IECC 2018 Residential Model Code Update: Alliance to Save Energy Issue Advocacy

This fact sheet reviews the Alliance's multi-year involvement in support of improved building energy codes and provides the basis for our key policy positions in the recent and ongoing process to update the 2018 International Energy Conservation Code (IECC).

1) The Alliance has long supported building energy code advancement, adoption, and compliance.
   - *Model Building Energy Code Advancement* –
     - In 2007 the Alliance created the Energy Efficient Codes Coalition (EECC), whose support base includes over 50 efficiency and environmental advocates, government, affordable housing and consumer groups, labor and business organizations. EECC advocates for efficiency gains in triennial IECC updates.
     - The Alliance leads efforts to secure enactment of national policy to strengthen the role of the Department of Energy in the code process with a goal of continuous and dynamic improvement in the national model building energy codes.
   - *Code Adoption and Compliance* –
     - In 1993, the Alliance, ACEEE and NRDC partnered to create the Building Codes Assistance Project (BCAP) to advocate for state and local code adoption and to provide technical assistance in code implementation. BCAP spun off as an independent NGO in 2014.
     - Also in the mid-1990s the Alliance co-founded the Responsible Energy Codes Alliance (RECA) to promote the adoption, implementation, and enforcement of the most recent IECC.

2) The Alliance's positions on proposed changes in the model energy code have consistently observed the following principles, also incorporated in the EECC Statement of Principles:
   - Pursue continuous improvement in the model energy code based on cost-effective, practical measures that are neutral with respect to technologies, building products, and fuel source.
   - Oppose code change proposals that would weaken code efficiency.
   - Optimize cost-effective energy savings by first reducing thermal and electrical loads (e.g., lighting), followed by measures to efficiently meet these loads with energy-saving equipment and systems.
   - Achieve energy performance over the life of the building by valuing permanent and long-lasting measures more than those with shorter lifetimes.
   - After maximizing cost-effective energy savings, look beyond the building boundary to effective integration with the utility grid and local micro-grids, on-site renewable energy, and community-scale district energy where feasible.
   - Recognize the need for both efficiency and renewable energy to achieve our ultimate goal of net-zero energy buildings.
   - Because new buildings will last many decades, look for low-cost opportunities to "future-proof" buildings by preparing them for emerging technologies that are not yet proven or cost-effective.

3) Alliance-led activities have contributed to unprecedented progress in the model energy code, along with accelerated code adoption and more effective code compliance.
   - The 2012 and 2015 IECC codes represent an efficiency improvement of 32% over the 2006 model code.[1] An ICF International analysis found that the elimination of the equipment trade off in the model

[1] U.S. DOE. "Saving Energy and Money with Building Energy Codes in the United States." DOE Fact Sheet.

code – an EECC proposal – saved an additional 6-9% nationwide and as much as 22% in an individual home that would otherwise have used all available equipment trade-offs.
- DOE has estimated that these improvements in the model codes, if coupled with prompt adoption and effective implementation, will save 13 quads of primary energy cumulatively from 2010 to 2040, save consumers $120 B in energy costs, and reduce CO2 emissions by 840 MMT.[2]

4) Appliance and equipment standards – which the Alliance supports as a co-founder of the Appliance Standards Awareness Project (ASAP) – have also been highly successful. However, federal appliance standards impose not only a floor on efficiency for all products manufactured or imported, but a *ceiling on the baseline efficiency levels that can be specified in state building codes*. As a result, in markets where equipment that is significantly more efficient than the federal minimum standard is installed, large "free-ridership" effects and reduced energy savings occur if the code allows mechanical equipment trade-offs against building envelope requirements.

It is within the context of the above-stated goals, objectives and historic actions that the Alliance has articulated positions on key issues that have emerged in the 2018 IECC Residential Energy Code update:

The Alliance opposes RE134, a proposal to reinstate performance path trade-offs between mechanical equipment and building envelopes. (These tradeoffs were eliminated from the 2009 IECC.)

- Because high-efficiency furnaces and other equipment are already commonplace in new homes,[3] builders would be able to weaken the insulation levels, windows, and envelope/duct air sealing by claiming a savings credit for equipment being installed anyway.
  - ICF International found that for furnaces only, this free ridership (plus shorter equipment lifetimes vs insulation and other measures) could increase homeowner energy costs by 11-22% for gas-heated and 3-18% for all-electric homes.[4] This would increase utility bills nationally by over $450 million (present-value over 30 years) for every year of new home construction.
- Shifting efficiency from building envelopes to HVAC equipment would increase peak load electricity demand, require higher-capacity (costlier) equipment, and degrade building resilience and occupant comfort during grid outages.

Attempts were made to reinstate performance path trade-offs in both the 2012 and 2015 code development cycles; these proposals were rejected overwhelmingly. And, at the Public Comment Hearings in mid-October, 2016, RE134 was rejected by a vote of 64 to 57. This decision must be confirmed by ICC members voting online. (Voting occurs from November 8 through 22, 2016.).

- Of special note, equipment trade-offs are still available through the 2015 IECC's Energy Rating Index (ERI) compliance path, however, the ERI values are sufficiently stringent that in most cases they will require both a very tight thermal envelope and efficient HVAC equipment, appliances, and lighting.

The Alliance opposed RE173, a proposal by the Leading Builders of America to roll back the stringency of the 2015 IECC's Energy Rating Index (ERI) compliance path by 5-8 points (9-15%), depending on climate zone.

- While RE173 was silent on solar and other generation, the most popular ERI – the Home Energy Rating System (HERS) – and other code proposals would have explicitly allowed unlimited trade-offs of on-site generation (including but not limited to solar PV) against the home's envelope under the ERI path. Trade-offs from a 4 kW solar system, for example, could allow over a 50% increase in home energy use.

[2] R.A. Athalye et al. 2016. "Impacts of Model Building Energy Codes (Public Review Draft)." October. PNNL-25611.
[3] Efficient 90+ AFUE furnaces, vs a federal standard at 80 AFUE, are at least 50% of the market nationally and 80% in northern states. Similarly, DOE Reports that SEER 15+ air conditioners represent 40% of the U.S. market, compared with a SEER 13 or 14 federal standard.
[4] ICF International. "Review & Analysis of Equipment Trade-offs in Residential Energy Codes, Sept 2013

- DOE's recent Position Brief on the role of on-site renewables and efficiency in the IECC states that while renewable energy will be essential to achieve net-zero energy buildings, it should complement, not substitute for, efficiency at levels at least as stringent as those in the current code.

The Alliance supports RE173 with Public Comment #1, as approved unanimously at ICC's Public Comment Hearing.

- The North America Insulation Manufacturers Association (NAIMA), an Alliance Associate, worked with the Leading Builders of America (LBA) and other stakeholders (including the Alliance) on a compromise amendment to RE173 to:
  - Reduce the stringency of ERI values by 5-8 points, while retaining a 2009 IECC envelope efficiency minimum requirement (i.e., a "backstop") and
  - Allow solar PV credits in the ERI path only in combination with a 2015 IECC envelope efficiency minimum requirement (i.e., "backstop"). Because the envelope could not be weakened, this means that solar PV credits can only be used to offset non-envelope efficiency measures under HERS/ERI, such as Energy Star appliances, HVAC equipment, lighting, etc.