

### **Southern Nevada Amendments**

- ✓ Find S Nevada Amendments on line at:
- ✓ [http://www.clarkcountynv.gov/depts/development\\_services/plan\\_review/Pages/BuildingCodes.aspx](http://www.clarkcountynv.gov/depts/development_services/plan_review/Pages/BuildingCodes.aspx)
- ✓ The amendments as included in this document are underlined

## Today's Agenda

8:00	Scope and Application Building Envelope
	Mechanical Systems and Service Water
	Lighting Additional Efficiency Package Options
Noon	Adjourn

## Overview



### Commercial Compliance Options

**1** ● 90.1-2010

**OR**

**2** ● 2012 IECC

- C402 - Envelope
- C403 - Mechanical
- C404 - SWH
- C405 - Lighting


AND

- Pick One:
- C406.2 – Eff. HVAC Performance
- OR
- C406.3 – Eff. Lighting Systems
- OR
- C406.4 – On-site Renewable Energy

**OR**


**3** ● 2012 IECC

- C407 – Total Building Performance
- C402.4 – Air Leakage
- C403.2 – Provisions applicable to all mechanical systems
- C404 - SWH
- Lighting Mandatory Sections
  - C405.2
  - C405.3
  - C405.4
  - C405.6
  - C405.7
- Building energy cost to be ≤ 85% of standard reference design building




### Additional Efficiency Package Options C406


- One additional efficiency feature must be selected to comply with the IECC
  - More efficient lighting system (consistent with 90.1-2010), **OR**
  - More efficient HVAC system, **OR**
  - Installation of onsite renewables
    - 3% of the regulated energy



More Efficient Lighting System



High Efficiency HVAC



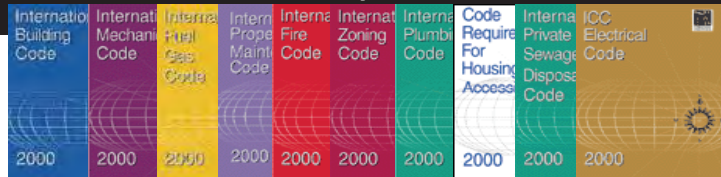
Onsite Renewables

**Additional Efficiency Package Options**  
**C406**

- Efficient HVAC performance per C406.2 **OR**
  - Per Tables C406.2(1) thru C406.2(7)
  - Only used when efficiencies in the above tables are greater than those in the efficiency tables in C403
  
- Efficient lighting system per C406.3 **OR**
  - Whole building LPD complies with C406.3.1
  - Determine total LPD of building using reduced whole building interior lighting power in Table 406.3 x floor area for the building types
  
- On-site supply of renewable energy per C406.4
  - Total minimum ratings to comply with
    - Provide  $\geq 1.75$  Btu or  $\geq 0.50$  watts per ft<sup>2</sup> of conditioned floor area OR
    - Provide  $\geq 3\%$  of energy used for mechanical and SWH equipment and lighting

Individual tenant spaces to comply with either C406.2 or C406.3 unless documentation is provided that demonstrates compliance with C406.4 for the entire building

**The Family of I-Codes**



## Structure of the IECC

Chapter C1 Administrative

Chapter C2 Definitions

Chapter C3 Climate Zones

Chapter C4 Commercial Energy Efficiency

Chapter C5 Referenced Standards



Residential also has 5 Chapters

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## Overview of Commercial Code Requirements

Focus is on:

Section C402 – Building Envelope

Section C403 – Building Mechanical Systems

Section C404 – Service Water Heating

Section C405 – Electrical Power & Lighting Systems

Section C406 – Additional Efficiency Packages

Section C407 – Total Building Performance

Section C408 – System Commissioning

Equipment efficiency is established by NAECA not IECC.

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## Chapter 1 – Administration



## Scope of IECC

*Does my project need to comply with the commercial provisions in the IECC?*

All buildings need to comply with commercial standards other than:

- ✓ R-3, One- and two-family residential
- ✓ R-2, R-4 three stories or less in height



## Section C101.1 Title

*Revise Section C101.1 Title, as follows:*

**C101.1 Title.** This code shall be known as the International Energy Conservation Code of Southern Nevada, and shall be cited as such. It is referred to herein as “this code”.

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## What must Comply

Overall statement of what must comply

- ✓ New Buildings
- ✓ Additions to Existing Buildings
- ✓ Alterations of Existing Buildings
- ✓ Replacements of Portions of Existing Buildings
- ✓ Changes in Space Conditioning

Administrative Requirements

- ✓ Permits
  - ✓ Enforcement
  - ✓ Local
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## Scope



New buildings and their systems

## Scope *(cont'd)*

New *portions* of buildings and their systems  
*(additions)*

**addition:** an extension or increase in floor area or height of a building outside of the existing building envelope.





## Scope (cont'd)



### New systems and equipment in *existing* buildings (alterations)

**alteration:** a replacement or addition to a building or its systems and equipment; routine maintenance, repair, and service or a change in the building's use classification or category shall not constitute an alteration.

## Scope (cont'd)

- ✓ Envelope must comply if
  - heated or cooled with an output capacity  $\geq 3.4$  Btu/h-ft<sup>2</sup> or
- ✓ Virtually all mechanical, power, and lighting systems are covered
  - **Examples include**
    - heating, ventilating and air conditioning
    - service water heating
    - electric power distribution
    - metering provisions

## Scope Exception

### What does not apply

- ✓ Too little heating or cooling
- ✓ Single-family, multifamily of three stories or less, manufactured or modular homes
- ✓ Buildings that don't use electricity or fossil fuel
- ✓ Equipment and portions of building systems that use energy primarily for industrial, manufacturing, or commercial processes



## Administration and Enforcement

### Compliance

- ✓ New buildings
- ✓ Additions to existing buildings
  - Exceptions
    - Trade-offs will be allowed
- ✓ Alterations to existing buildings
  - Exceptions
    - Designated historically significant
    - Annual energy consumption



## Exceptions for Alterations



Buildings that are specifically designated as historic

- ✓ by the adopting authority or
- ✓ on the National Register of Historic Places or
- ✓ eligible for listing by the U.S. Secretary of Interior

If the building's annual energy consumption is the same as a building that meets the requirements of Sections 5-10

- ✓ verified by a design professional using methods acceptable to the authority having jurisdiction

## C101.4 Applicability

If there are different specifications in this code, the most restrictive requirement governs.

If there is a conflict between a general and a specific requirement, then the specific requirement governs.

## C101.4.3 Additions, Alterations, Renovations, Repairs *Exceptions*

Exception: The following need not comply with the applicable provisions of the code, provided the authority having jurisdiction deems the energy use of the building is not increased:

1. Storm windows over existing fenestration
2. Glass only replacements in an existing sash and frame, provided glass meets or exceed the same U-factor and SHGC of the glass being replaced. If the U-factor and SHGC of the glass cannot be determined, the windows shall either meet the minimum prescriptive values of Table C402.3 or justified using the whole building performance modeling approach per Sec. C407.
3. Existing ceiling, wall or floor cavities exposed during construction provided that these cavities had been filled with insulation. If insulation is missing and R-value cannot be determined, then all exterior cavities absent the insulation shall be insulated per the minimum prescriptive requirements of Sec. C402, or justified using the whole building performance modeling approach per Sec. C407.
4. Where existing roof, wall or floor cavity isn't exposed

## Additions, Alterations, Renovations, Repairs *Exceptions*

5. Reroofing for roofs where neither sheathing nor insulation is exposed  
When exposed - Insulate above or below the sheathing
  - Roofs without insulation in the cavity
  - Sheathing or insulation is expose
6. Replacement of existing doors that separate conditioned space from the exterior shall not require installation of a vestibule . . .
7. Alterations that replace less than 50 percent of the luminaires in a room or space provided that such alterations do not increase the installed interior lighting power of Sec. C405.5.2. Altered rooms or spaces created within the remodeled area must still comply with the switching requirements of section C405.2.
8. Alterations that replace only the bulb and ballast within existing luminaires . . . Provided that the alteration does not increase the installed lighting power.

## C101.4.4 Change in Occupancy or Use

Spaces undergoing a change in occupancy that would result in an increase in demand for either fossil fuel or electrical energy shall comply with this code.

Where the use in a space changes from one to another, the installed lighting wattage shall comply with Section C405.5.

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## 101.4.5 Space Conditioning

Any non-conditioned space that is altered to become conditioned space shall be required to be brought into full compliance with this code.



## 101.4.6 Mixed Occupancy

Treat the residential occupancy under the applicable residential code.

Treat the commercial occupancy under the commercial code.

The residential and commercial occupancies fall under two different scopes. Thus, two compliance submittals must be prepared using the appropriate calculations and forms from the respective codes for each.

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## 101.5 Multiple Dwelling Units



Summerhill, Idaho Falls

Systems serving multiple dwelling units shall comply with Sections 503 and 504 in lieu of Section 403.

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## 101.1.1 Above Code Programs

Revise Section C102.1.1, as follows:

**C102.1.1 Above code programs.** The code official or other authority having jurisdiction shall be permitted to deem a national, state or local energy efficiency program to exceed the efficiency required by this code. Programs seeking approval must submit all requested supporting documentation, including program guidelines, protocols, calculations and program simulation performance software, if applicable, to the Southern Nevada Building Officials for review. Buildings certified in writing by such an energy efficiency program shall be considered in compliance with this code, but all requirements identified as "mandatory" in Chapter 4 of this code shall be met.

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## 106.1. Referenced Codes and Standards

Revise Section C106.1, as follows:

**C106.1 Referenced codes and standards.** The codes and standards referenced in this code shall be those listed in Chapter 5. Where this code refers to other codes not adopted by the jurisdiction, the applicable code adopted by the jurisdiction shall govern. Such codes and standards shall be considered as part of the requirements of this code to the prescribed extent of each such reference and as further regulated in Sections C106.1.1 and C106.1.2.

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## Chapter 2 – Definitions



### Critical Definitions Now separate from Residential and expanded

<i>Air Barrier</i>	R-Value
<i>Building Thermal Envelope</i>	SHGC
Conditioned Space	Storefront
Daylight Zone	U-Factor
DCV	Residential Building
Entrance Door	
ERV / HRV	

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## Air Barrier Definition

Revise C202 General Definitions, as follows:

**AIR BARRIER.** An integral component of the building thermal envelope comprised of approved material(s) that are assembled and joined together to support in-contact insulating materials on one or more of its surfaces and to provide a barrier to air leakage through the building envelope. An air barrier may be comprised of, but not be limited to, the exterior siding, exterior lath and stucco, rigid insulation board, exterior sheathing and sub-sheathing, water proof substrate with tiles, masonry walls, roof sheathing and drywall between conditioned and unconditioned spaces.

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## Building Thermal Envelope Definition

Revise C202 General Definitions, as follows:

**BUILDING THERMAL ENVELOPE.** The building's exterior walls, floor(s), ceilings, roof(s) and any other building elements that define a thermal barrier (heat gain/loss) between the interior and exterior environments. The building thermal envelope includes the air barrier installed in direct contact with insulation and is enclosed by, but is not limited to, the following combination of elements: thermal insulation, air barrier, framing/structural members, glazing, doors and other components between the conditioned interior and unconditioned exterior environments.

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## Casino Definition

Revise C202 General Definitions, as follows:

**CASINO.** A structure that houses a business with a Non-restricted Gaming License from the Nevada Gaming Commission and State Gaming Control Board. It includes the gaming area(s) as well as all the adjacent area(s) within the same building envelope.

## Casino Gaming Area Definition

Revise C202 General Definitions, as follows:

**CASINO GAMING AREA.** The space within a casino wherein gaming is conducted. The gaming area shall also include accessory uses within the same room(s) as, or substantially open to, the gaming floor(s). Such areas shall include, but not be limited to lobbies, balconies, public circulation areas, assembly areas, restaurants, bars, lounges, food courts, retail spaces, mezzanines, convention pre-function areas, cashiers' cages, players' clubs, customer support, conservatories and promenades that share the same atmosphere, spillover lighting and theme lighting with the adjacent gaming floor area. For accessory areas situated on the perimeter of the gaming floor to be considered substantially open, the walls(s) or partitions(s) separating an accessory space from the gaming area must be a minimum of 50% open, as measured from the interior side of the accessory space, with no doors, windows and other obstructions, other than roll up security grills, installed within the opening.

## Luminaire Definition

Revise C202 General Definitions, as follows:

**LUMINAIRE.** A complete lighting unit consisting of a light source, such as a lamp or lamps, together with the parts designed to position the light source and connect it to the power supply. It may also include parts to protect the light source, ballast, or distribute the light. A lampholder itself is not a luminaire.

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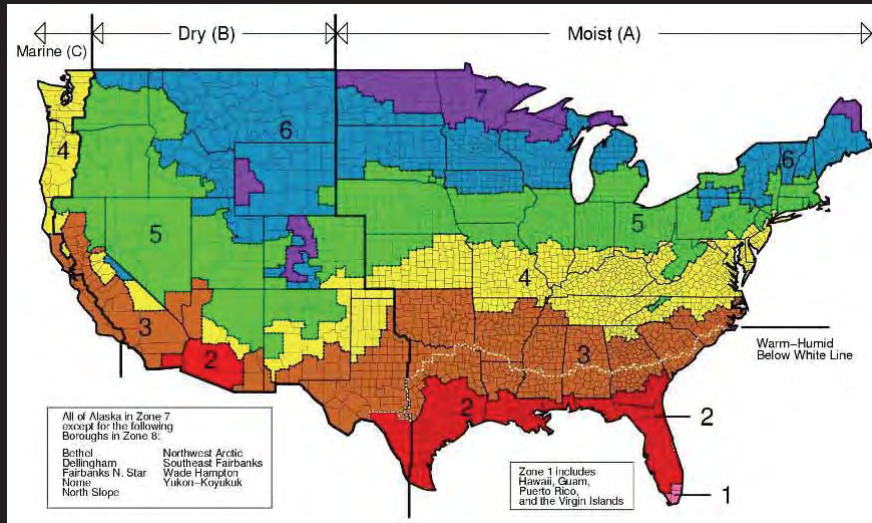
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## Chapter 3 – Climate Zones



## Climate Zones – 2013 IECC



### Section C301.1 General

*Delete the current Section C301.1 in its entirety and replace, as follows:*

**C301.1 General:** Climate zones from Figure C301.1 or Table C301.1 shall be used in determining the applicable requirements from Chapters 4. Locations not in Table C301.1 (outside the United States) shall be assigned a climate zone based on Section C301.3.

**Exception:** Areas within these jurisdictions above altitudes of 4000 feet shall be considered in Climate Zone 5B.

## Section C302 Design Conditions

C302.1 Interior design conditions. The interior design temperatures used for heating and cooling load calculations shall be a max of **72 degrees for heating** and minimum of **75 degrees for cooling**

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## Section C303 Materials, Systems and Equipment

### C303.1 Identification

C303.1.1 Building thermal envelope insulation

C303.1.1.1 Blown or sprayed roof/ceiling insulation

C303.1.2 Insulation mark installation

C303.1.3 Fenestration product rating

C303.1.4 Insulation product rating

### C303.2 Installation

C303.2.1 Protection of exposed foundation ins.

### C303.3 Maintenance Information

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## Section C3031.3 Fenestration Product Rating

*Add two new subsections under Section C303.1.3 Fenestration product rating.*

**C303.1.3.1 Fenestration rating documentation.** All fenestration products to be used in a project must be listed in a fenestration schedule on the approved plans. This schedule shall include all of the following:

1. A list of all fenestrations, including, but not limited to, fixed and operable windows, skylights, sliding, swinging and overhead doors and glass block.
2. For site-built window assemblies not listed in the NFRC CMAST data base, simulation report reference numbers provided by an NFRC accredited simulation laboratory, for each type of product to be used in the project. [Note: The simulation reports are required as part of the plans submittal documentation, and shall include specific frame profiles, glazing options, emissivity coatings, gas fills, and spacer usage.]
3. The fenestration type, size, quantity and NFRC 100 certified U-factor
4. The solar heat gain coefficient for each fenestration proposed, using the NFRC 200 certified value.

## Section C3031.3 Fenestration Product Rating

*Add two new subsections under Section C303.1.3 Fenestration product rating.*

**C303.1.3.2 Construction site documentation.** In addition to the approved plans described in Section C303.1.3.1, the following documentation shall be provided at the construction site prior to inspection of the *building thermal envelope*:

1. All NFRC certified factory-built *fenestration* products shall be labeled with the NFRC label certificates. This label is to remain intact on the fenestration unit until inspected by the jurisdiction having authority.
2. For rated site-built *fenestration* products, there shall be a separate NFRC label certificate for each type of fenestration product used in the project,. The label will display the following information:
  - a) The NFRC certification logo
  - b) The name, address and authorized NFRC license number of the approved inspection agency
  - c) The product ratings (U-factor, solar heat gain coefficient and visible light transmittance)
  - d) The address and name of the project
  - e) the product line information
  - f) The names, addresses and contractors/business license numbers for the suppliers of the frame, the glazing and the contractor

# Questions & Answers

