**Nevada Housing Division**

**Bond Program**

**Energy Efficiency Requirements and Quality Assurance Measures**

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A. New Construction General Building Performance

1) Energy performance quality assurance measures and other requirements equal to or greater than the EPA Energy Star Home Program Version 2.5. Verified by an analysis of the building plans pre-construction using the REM/Rate or equivalent software and verified by inspections and testing post construction using sampling protocol.

2) Using all applicable prescriptive measures listed for mechanical system and building envelope efficiencies should result in the structure meeting the energy efficiency requirements. When the detailed analysis of the building and individual units demonstrates that the energy performance meets the Energy Star level, trade-offs with components may be made and all prescriptive measures may not be required.

B. Mechanical Systems

Heating and cooling equipment must be sized using ACCA’s Manual J or equivalent protocol. This information is given for heating systems and hot water heaters fueled by natural gas. For areas not served by natural gas and for installation of high efficiency Energy Star qualified heat pump or solar water heaters, consult NHD.

1) Heating. A furnace inside conditioned space will be a sealed-combustion unit.

2) Cooling. Thermal Expansion valves are required.

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| **EQUIPMENT** | **NORTHERN NEVADA** | **SOUTHERN NEVADA** |
| Conventional Forced Air  Furnace | 92 AFUE | 90 AFUE |
| Split System Central A/C and Air Source Heat Pumps up to 135,000  BTuh | 13 SEER | 14.5 SEER or 8.2 HSPF  or 12 EER |
| Combination Space  Heating/Water Heater | 80 CAafue | 80 CAafue |

AFUE – Annual Utilization Efficiency SEER – Seasonal Energy Efficiency Rating

EER – Energy Efficiency Ratio HSPF – Heating Seasonal Performance Factor

CAafue – Combined Appliance AFUE, *for integrated systems that use the water heater to also provide heat this is the recovery efficiency of the water heater.*

less/100 square feet of living space

3) Thermostats. Seven day programmable with setback capabilities for wake, day, evening and night settings. Not required for senior housing units. For senior housing units, thermostats with large display settings are preferred.

4) Ventilation. Meet ASHRAE Standard 62.2 Ventilation for Acceptable Indoor

Air Quality.

5) Return Air. Transfer grills or jump ducts at bedrooms in units with 2 or more bedrooms unless served by return balancing air duct or if pressure difference with door closed and air handler running is 3 pascals or less.

6) Hot Water. Energy Factor 0.61, water heaters inside conditioned space of the dwelling unit will be power vented or direct-power vented unit. The Energy Factor (EF) for gas water heaters may be found at [http://ari.org/CONTENT/GAMAICRCertification\_581.aspx.](http://ari.org/CONTENT/GAMAICRCertification_581.aspx) A water heater with an EF of 0.58 with an insulating blanket of R12 also meets the requirement.

7) Ceiling Fans. Energy Star Rated reversible ceiling fans in all dwelling units. C. Building Envelope

Minimum Efficiency must be equal to or greater than required minimum below or the

IECC code in effect at the time of construction, whichever is greater.

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| **COMPONENT** | **NORTHERN NEVADA, LAKE TAHOE AND RURAL NEVADA** | **SOUTHERN NEVADA** |
| Attic/Ceiling | R38 | R30 |
| Walls | R 22 / R 24 in Lake Tahoe | R15 |
| Band Joists | R 22 / R 24 in Lake Tahoe | R15 |
| Floors Over Crawl Spaces | R30 | R15 |
| Slab Foundations | R10 Perimeter Insulation | N/A |
| Windows | Energy Star Qualified | Energy Star Qualified |
| Air Infiltration | Meet the Energy Star v 2.5 air infiltration requirement. Complete the Energy Star Thermal Bypass Inspection List | Meet the Energy Star v  2.5 air infiltration requirement. Complete the Energy Star Thermal Bypass Inspection List |

unconditioned spaces must be airtight (i.e., ICAT fixtures).

2) Appliances. The below must be Energy Star labeled. a. Refrigerators

b. Dishwashers

c. Clothes Washers

3) Hot Water Conservation.

a. Showerheads. Use 2.5 gallons per minute or less. b. Bath Faucets. Use 2.0 gallons per minutes or less.

4) Quality Assurance. Must meet Energy Star Version 2.5 quality installation requirements. During project construction, each unit type (i.e., floor plan and location in building) will be inspected and tested as a quality assurance measure until two consecutive units of this model type meet testing requirements. At this point, testing on this unit type can be reduced to a sampling rate of 1 in 7, or

15%.

D. Mechanical Systems. Test all systems for proper installation and operation.

1) Heating. Proper installation will be verified.

2) Cooling. Thermostatic Expansion Valve verified (if installed).

3) Duct Leakage. Verified by pressure testing.

3) Thermostats. Verified by inspection.

4) Ventilation. Verified by testing and inspection.

5) Return Air Balancing. Verified by inspection.

6) Hot Water. Verified by inspection. E. Building Envelope

1) Complete the Energy Star checklists, including Thermal Bypass Inspection

Checklist.

2) Ensure the insulation is at required levels, is installed properly and consistently.

3) Document NFRC rating on windows for required U-value and SHGC.

4) Ensure that Low E coatings on windows are installed on the correct surface.

5) Verified by Inspection during Construction: Attics, Walls, Band joists, Crawl

Space and Foundations, Slab Foundations, Windows.

6) Verified by Post Construction by Pressure Test: Infiltration.

7) Verified by Inspection Post Construction

a. Appliances (i.e., Refrigerators, Dishwashers, Clothes Washers). b. Hot Water Conservation (i.e., Showerheads and Faucets).