



Asia-Pacific
Economic Cooperation

U.S. Commercial Building Envelope Compliance

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Key Infrastructure Elements are Interrelated and Work to Achieve Results

Code Development

- Sends a strong message to economy
- Sets goals to strive for

Infrastructure

- Needed to assess key building components
- Likely starting point, but hard to get interest w/o codes

Enforcement

- Key issue to achieve results, but often not investigated deep enough
- Core problems include lack of product ratings, product availability, lack of knowledge

Establishment of a Rating Program for Pre-and Post Fabrication Windows, GB Parker, et. al., August 2011, PNNL-20647

U.S. Windows Testing and Rating*

- NFRC certification system for residential and commercial window products dominates marketplace. NFRC is a nonprofit organization with 800 window manufacturing participants and 2.5 million rated products in an online database.
- NFRC 100 (U-factor) and 200 (SHGC and VT) are written and continuously updated by the NFRC membership.
- Applicable standards:
 - NFRC 100-U-factor simulation standard
 - NFRC 200-SHGC and VT simulation standard
- NFRC Approved Software: WINDOW and THERM (Lawrence Berkeley National Labs download site)
- NFRC Approved Software: Component Modeling Approach Software Tool download site
 - NFRC 102-U-factor testing standard
 - NFRC 700-Product Certification Program-program procedure

*Energy-Saving Windows: Survey of Policies and Programs to Promote Advanced Window and Glazing Technologies in APEC Economies June 2011, APEC # 211-RE-01.9



Policies

- Each State, and some localities, references a common code, principally ASHRAE 90.1 for commercial buildings and the International Energy Conservation Code (IECC) for residential. State legislatures select a version of ASHRAE 90.1 and IECC and either mandate compliance or allow voluntary compliance. In both IECC and ASHRAE 90.1 NFRC window ratings per NFRC 100 and 200 are exclusively referenced and required for compliance.
 - American Society of Heating Refrigerating and Air conditioning Engineers Standard 90.1-2007
 - International Energy Conservation Code-2009



Programs

Window energy performance as part of the energy efficiency requirement is provided by:

- US Green Building Council-Leadership in Energy Efficient Design (LEED, New Construction V3 included)
- International Green Conservation Code-Public Version 2-2010
- US EPA/DOE ENERGY STAR window, door, skylight program and homes program
- US EPA/DOE ENERGY STAR Building and Plants

Numerous government and utility window installation incentives exist throughout the US and can be reviewed at:

<http://www.dsireusa.org/incentives/index.cfm?EE=1&RE=0&SPV=0&ST=0&technology=windows&sh=1>



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U.S. DOE Compliance Tool

Commercial Compliance Using *COMcheck*™

- The *COMcheck* materials (software, manual code compliance, and reference guides) simplify and clarify commercial and high-rise residential energy code compliance. Forms and checklists are included for documenting compliance.
- The [COMcheck](#) desktop software simplifies energy code compliance by offering a flexible computer-based alternative to manual calculations.
- The [COMcheck-Web](#) online code compliance tool is the web-based version of the *COMcheck* desktop software. It performs just like the desktop version but requires no download or installation.

<http://www.energycodes.gov/comcheck/>



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Thank you for your attention!