



January 28, 2014

VIA E-MAIL

Emily H. Nunez
Governor's Office of Energy
755 N. Roop Street, Suite 202
Carson City, NV 89701

RE: RECA Comments Supporting the Proposed Adoption of the 2012 *IECC* and Opposing Weakening Amendments Submitted by the Builders Association of Northern Nevada

Dear Ms. Nunez,

The Responsible Energy Codes Alliance¹ supports efforts by the state of Nevada to secure a solid energy future for its citizens by adopting the 2012 *International Energy Conservation Code (IECC)*. As in other states, the 2012 *IECC* has received support from a broad range of Nevada stakeholders. However, one stakeholder – the Builders Association of Northern Nevada (BANN) – has proposed several weakening amendments in a December 16, 2013 letter that would not only eliminate the residential efficiency improvements in the 2012 *IECC*, but would also reduce the efficiency and cost-effectiveness of the current energy code in Nevada. Nearly all of these proposed amendments have been proposed and rejected multiple times at the ICC national code development process, as well as in states that have adopted the 2009 or 2012 *IECC*. The following comments address the benefits of adopting the 2012 *IECC* and respond specifically to the weakening amendments proposed by BANN. We urge the Governor's Office of Energy to reject all weakening amendments and complete the process of adopting the 2012 *IECC* in order to maintain Nevada's role as a regional energy leader.

1. Adoption of the 2012 *IECC* will continue Nevada's solid, long-term investment in building efficiency and energy security.

With the 2012 *IECC*, Nevada will adopt the most recent nationally-recognized model energy conservation code, which will help ensure that every new homebuyer gets a reasonably energy efficient home, and that every owner or operator of a new commercial building receives the benefits of a modern, energy efficient building. The *IECC* is the final product of a well-developed, long-standing model code development process that involves the nation's

¹ The Responsible Energy Codes Alliance is a broad coalition of energy efficiency professionals, regional organizations, product and equipment manufacturers, trade associations, and environmental organizations that promote the adoption and implementation of improved building energy codes and, in particular, the most recent version of the *IECC* nationwide without weakening amendments. A list of RECA members is enclosed at the end of this letter. RECA members have been involved in the development of the *IRC* and *IECC*, and the implementation of these codes in jurisdictions across the country for two decades.

leading experts in energy efficiency, building design and product performance, state and local governmental officials, product manufacturers, architects and builders. The following are some of the reasons for adopting the 2012 *IECC* for residential construction:

- **Clear Cost-Effectiveness.** According to the U.S. Department of Energy, a residential home built to the 2012 *IECC* in Nevada will use, on average, **25.9% less energy** per year than a home built to the current energy code. That translates into a net savings – including the costs of the energy efficiency upgrades – of \$4,736.00 over the first 30 years of the home’s useful life.² The analysis also shows that homeowners will see a net positive cash flow – where the increased down payment and mortgage costs are lower than the monthly savings in energy bills – within the first two years of home ownership. These savings will benefit every owner of the home over the home’s useful life – often 70-100 years. A complete copy of that Nevada-specific report is attached to these comments.
- **The Latest National Standard for Residential Buildings.** The U.S. DOE has carefully reviewed the 2012 *IECC* in accordance with federal law and has issued a positive determination that the 2012 *IECC* is an improvement in energy efficiency and has requested all states to certify that they have reviewed and considered adopting this code.³ With the adoption of the 2012 *IECC*, Nevada builders and design professionals will be able to use the latest free compliance software offered by the U.S. DOE, and code users will be able to take advantage of training programs and other resources targeting code compliance and enforcement.
- **Better-Built Homes.** At the core of the 2012 *IECC* is a set of improvements to the permanent thermal envelope – improvements that will benefit homeowners over the lifetime of the home. Specific improvements incorporated into the 2012 *IECC* for residential buildings in Nevada include better insulation specifications and improved SHGC requirements for fenestration that will make homes more comfortable and more efficient. Under the 2012 *IECC*, Nevada homes will be tightly sealed and tested. Homes must also be tested for duct leakage unless ducts and air handlers are located inside conditioned space. This will result in more efficient delivery of heated or cooled air to the entire house, reducing the amount of energy used to heat and cool and helping to avoid the need for occupants to adjust the thermostat to address discomfort.

Owners and operators of non-residential buildings in Nevada will also benefit from the adoption of the 2012 *IECC*:

- **Better Value for Commercial Building Owners/Operators.** Non-residential buildings in Nevada will yield long-term benefits from a better thermal envelope, improved lighting requirements, and more efficient heating and cooling equipment

² See U.S. Department of Energy, *Nevada Energy and Cost Savings for New Single- and Multifamily Homes*, at 3 (April 2012).

³ See 77 Fed. Reg. 29322 (May 17, 2012) (Final Determination on 2012 *IECC*).

requirements. These changes will lower operating costs for building owners and managers and will make commercial buildings more attractive to potential tenants.

- **The Latest National Standard for Commercial Buildings.** The Department of Energy has issued a positive determination on ASHRAE Standard 90.1-2010 as required by federal law and each state must certify that it has reviewed and updated the provisions of its commercial energy code to meet or exceed ASHRAE Standard 90.1-2010.⁴ ASHRAE Standard 90.1-2010 is adopted by reference in the 2012 *IECC*, allowing states to adopt a single code book for residential and commercial construction, and providing commercial design professionals the option of building to either code.

Finally, although the 2015 edition of the *IECC* will likely be published in spring of 2014, we encourage Nevada to complete the process of adopting and implementing the 2012 *IECC* before turning to that code. We are not aware of any analyses of the 2015 *IECC* or any compliance materials or other support for that code, and we believe that consideration of the 2015 *IECC* before these materials are available will only set back code adoption and any related energy savings by at least another year. The 2012 *IECC* is already well-supported and thoroughly analyzed, and Nevada stands to substantially benefit from its improvements right away.

2. Brief Responses to Proposed Weakening Amendments to the Residential *IECC*.

Although the full text of BANN's proposed weakening amendments to the 2012 *IECC* residential requirements was not posted on the state's website, most of the issues raised by BANN appear to be based on unsuccessful weakening amendments that were already argued before the ICC (and failed) in the last few code change cycles. We will address each of these proposed amendments below and explain why these amendments would not benefit Nevada homeowners.

Amendments that Would Weaken Nevada's Current Code (2009 *IECC*). Any steps backward from the 2009 *IECC* would be inconsistent with Nevada's compliance with federal law and should not be considered. Given that Nevada is already enforcing the 2009 *IECC* statewide and has certified to the Secretary of Energy that it has complied with its 2009 ARRA commitments,⁵ the Governor's Office of Energy should reject any amendments that weaken the current energy code. BANN has recommended two amendments that would eliminate much of the energy efficiency in the current code.

- ***Equipment-for-Envelope Trade-offs.*** This proposal would re-create a huge free-rider loophole that would award a builder "credit" for commonly-installed heating, cooling, and water heating equipment – credit that would be used to reduce the overall

⁴ See 76 Fed. Reg. 64904 (Oct. 19, 2011) (Final Determination on ASHRAE Standard 90.1-2010).

⁵ See

<http://www.energycodes.gov/sites/default/files/documents/NV%20Certification%20of%20Residential%20Building%20Energy%20Codes.PDF>

efficiency of the permanent thermal envelope and cost the homeowner more in monthly energy costs. The net result of adding an equipment trade-off would be that the energy savings currently resulting from the installation of commonly-installed equipment would disappear through a leakier thermal envelope and other efficiency downgrades that would be permitted. According to a recent analysis prepared by ICF International, **the furnace trade-off alone could allow builders to weaken the building envelope and increase the home's overall energy consumption by 6-9%, and when combined with other trade-offs, could increase consumption by 11-22% -- a 11-22% increase in the energy bills that homeowners will have to pay every month that they own the home.**⁶

The equipment-for-envelope trade-off has been proposed repeatedly by builders at the ICC national code development process, yet the trade-off has been overwhelmingly rejected by the nation's code officials from the 2009, 2012, and most recently, the 2015 *IECC*. Likewise, at the state level, over 2/3 of states and dozens of cities now enforce the 2009 or 2012 *IECC* with no equipment trade-offs. Nevada does not currently allow equipment-for-envelope trade-offs, and this proposed weakening amendment should be rejected.

- **Window Area Loophole.** Although it is not clear from the December 16 BANN letter how window area would be “traded off,” builders have argued at the ICC and in a few states for a fixed glazing area percentage in the performance path. This weakening amendment has been repeatedly rejected at the national and state levels because it is yet another free-ridership loophole that will result in higher energy costs for homeowners. The proposal most often proposed by builders would set the performance path glazing area assumption at a fixed percentage – such as 15%. With this loophole in place, builders who build homes with glazing area less than 15% (often townhouses, condos, low-income housing and multifamily housing) would receive artificial “trade-off credit” that would be used to weaken other parts of the thermal envelope such as wall or ceiling insulation to levels well below the code requirements. **This amendment creates “credit” out of nothing, and attempts to shift costs to homeowners in the form of higher energy bills over the lifetime of the home.** Well over 2/3 of states now enforce the 2006, 2009, or 2012 *IECC* without adding this loophole. This amendment would lead to less efficient homes at the expense of homeowners and should be rejected because it weakens Nevada's current code.

Amendments that Would Weaken the 2012 IECC. The following seven proposals would substantially reduce or eliminate the energy efficiency gains (and cost savings) of the 2012 *IECC*, and should be rejected.

- **Reduction in Ceiling Efficiency.** The ceiling insulation required by the 2012 *IECC* is most cost-effective when installed at initial construction, when equipment and

⁶ See ICF International, *Review and Analysis of Equipment Trade-Offs in Residential Energy Codes*, at i-ii (Sep. 23, 2013).

laborers are already present. The only question is whether to install an additional amount of insulation in the attic (basically another 3.5 inches of blown-in insulation). The R-49 insulated attic will save 1.6% more energy than the R-38 attic, every year over the 70-100 year expected lifetime of the home. The U.S. Department of Energy has found that ceiling insulation between R-38 and R-60 is cost-effective in Nevada's climate zones, and R-49 is well within that range.⁷

- **Reduction in Wall Efficiency in Climate Zone 3.** The 2012 *IECC* would establish a uniform statewide insulation standard by improving the requirements in Clark County (climate zone 3) to match the current requirements in all other counties in Nevada (R-20 or 13+5). The methods, techniques, and products should all be very familiar to Nevada homebuilders, and homeowners in Clark County stand to benefit from the improved insulation levels in walls.
- **Building Tightness Trade-off and "Correction."** Two proposals appear to target building air leakage: a change in the air leakage level from 3 ACH50 to 4 ACH50, and a change in the air leakage requirement from "mandatory" to "prescriptive," allowing trade-offs. The 2012 *IECC* requires homes in Nevada to be properly sealed and tested for air leakage at a rate no higher than 3 ACH50. This will save a substantial amount of energy and will keep the occupants of the home more comfortable. Although the BANN letter suggests that a low percentage of homes in Nevada currently achieve that air leakage level, that is not a justification to not improve the requirement. Until it is actually set in code, we would not expect to see statewide air leakage numbers in the range of 3 ACH50. The air tightness requirement in the 2012 *IECC* is an improvement over current air tightness requirements in Nevada, and we expect that builders who are properly sealing homes will not have any problem achieving this level of tightness.
- **Duct Tightness Trade-off and Performance Path Assumption.** We do not oppose the addition of an assumed duct tightness level in the performance path, provided it matches the requirement in the 2012 *IECC*. (This is a typographical fix that should not affect efficiency.) However, it is not clear from the December 16 letter what other changes are being proposed in order to allow "an alternative duct-tightness testing method." Builders proposed an additional test for "leakage to outdoors" at the ICC, but this proposal was rejected for the 2012 and 2015 *IECC*. Testing leakage to outdoors will not indicate whether conditioned air is being delivered to the intended spaces of the home – or whether it is spilling into the furnace room or floor cavities. Duct sealing and testing requirements are already part of the energy code in Nevada, and the 2012 *IECC* contains moderate improvements in sealing and testing requirements. As builders and HVAC contractors have learned to properly seal ducts through the application of the 2009 *IECC*, we believe they can achieve the 2012 *IECC*'s requirements with little or no additional effort. Efficient ducts are critical in maintaining the efficiency, proper operation, and longevity of heating and cooling systems.

⁷ See <http://energy.gov/energysaver/articles/tips-insulation>

- **Adjustments to U-factor Calculations.** Although we do not have a copy of the changes being proposed by BANN, we urge Nevada not to weaken the U-factors in the 2012 *IECC*. Weaker U-factors would not only weaken the efficiency baseline for homes built to the Total UA alternative, but would also weaken the baseline for homes built to the simulated performance alternative. (Changes to the U-factor table could also create inconsistencies with compliance software such as REScheck.) The U-factors in the 2012 *IECC* are not “incorrect” as claimed by BANN. U-factors and corresponding component R-values can be calculated in several different ways, and we do not believe it is productive to weaken U-factors to match a worst-case scenario for R-values.
- **Reductions in Hot Water Pipe Efficiency.** Again, we do not have all the details of BANN’s proposed weakening amendment to the *IECC*’s hot water pipe efficiency, but we encourage Nevada to keep the moderate improvements to hot water system efficiency as contained in the 2012 *IECC*. The goal of these improvements is not only to save energy, but also to save water through reduced pipe lengths and/or more effective insulation strategies.
- **Reduction in Basement Wall Efficiency.** Basement walls insulated on the exterior are very unlikely to undergo efficiency improvements over the lifetime of the home. The requirements in the 2012 *IECC* are cost-effective and have already been implemented for several years at those levels or higher in climate zones 6-8. Basement walls should be insulated properly at construction when the incremental cost increases are much smaller. The arguments raised by BANN in the December 16 letter are similar to arguments raised at the national code development process, and these arguments were rejected, leaving the 2012 *IECC* requirements for basement wall insulation the same in the 2015 *IECC*.

By adopting the 2012 *IECC* with no weakening amendments, Nevada will provide important benefits to the state and, in particular, to building and home owners in the state for generations. Building homes and commercial buildings right the first time is always the best policy. Every home or building constructed to a weaker standard will use more energy than necessary for decades, making it imperative to adopt and implement improved energy codes as soon as possible. During construction is the best time to install cost-effective levels of insulation, quality windows and doors, properly-sized heating and cooling equipment, and efficient lighting. Construction costs for energy efficient buildings are likely to be reduced through economies of scale, as suppliers and retailers may reduce inventories and streamline production to meet efficiency targets established by the code. Adopting the 2012 *IECC* will help Nevada continue on its path toward a more secure energy future.

Nevada 2012 IECC Builder Compliance Guides

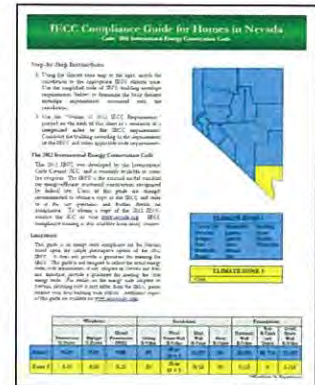
As with previous editions of the *IECC*, RECA has created a one-page simple reference guide for the key elements of the 2012 *IECC* for residential buildings. These guides have been used around the country for code compliance and training purposes. A copy of the 2012 *IECC* guide for Nevada is attached to this submission; additional copies can be downloaded or printed free of charge from our website, www.reca-codes.com. Copies can also be customized for Nevada's training and compliance needs. Please contact us directly for more information.

Conclusion

RECA strongly supports Nevada's adoption of the 2012 *IECC* and we offer our assistance and experience in energy code adoption and implementation as you work to maximize building energy efficiency. We hope that you will not hesitate to draw on RECA's support and willingness to help. Please contact me at (202) 339-6366 if you have any questions or would like to discuss how RECA can be of assistance.

Sincerely,

Eric Lacey
Chairman



RECA is a broad coalition of energy efficiency professionals, regional organizations, product and equipment manufacturers, trade associations, and environmental organizations with expertise in the adoption, implementation and enforcement of building energy codes nationwide. RECA is dedicated to improving the energy efficiency of homes throughout the U.S. through greater use of energy efficient practices and building products. It is administered by the Alliance to Save Energy, a non-profit coalition of business, government, environmental and consumer leaders that supports energy efficiency as a cost-effective energy resource under existing market conditions and advocates energy-efficiency policies that minimize costs to society and individual consumers. Below is a list of RECA Members that endorse these comments.

Air Barrier Association of America

Alliance to Save Energy

American Chemistry Council

American Council for an Energy-Efficient Economy

Cardinal Glass Industries, Inc.

CertainTeed Corporation

Energy Efficient Codes Coalition

EPS Industry Alliance

Extruded Polystyrene Foam Association

Guardian Industries Corporation

Institute for Market Transformation

Johns Manville Corporation

Knauf Insulation

National Fenestration Rating Council

North American Insulation Manufacturers Association

Pactiv Corporation

Polyisocyanurate Insulation Manufacturers Association

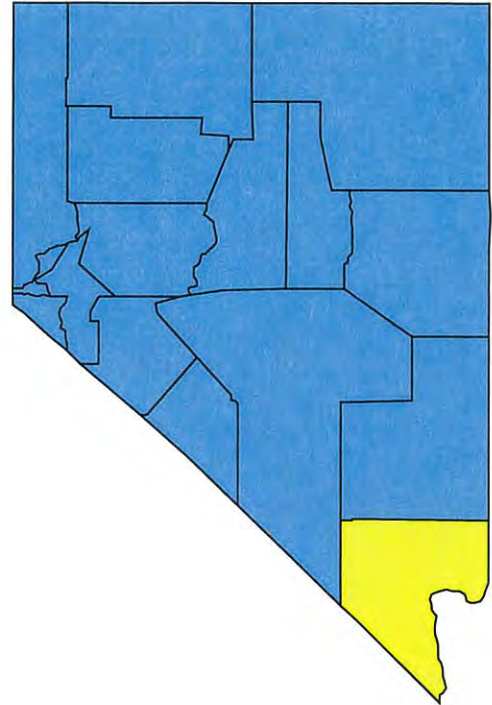
Sierra Club

IECC Compliance Guide for Homes in Nevada

Code: 2012 International Energy Conservation Code

Step-by-Step Instructions

1. Using the climate zone map to the right, match the jurisdiction to the appropriate IECC climate zone. Use the simplified table of IECC building envelope requirements (below) to determine the basic thermal envelope requirements associated with the jurisdiction.
2. Use the “Outline of 2012 IECC Requirements” printed on the back of this sheet as a reference or a categorized index to the IECC requirements. Construct the building according to the requirements of the IECC and other applicable code requirements.



The 2012 International Energy Conservation Code

The 2012 IECC was developed by the International Code Council (ICC) and is currently available to states for adoption. The IECC is the national model standard for energy-efficient residential construction recognized by federal law. Users of this guide are strongly recommended to obtain a copy of the IECC and refer to it for any questions and further details on compliance. To obtain a copy of the 2012 IECC, contact the ICC or visit www.iccsafe.org. IECC compliance training is also available from many sources.

Limitations

This guide is an energy code compliance aid for Nevada based upon the simple prescriptive option of the 2012 IECC. It does not provide a guarantee for meeting the IECC. This guide is not designed to reflect the actual energy code, with amendments, if any, adopted in Nevada and does not, therefore, provide a guarantee for meeting the state energy code. For details on the energy code adopted by Nevada, including how it may differ from the IECC, please contact your local building code official. Additional copies of this guide are available on www.reca-codes.com.

CLIMATE ZONE 5		
Carson City	Humboldt	Pershing
Churchill	Lander	Storey
Douglas	Lincoln	Washoe
Elko	Lyon	White Pine
Esmeralda	Mineral	
Eureka	Nye	

CLIMATE ZONE 3
Clark

	Windows			Insulation				Foundation		
	Fenestration U-Factor	Skylight U-Factor	Glazed Fenestration SHGC	Ceiling R-Value	Wood Frame Wall R-Value	Mass Wall R-Value	Floor R-Value	Basement Wall R-Value	Slab R-Value and Depth	Crawl Space Wall R-Value
Zone 5	0.32	0.55	NR	49	20 or 13 + 5	13/17	30	15/19	10, 2 ft	15/19
Zone 3	0.35	0.55	0.25	38	20 or 13 + 5	8/13	19	5/13	0	5/13

NR indicates No Requirement

Outline of 2012 IECC Requirements for Nevada Homes

The simplified table of building envelope requirements (on the previous page) applies to new residential buildings, as defined in the IECC, with wood framing and/or mass walls. For steel-framed buildings, the same window requirements apply; however, refer to IECC section R402.2.6 for specific ceiling, wall and floor insulation R-value requirements. The table also applies to all additions, alterations and replacement windows. The table is based upon the thermal envelope requirements in the 2012 IECC's prescriptive compliance option for the appropriate climate zones (Table R402.1.1) and does not reflect any state-specific amendments to the IECC.

Fenestration (IECC Sections R303.1.3, R402.3, R402.5)

- Fenestration (including all windows and doors) and Skylight U-factors are maximum acceptable levels. The Glazed Fenestration SHGC maximums apply to all windows, skylights and glazed doors (except certain skylights). An area-weighted average of fenestration products is permitted to satisfy these requirements.
- Window, door and skylight U-factors and SHGCs must be determined from a National Fenestration Rating Council (NFRC) rating that is independently certified and set forth on a label on the product or from a limited table of product default values in the IECC. See www.nfrc.org for more details on the NFRC rating system.
- Windows, skylights, and sliding glass doors must also be labeled in a manner to show that they meet the IECC's air infiltration requirements.
- Up to 15 square feet of glazed fenestration is permitted to be exempt from the U-factor and SHGC requirements. One side-hinged opaque door assembly up to 24 square feet is exempted from the Fenestration U-factor requirement. These exceptions apply in the prescriptive path only. Special exceptions may apply for Fenestration U-factor requirements in thermally isolated sunrooms. (see IECC section R402.3.5)

Insulation (IECC Sections R303.1.4 and R402.2)

- Insulation R-values are minimum acceptable levels and must be determined according to FTC rule.
- R-values for walls represent the sum of cavity insulation plus insulated sheathing, if any. The second R-value for mass walls applies when more than half the insulation is on the interior of the mass wall.
- The insulation for basement walls must be from the top of the wall down 10 feet below grade or to the basement floor, whichever is less. Basement wall insulation is not required in warm-humid locations as defined in IECC Figure R301.1 and Table R301.1. Insulation requirements for crawl space walls are further specified in IECC section R402.2.10.
- Floor insulation must be installed to maintain contact with the underside of the subfloor decking.
- Access doors from conditioned spaces to unconditioned spaces (e.g., attics and crawl spaces) shall be weatherstripped and insulated to a level equivalent to the insulation on the surrounding surfaces.
- Insulation requirements for slab on grade floors are further specified in IECC section R402.2.9. R-5 shall be added to the required slab edge R-values for heated slabs. Insulation

depth shall be the depth of the footing or 2 feet, whichever is less in climate zone 3 for heated slabs.

- Special Insulation exceptions related to ceilings with attic spaces, ceilings without attic spaces, masonry veneer and thermally isolated sunrooms are set forth in IECC section R402.

Ducts (IECC Section R403.2)

- Ducts must be tested and verified to have total leakage of no more than 4cfm/100 sq. ft. (or 3cfm if air handler is not installed), except where air handler and all ducts are inside conditioned space.
- Supply ducts in attics shall be sealed and insulated to a minimum of R-8. All other ducts shall be sealed and insulated to a minimum of R-6. Ducts or portions thereof located completely inside the building thermal envelope are exempted from the insulation requirement. Air handlers and filter boxes must also be properly sealed.

Air Sealing (IECC Section R402.4)

- The building envelope is required to be properly sealed and tested, and verified as having an air leakage rate no higher than 3 ACH. Recessed lighting must also be sealed to limit air leakage.

Documentation (IECC Sections R103, R303.3, R401.3)

- The appropriate construction documents and preventative maintenance information must be provided, along with a permanent certificate listing certain insulation, window and HVAC performance information.

Systems (IECC Section R403)

- HVAC system must be properly sized in accordance with ACCA Manual S based on building loads calculated in accordance with ACCA Manual J or other approved methodologies.
- Temperature controls must be installed, including a programmable thermostat where required.
- Mechanical system piping must be insulated to a minimum of R-3. Hot water piping must be insulated to R-3, with certain exceptions.
- Specific requirements apply to circulating hot water systems, mechanical ventilation, snow melt systems, and pools.

Lighting (IECC Sections R202 and R404.1)

- A minimum of 75% of lamps in permanently installed fixtures must be high-efficacy as defined in the IECC.