relative level of building energy performance with respect to a national code reference standard (Appendix G).

# ASHRAE 140 Challenges

- Method of Test (MOT) only – does not provide any acceptance criteria
- Test suites do not include tests for determining if reference and proposed buildings can be accurately configured automatically by software tools
- Example results sometimes show large variance, causing some parties to be leery of its use as a software verification standard for code compliance.

# ASHRAE 140 Opportunities

- Provides a national, consensus-based method of test standard that can be widely accepted
- Provides a comprehensive set of building load, HVAC and furnace test suites that can be used to verify building simulation tools
- Provides diagnostic tests that can be used to determine the origin of differences and debug software tools.
- Provides a mechanism that allows all software tool providers to compete on a level playing field in the market.

# Title 24 ACM Challenges

- Not a nationally accepted standard for performance-based code compliance (applicable in California only)
- Stipulates specific algorithms that must to be used in modeling, limiting software tools that can comply with compliance tool requirements unless some capabilities are “crippled.”

# Title 24 Opportunities

- Provides an example of comprehensive compliance rules and procedures that could be replicated nationally without much difficulty
- Provides Reference Building HVAC system mapping considered by many to be superior to that of ASHRAE 90.1
- Provides requirements that Reference Buildings be automatically generated by software tools and out of the control of the tool user.

# Thank You

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