

Southern Nevada Amendments

To The

2006

International Energy Conservation Code

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Preface

This document comprises the proposed Southern Nevada Amendments to the 2006 International Energy Conservation Code as published by the International Code Council (ICC). It was developed by the jurisdictions listed on the cover page, the Southern Nevada Home Builders Association (SNHBA), representatives of the building industry (both contractors and trade groups), representatives of private energy consulting groups, and consultants representing the State Energy Office and DOE as a document to be adopted by reference. These provisions are not intended to prevent the use of any material or method of construction not specifically prescribed herein, provided any alternates have been approved and its use authorized by the building official. This document is available to be adopted as code by any jurisdiction without permission or approval from the jurisdictions listed on the cover page.

101.1 Title.

Section 101.1 is amended to read:

101.1 Title. This code shall be known as the Energy Conservation Code of Southern Nevada, and shall be cited as such. It is referenced to herein as “this code”.

101.4.3 Additions, alterations, renovations or repairs.

Revise Sec. 101.4.3 to add Exceptions #5 and #6 to read as follows:

101.4.3 Additions, alterations, renovations or repairs. Additions, alterations, renovations or repairs to an existing building, building system or portion thereof shall conform to the provisions of this code as they relate to new construction without requiring the unaltered portion(s) of the existing building or building system to comply with this code. Additions, alterations, renovations, or repairs shall not create an unsafe or hazardous condition or overload existing building systems.

Exceptions: The following need not comply provided the energy use of the building is not increased:

1. Storm windows installed over existing fenestration.
2. Glass only replacements in an existing sash and frame.
3. Existing ceiling, wall or floor cavities exposed during construction provided that these cavities are filled with insulation.
4. Construction where the existing roof, wall or floor cavity is not exposed.
5. Relocations of existing luminaries within an existing space.
6. Alterations that replace 50% or less of the luminaries within a space, provided that the total energy consumption of the new luminaries is at least 10% less than the total energy consumption of the luminaries being replaced. If this exception is taken, the design professional shall provide all necessary calculations and information on the plans to show justification.

101.5.2.1 Low Energy Buildings.

Section 101.5.2 is amended to read:

101.5.2 Low energy buildings. The following buildings, or portions thereof, separated from the remainder of the building by building thermal envelope assemblies complying with this code shall be exempt from the building thermal envelope provisions of this code:

1. Those with a peak design rate of energy usage less than 3.4 Btu's /h/ft² (10.7W/m²) or 1.0 watt/ft² (10.7W/m²) of floor area for space conditioning purposes.
2. Those that do not contain conditioned space.
3. Those spaces that employ evaporative cooling as the sole source of conditioning.
4. Spaces whose sole purpose is to house and protect from freezing risers and mechanisms directly related to the building fire suppression system.

107.3 Referenced Codes.

Add a new section 107.3 to read:

107.3 Referenced Codes. Where this code refers to other codes not adopted by the jurisdiction, the applicable code adopted by the jurisdiction shall govern.

202 General Definitions.

Add the following definition:

AIR BARRIER. An integral component of the thermal energy envelope comprised of approved solid opaque materials that supports in-contact insulating material on one side and is sealed to prevent any leakage of air through the building enclosure. The air barrier can be comprised of, but not limited to, the exterior siding, exterior lath and stucco, rigid insulation board, exterior sheathing and sub-sheathing, water proof substrate with tiles, masonry or stone veneers, roof sheathing and drywall between conditioned and unconditioned attic spaces.

Revise BUILDING THERMAL ENVELOPE to read as follows:

BUILDING THERMAL ENVELOPE. The basement walls, exterior walls, floor, roof and any other building element comprised of a solid air barrier and approved insulation components in substantial, direct contact with it, that encloses conditioned space and any exempt or unconditioned space.

Add the following definitions in alphabetical order:

CASINO RESORT-BACK OF HOUSE. Areas of a casino resort that is only accessible to authorized personnel and not to the general public and guests, such as employee and delivery entrances, employee lounges and dining areas, administrative offices and meeting rooms, maintenance areas, storage rooms, service corridors, etc.

CASINO RESORT-FRONT OF HOUSE. Areas of the casino resort that are physically accessible or visible to the general public and guests, such as the exterior facades, landscaping, entries, lobbies, guestroom corridors, porte cocheres, retail shops,

restaurants, theaters, gaming areas, guest conference and meeting rooms, other areas of entertainment, etc.

Revise the definition of **CONDITIONED SPACE** to read as follows:

CONDITIONED SPACE. For energy purposes, space within a building that is provided with heating and/or cooling equipment, un-insulated ducts or systems capable of maintaining, through design or heat loss/gain, 50° F (10°C) during the heating season and 85° (29° C) during the cooling season, or through openings that communicate directly with a conditioned space. For mechanical purposes, an area, room or space being heated or cooled by any equipment or appliance. Note: Spaces which utilize required supplemental heating for the sole purpose of protecting wet fire protection systems (freeze protection to 42° F) or whose sole source of conditioning is through evaporative cooling is not considered conditioned space for the purposes of this code.

Add the following definitions in alphabetical order:

DISPLAY KITCHEN. A substantially open cooking and food preparation facility, located in the front-of-house dining room/lounge area specifically for the purpose of entertaining patrons by demonstrating the function of food and drink preparation.

INSULATION –THERMAL. A component of the thermal energy envelope comprised of any approved material installed in substantially direct contact to either side of the air barrier that provides measured thermal resistance (R-value) to heat flow from a conditioned space to which it bounds.

LIGHTING-SPECIALIZED MEDICAL, DENTAL AND RESEARCH. Lighting, other than general room illumination lighting, that is supplied from specialized single-purpose fixtures that are essential for the performance of specific medical, dental, or research–related tasks or procedures, including low-level night-lights used in clinical applications.

LIGHTING-TASK. Lighting provided to illuminate work areas wherein specific repetitive and/or ongoing tasks or operations are performed. To be considered task lighting, the fixture(s) providing the illumination must be either cord-and-plug connected or hard-wired apart from the fixtures specified for general lighting and be switched or dimmed locally. Tasks that commonly require additional illumination include drafting; graphic design; office duties such as filing and sorting mail; reading detailed photographs, carbon copies, handwritten documents, materials printed with less than 6-point type, maps, and telephone books; maintenance work; and industrial tasks such as cutting, crushing, sorting, or grading; manufacturing components; machining; difficult or exacting assembly; difficult or exacting inspection; welding; and crafting by means of engraving, carving, painting, stitching, cutting, pressing, knitting, polishing, or woodworking. Authorities having jurisdiction may approve additional qualifying tasks.

LIGHTING-THEATRICAL AND SPECIAL EFFECTS. Theatrical lighting shall be any lighting used to directly or indirectly illuminate a stage or other performance area, including dance floors. Special effects lighting shall be lighting used within or as part of a visual feature in a themed or theatrical environment. Effects lighting shall include but not be limited to: strobe lights, automated luminaries (intelligent lighting), effects

projectors, and ultraviolet (UV) fixtures. In order to qualify as theatrical or special effects lighting, the lighting must be separated from general illumination and be operated from a control system accessible only by authorized personnel.

MASS WALL. Walls constructed of concrete block, concrete, insulated concrete form (ICF), masonry cavity, brick (other than brick veneer), earth (adobe, compressed earth block, rammed earth), or solid timber logs.

SIGN. An interior or exterior lighted device used to impart way-finding, identifications or promotional information to the viewer. Signs include, but are not limited to, business identification, locations maps and directories, gaming boards, sports scoreboards, and slot carousel identifiers.

401.3 Certificate.

Section 401.3 is amended to read:

401.3 Certificate. A permanent certificate shall be posted in a conspicuous place on or in the home. The certificate shall be completed by the builder or registered design professional. The certificate shall list the predominate *R*-values of insulation installed on ceiling/roof, walls, foundation (slab, basement wall, crawlspace wall and/or floor) and ducts outside conditioned spaces; *U*-factors for fenestration; and the solar heat gain coefficient (SHGC) of fenestration. Where there is more than one value for each component, the certificate shall list the value covering the largest area. The certificate shall list the type and efficiency of heating, cooling and service water heating equipment.

402.4.1 Building Thermal Envelope.

Section 402.4.1 is amended to read:

402.4.1 Sealing of air barrier. The building air barrier shall be durably sealed to limit infiltration. The sealing methods between dissimilar materials shall allow for differential expansion and contraction. The following shall be caulked, gasketed, weather-stripped or otherwise sealed with an approved material.

1. All joints, seams, and penetrations in the air barrier.
2. Site-built windows, doors and skylights.
3. Openings between window and door assemblies and their respective jambs and framing.
4. Utility penetrations.
5. Other sources of infiltration through the air barrier.

403.2.1 Insulation.

Section 403.2.1 is amended to read:

403.2.1 Insulation. Supply and return ducts shall be insulated to a minimum of R-6. Ducts in floor trusses shall be insulated to a minimum of R-6.

Exception: Ducts or portions thereof located completely inside the building thermal envelope.

403.2.2 Sealing.

Section 403.2.2 is amended to read:

403.2.2 Sealing. All ducts, filter boxes, and building cavities used as ducts shall be sealed. Joints of duct systems shall be made substantially airtight by means of tapes, mastics, gasketing or other approved closure systems. Closure systems used with rigid fibrous glass ducts shall comply with UL 181A and shall be marked “181A-P” for pressure-sensitive tape, “181 A-M” for mastic or “181 A-H” for heat-sensitive tape. Closure systems used with flexible air ducts and flexible air connectors shall comply with UL 181B and shall be marked “181B-FX” for pressure-sensitive tape or “181 B-M” for mastic. Duct connections to flanges of air distribution system equipment or sheet metal fittings shall be mechanically fastened. Mechanical fasteners for use with flexible nonmetallic air ducts shall comply with UL 181B and shall be marked 181B-C. Crimp joints for round metal ducts shall have a contact lap of at least 1 ½ inches (38mm) and shall be mechanically fastened by means of at least three sheet-metal screws or rivets equally spaced around the joint.

403.4 Circulating Hot Water Systems.

Section 403.4 is deleted and replaced with the following:

403.4 Hot water systems. All service hot water heating systems shall meet the requirements of 403.4.1 or 403.4.2.

403.4.1 Non-circulating hot water systems. All service hot water piping installed in unconditioned spaces, including under-slab piping, shall be insulated to R-2.

403.4.2 Circulating hot water systems. All circulating service hot water piping, including under-slab piping, shall be insulated to at least R-2. Circulating hot water systems shall include an automatic or readily accessible manual switch that can turn off the hot water circulating pump when the system is not in use.

403.5 Mechanical Ventilation.

Section 403.5 is amended by adding an exception to read as follows:

403.5 Mechanical ventilation. Outdoor air intakes and exhausts shall have automatic or gravity dampers that close when the ventilation system is not operating.

Exception: Where clothes dryer exhaust vents terminate at the roof, backdraft dampers are not required.

404.3 Performance-based Compliance.

Sec. 404.3 is deleted and replaced with the following:

404.3 Site energy: The different energy sources shall be compared on the basis of source energy used at the site where 1kWh=10,239 Btu.

404.6.1 Minimum Capabilities.

Section 404.6.1 is amended to read:

404.6.1 Minimum capabilities. Calculation procedures used to comply with this section shall be software tools capable of calculating the annual energy consumption of all building elements that differ between the standard reference design and the proposed design and shall include the following capabilities:

- 1) Computer generation of the standard reference design using only the input for the proposed design. The calculation procedure shall not allow the user to directly modify the building component characteristics of the standard reference design.
- 2) Calculation of whole-building (as a single zone) sizing for the heating and cooling equipment in the standard reference design residence shall be sized based on building loads calculated in accordance with ACCA Manual J or other approved heating and cooling calculation methodologies.
- 3) Calculations that account for the effects of indoor and outdoor temperatures and part-load ratios on the performance of heating, ventilating and air conditioning equipment based on climate and equipment sizing.
- 4) Printed code official inspection checklist listing each of the proposed design component characteristics from Table 404.5.2(1) determined by the analysis to provide compliance, along with their respective performance ratings (e.g. *R*-Value, *U*-Factor, SHGC, HSPF, AFUE, SEER, ER, etc.).

502.4.4 Outdoor Air Intakes and Exhaust Openings.

Section 502.4.4 is amended by adding exceptions 2-6, to read as follows:

502.4.4 Outdoor air intakes and exhaust openings. Stair and elevator shaft vents and other outdoor air intakes and exhaust openings integral to the building envelope shall be equipped with not less than a Class I motorized, leakage-rated damper with a maximum leakage rate of 4 cfm per square foot (6.8 L/s Cm²) at 1.0 inch water gauge (w.g.) (1250 Pa) when tested in accordance with AMCA 500D.

Exceptions:

1. Gravity (non-motorized) dampers are permitted to be used in buildings less than three stories in height above grade.
2. Supply and exhaust ducts or shafts integral to the smoke management system as required by Section 909 of the International Building Code.
3. Type I and Type II hoods in commercial kitchens and the make-up air units that are required for the operation of these fume hoods.

4. All vents used for conveying products of combustion.
5. Clothes dryer vents that terminate at the roof.
6. Explosion venting.

502.4.6 Vestibules.

Section 502.4.6 is amended by adding exception 7, to read as follows:

502.4.6 Vestibules. A door that separates conditioned space from the exterior shall be protected with an enclosed vestibule, with all doors opening into and out of the vestibule equipped with self-closing devices. Vestibules shall be designed so that in passing through the vestibule it is not necessary for the interior and exterior doors to open at the same time.

Exceptions:

1. Buildings in Climate Zones 1 and 2 as indicated in Figure 301.1 and Table 301.1.
2. Doors not intended to be used as a building entrance door, such as doors to mechanical or electrical equipment rooms.
3. Doors opening directly from a sleeping unit or dwelling unit.
4. Doors that open directly from a space less than 3,000 square feet (298 m²) in area.
5. Revolving doors.
6. Doors used primarily to facilitate vehicular movement or material handling and adjacent personnel doors.
7. Doors in buildings with less than four stories above grade.

505.2.2.1 Light Reduction Controls.

Section 505.2.2.1 is amended to read:

505.2.2.1 Light reduction controls. Each area that is required to have a manual control shall also allow the occupant to reduce the connected lighting load in a reasonably uniform illumination pattern by at least 50 percent. Lighting reduction shall be achieved by one of the following or other approved method:

1. Controlling all lamps or luminaires;
2. Dual switching of alternate rows of luminaires, alternate luminaires or alternate lamps;
3. Switching the middle lamp luminaires independently of the outer lamps;
4. Switching each luminaire or each lamp; or
5. Using a dimming control system to reduce load by at least 50 percent.

Exceptions:

1. Areas that have only one luminaire.
2. Areas that are controlled by an occupant-sensing device.
3. Corridors, storerooms, restrooms, public lobbies, or means of egress.
4. Sleeping unit (see Section 505.2.3).
5. Spaces that use less than 0.6 Watts per square foot (6.5 W/m²).

505.2.2.2 Automatic Lighting Shutoff.

Section 505.2.2.2 is amended to read:

505.2.2.2 Automatic lighting shutoff. Single-occupancy buildings or single-tenant spaces larger than 5,000 square feet (465 m²) shall be equipped with an automatic control device to shut off lighting in those areas. This automatic control device shall function on either:

1. A scheduled basis, using time-of-day, with an independent program schedule that controls the interior lighting in areas that do not exceed 25,000 square feet (2523 m²) and are not more than one floor; or
2. An occupant sensor that shall turn off the lighting within 30 minutes of an occupant leaving a space; or
3. A signal from another control or alarm system that indicates the area is unoccupied.

Exceptions: The following shall not require an automatic control device:

1. Sleeping units (see Section 505.2.3)
2. Lighting in spaces where patient care is directly provided.
3. Spaces where automatic shutoff would endanger occupant safety or security.
4. Buildings where the nature of the business activity operates 24 hours per day, as approved by the Building Official.

505.5.1 Total Connected Interior Lighting Power.

Section 505.5.1 is amended to read:

505.5.1 Total connected interior lighting power. The total connected interior lighting power (watts) shall be the sum of the watts of all interior lighting equipment as determined in accordance with Section 505.5.1.1 through 505.1.1.4.

Exceptions: The connected power associated with the following lighting equipment is not included in the calculating total connected lighting power.

1. Specialized medical, dental, and research lighting.
2. Professional and/or competition level sports playing area lighting.
3. Display lighting for exhibits in galleries, museums, monuments, and convention centers.
4. Sleeping unit lighting in hotels, motels, boarding houses or similar buildings.
5. Emergency lighting automatically off during normal building operation.

6. Casino Resort - Front of House areas on properties classified as such by local jurisdictions.
7. Theatrical and special effects lighting.
8. Lighting for film, video or photography beyond general studio illumination.
9. Light Emitting Diode (LED) lighting sources.
10. Neon and cold cathode lighting sources.
11. Interior signage.
12. In a redundant, interlocked lighting system or in a system programmed to prevent simultaneous operation of more than one lighting system, the system using the least amount of power.
13. Lighting equipment available for purchase in a retail setting.
14. Task Lighting.
15. Where specific lighting levels are required by state or local governmental criteria, the state or local code shall prevail. The total square footage of the area addressed in such codes shall be subtracted from the overall square footage of the space when utilized for energy calculations.
16. Display kitchen and bar areas.
17. Lighting that is integral to equipment or instrumentation and is installed by its manufacturer.

505.5.1.4 Line-Voltage Lighting Track and Plug-In Busway.

Section 505.5.1.4 is amended to read:

Section 505.5.1.4 Line-voltage lighting track and plug-in busway. The wattage shall be the greater of the wattage of the luminaires determined in accordance with Sections 505.5.1.1 through 505.5.1.3 or 30 W/linear foot (98W/lin m). In track lighting equipped with a current limiting device, the wattage shall be the maximum rated power of the current limiting device.

Table 505.5.2 INTERIOR LIGHTING POWER ALLOWANCES.

Table 505.5.2 is deleted in its entirety and replaced with the following:

**TABLE 505.5.2
INTERIOR LIGHTING POWER ALLOWANCES**

LIGHTING POWER DENSITY	
Building Area Type ^a	(W/ft²)
Auditorium	1.8
Automotive Facility	0.9
Bank/Financial Institution ^c	1.5
Classroom/Lecture Hall	1.4
Convention Center ^c	1.3
Corridor, restroom, support area	0.9

Court House ^c	1.2
Dormitory	1.0
Exercise Center	1.0
Exhibit Hall	1.3
Grocery Store	1.6
Gymnasium Playing Surface	1.4
Healthcare-Clinic	1.0
Healthcare-Spa ^c	1.6
Hospital ^c	1.2
Hotel ^{b,c}	1.3
Industrial work	1.2
Kitchen	1.2
Library ^c	1.7
Lobby-hotel ^c	1.1
Lobby-other ^c	1.3
Mall, arcade, or atrium ^c	0.6
Motel	1.0
Motion Picture Theater ^{b,c}	1.2
Multi-Family	0.7
Museum ^c	1.1
Office ^c	1.1
Parking Garage	0.4
Penitentiary	1.0
Police/Fire Station	1.0
Post Office	1.1
Religious Worship ^{b,c}	2.4
Restaurant ^{b,c}	1.6
Retail Sales, wholesales, show room ^{b,c}	1.7
School/University	1.2
Sports Arena ^c	1.1
Storage, Industrial and Commercial	0.8
Theatre – Motion Picture	1.2
Theatre – Performance ^c	2.6
Town Hall	1.1
Transportation	1.0
Warehouse	0.8
Workshop	1.4
Other	1.0

For SI: 1 foot = 304.8 mm, 1 watt per square foot = W/0.0929 m².

- a. In cases where both a general building area type and a more specific building area type are listed, the more specific building area type shall apply.
- b. Where lighting equipment is specified to be installed to highlight specific merchandise or displays in addition to lighting equipment specified for general lighting and is switched or dimmed on circuits separate from the circuits for general lighting, the smaller of the actual wattage for the lighting equipment installed specifically for merchandise, or 21 W/ft times the area of the wall display, 1.6 W/ft²

times the area of the specific display of the floor display, or 3.9 W/ft² times the actual case or shelf area for displaying and selling jewelry, china or silver, shall be added to the interior lighting power determined in accordance with this line item.

- c. Where lighting equipment is specified to be installed for decorative purposes in addition to lighting equipment specified for general lighting and is switched or dimmed on circuits separate from the circuits for general lighting, the smaller of the actual wattage of the decorative lighting equipment or 1.5 W/ft² times the area of the space that the decorative lighting equipment is in shall be added to the interior lighting power determined in accordance with this line item.

505.5.2 Interior Lighting Power.

Section 505.5.2 is amended, and a new Table 505.5.3 is added, to read as follows:

505.5.2 Interior lighting power. The total interior lighting power (watts) is the sum of all interior lighting powers for all areas in the building covered in this permit. The interior lighting power is the floor area for each building area type listed in Table 505.5.2 times the value from Table 505.5.2 for that area. For areas with high ceilings and lighting fixture mounting heights that exceed 12 feet, an adjustment factor is allowed by multiplying the LPD value from Table 505.5.2 with the adjustment factor in Table 505.5.3. For the purposes of this method, an “area” shall be defined as all contiguous spaces that accommodate or are associated with a single building area type as listed in Table 505.5.2. When this method is used to calculate the total interior lighting power for an entire building, each building area type shall be treated as a separate area.

**TABLE 505.5.3
ADJUSTMENTS FOR MOUNTING HEIGHTS ABOVE FLOOR**

Height (in feet) above the finished floor to the bottom of luminaire(s)	Multiply LPD by
12 or less	1.0
13	1.05
14	1.10
15	1.15
16	1.21
17	1.47
18	1.65
19	1.84
20 or more	2.04

505.6 Exterior Lighting. (Mandatory).

Revise section 505.6, and delete sections 505.6.6 through 505.6.2, to read as follows:

505.6 Exterior lighting. (Mandatory). When the power for the exterior lighting is supplied through the energy service to the building, all exterior lighting, other than low-voltage lighting, shall have a source efficacy of at least 45 lumens per Watt. Fixtures employing lamps rated over 100 Watts shall either have a source efficacy of at least 60 lumens per Watt or be controlled by a motion sensor.

Exceptions:

1. Where approved because of historical, safety, signage or emergency considerations.
2. Light Emitting Diode (LED), neon, and cold cathode exterior lamp sources.
3. Front of House areas on properties classified by the local jurisdiction as casino resorts.
4. Where specific lighting levels are required by state or local governmental criteria, the state or local code shall prevail. Areas affected by this exemption include, but are not limited to, ATM's and parking garage emergency lighting.
5. Theatrical and special effects lighting.

505.7 Electrical Energy Consumption. (Mandatory)

Section 505.7 is amended by adding the exception to read as follows:

505.7 Electrical energy consumption. (Mandatory). In buildings having individual dwelling units, provisions shall be made to determine the electrical energy consumed by each tenant by separately metering individual dwelling units.

Exception: Dwelling units with a transient occupancy such as timeshares.