

Appendix E Voluntary Program – Silver State Sustainable Homes 2023

What is a Silver State Certified Sustainable Home?

A Silver State Sustainable Home (S3H) is designed and built to be environmentally sustainable. It is a green home that uses less energy, water and natural resources, creates less waste and is healthier for the people living inside compared to a standard home. A Silver State Sustainable certified home provides greater durability and lower maintenance costs. It is energy efficient and much more. It is also a high performing home in these other key areas: water use, materials and resource use, indoor air quality and site development. Homes are built to last decades and the operation and maintenance costs of a Silver State certified home will cost less than the standard home for its lifetime.

Key Features

- Voluntary Option
- Comprehensive and Credible
- Rigorous Yet Attainable
- Benefits Developers, Tenants / Occupants, Community
- Designed for Affordable Housing Developers in Nevada

For more information about S3H Contact **Barbara Collins, ERH West**, bcollins@erhwest.com, or Les Lazarek, Home Energy Connection, les@homeenergyconnection.com the Division Energy Consultants, with any questions.

New Construction Types

- Single-family Homes (including townhomes)
- Low-rise Multifamily (1-3 story buildings)
- Mid-rise Multifamily (4 -5 story buildings)

Certification Levels

- Tier 1 – Mandatory Measures plus 15 points, minimum 12 from Resource Efficiency and Site Development
- Tier 2 – Meet Tier 1 requirements plus 25 points from any category
- Tier 3 – Meet Tier 1 requirements plus 50 points from any category

S3H CHECKLIST

Plan Review Mandatory Measure

Plan Review	Building plans are reviewed and analyzed pre-construction to verify compliance with requirements. Design team meets with certifier to discuss plans and path to certification.
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Operations and Maintenance Manual Mandatory Measure

Operations and Maintenance Manual	A manual that covers operation and maintenance of equipment and building systems shall be provided to the building owner or property management.
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Energy Efficiency Mandatory Measures

Energy Performance Modeling	Energy modeling using nationally approved building energy use simulation software is done on each unique dwelling type based on type, size and location in a project, using worst case Orientation building for energy use. Minimum performance shall meet Energy Star Homes v3.1 or Multi-Family v1.1
Mechanical Equipment	
HVAC System Sizing	ACCA Manual J/S or equivalent required
Return Air Balancing System	In dwelling units with ≥ 2 bedrooms, pressure difference with bedroom door closed and air handler running is < 3 pascals
Air source heat pump	Climate Zone 3 ≥ 15.2 SEER2; (16 SEER), 7.8 HSPF2 Climate Zone 5 ≥ 14.3 SEER2 (15 SEER), 8.1 HSPF2
Conventional Forced Air Furnace, Natural gas / propane, Aqua therm system	Climate Zone 3 ≥ 90 AFUE Climate Zone 5 ≥ 92 AFUE
Split System Central A/C, Aqua therm system	Climate Zone 3 ≥ 15.2 SEER2 (16 SEER) Climate Zone 5 ≥ 14.3 SEER2 (15 SEER)
Thermostatic Expansion Valves	Required
Thermostat	Programmable
HVAC System Location	HVAC air handler and duct distribution systems located within the thermal and air barrier boundary
HVAC System Leakage	< 6 cfm or less/100 sq ft living space leakage to outside.
Combination Space Heating/Water Heater	Natural Gas $\geq 80\%$ Recovery Efficiency ; 0.81 Energy Factor, Electric ≥ 2.2 Energy Factor
Water Heater Only	Energy Star Certified or equivalent Residential Tank, Natural gas / propane \geq 0.81 Uniform Energy Factor (UEF) Tank Electric ≥ 2.2 UEF Commercial Tank, Natural gas / propane \geq 0.86 UEF Electric ≥ 2.2 UEF

Spot Ventilation and Mechanical Fresh Air Ventilation System	Ventilation equipment shall be Energy Star, high efficiency, low sone.
Plumbing Fixtures	
Showerheads	Use < 2.0 gallons per minute
Faucets	Use < 1.5 gallons per minute
Building Envelope	
Insulation Levels	Minimum required insulation levels for attics/ceilings, walls, band joists, floors over unconditioned space and slab foundations, must be equal to or greater than IECC code
Air Sealing and Insulation Installation Inspections	Pre-drywall inspections of air sealing and insulation installation required. Insulation installation must achieve RESNET Grade 1
Air Infiltration	Building envelope shall be pressure tested with blower door at finish and meet code requirement
Windows	Climate Zone 3 \leq U-value 0.28; SHGC 0.23 Climate Zone 5 \leq U-value 0.25; SHGC 0.40
Lights and Appliances	
Lighting	100% of interior light fixtures shall be Energy Star qualified LEDs or equivalent
Appliances	These appliances, if installed, shall be Energy Star: Refrigerator, Dishwasher, Clothes Washer, Clothes Dryer
Ceiling fans	Shall have high efficiency motors with minimum performance of 100 cfm/watt at medium speed.

On-Site Renewable Energy Ready	
Solar Energy Ready	<p>When renewable energy is not installed in project construction, design and build the project so that it will readily accommodate the installation of solar photovoltaic panels. Project must meet one of the following</p> <ol style="list-style-type: none"> 1. DOE Zero Energy Ready Home PV-Ready Checklist 2. CalGreen, Section 110.10.b Requirements for Solar Ready Buildings Required with Renewable Power Contracts 3. Provide conduit from all reasonably predictable energy producing devices to the electrical room. Size accordingly. Make spatial provisions for required devices, e.g. inverters, meters, switchgear, disconnects. Locate rooftop mechanical equipment to allow efficient layout for panels

Extra Points	
Renewable Energy	
Renewable Energy Installation 4 points for 5% of project's annual electrical energy demand. 1 point for each additional 1%	Design and install solar photovoltaic energy to meet portion of energy demand for project.
All Electric Construction 18 points	All equipment used in the building is electric
Renewable Power Contract 10% =1 point, 20% = 2 points 30% = 3 points, 40% = 4 points	Provide at least 10% of the project's total energy consumption through renewable energy sources by contracting to purchase green power for at least two years
Energy Performance Improvement Path 1% = 1 point	Energy Performance Improvement over IECC 2018, cannot be used with Prescriptive Improvements.

Prescriptive Improvements	
Air Infiltration 2 points	Maximum ACH/50 Climate Zone 3 ≤ 3 Climate Zone 5 ≤ 4
Energy Recovery Ventilator 1 point	Install Energy Recovery Ventilator to provide mechanical ventilation
Whole Building Lighting 2 points	All exterior area lighting, high efficacy
Air Source Heat Pump 1 SEER increase = 1 point each	Install air source heat pump that exceeds mandatory efficiency specification
Mini-Split heat pump 1 SEER increase = 1 point each	Install air source mini-split heat pump that exceeds mandatory efficiency specification
Heat Pump Water Heater 4 points	Install Energy Star qualified heat pump water heater
Tankless Water Heater 2 points	Install Energy Star qualified tankless water heater with recirculating pump
Central Boiler, Natural Gas 2 points	Install high efficiency commercial boiler in central system $\geq 94\%$ Thermal Efficiency
Conventional Forced Air Furnace Natural Gas / propane 1 point	Climate Zone 3 ≥ 92 AFUE Climate Zone 5 ≥ 96 AFUE
Reduced glazing, 4 points for 15%. 1 point for each additional 1% reduction, up to a maximum of 8 points	Reduce to amount of heat gain from glazing (windows and glass doors) to a less than or equal to 15% of the exterior wall adjacent to conditioned space, including floor, ceiling and interstitial space.
Solar ready carports, 1 point per 10 carports, no maximum	Provide solar photovoltaic structurally ready carports, including electrical conduit from structure to back of curb/sidewalk
Astronomic timeclock for exterior lighting control, 1 point	Climate zone 3, provide a timeclock capable of setting longitude/latitude zones for more accurate on/off, set to approximately 15 minutes before sunrise and 15 minutes after sunset, locally.
Cocoon attic insulation, 4 points	Climate 3, install insulation against roof sheathing and eliminate attic ventilation
Foam Board Insulation Sheathing, 2 points	Foam board sheathing on exterior walls: Climate Zone 3 $\geq R-4$ (nominal) Climate Zone 5 $\geq R-5$ (nominal)

Water Efficiency Mandatory Measures

Plumbing Fixtures	
Toilets	WaterSense; use < 1.28 gallons per flush
Showerheads	Use < 2.0 gallons per minute
Faucets	Use < 1.5 gallons per minute
Appliances	
Dishwashers & Clothes Washers	Dishwashers and clothes washers must be Energy Star

Extra Points

WaterSense hot water distribution 3 points	Design and install water system that meets the WaterSense volume limit for hot water distribution for central boiler systems
Xeriscaping 3 points	90% of landscape plants are drought tolerant per the Southern Nevada Water Authority (S Nevada) or the Truckee Meadows Water Authority (N Nevada)
Drip Irrigation 2 points	Drip or subsurface irrigation systems is installed for all landscape areas requiring irrigation
Limit Turf 2 points	Total drought tolerant area in landscape < 20% (no artificial turf)
Natural Mulch 2 points	≥ 2 inches of air and water permeable natural mulch (no rubber or artificial mulch) is installed over all no-turf vegetation areas, weed barriers must be air and water permeable.
Irrigation Controller 2 points	Install a WaterSense irrigation controller

Indoor Air Quality Mandatory Measures

Mechanical Ventilation	Meet ASHRAE Standard 62.2 Ventilation for Acceptable Indoor Air Quality which includes whole house, continuous mechanical ventilation plus spot exhaust ventilation in kitchens, baths and laundry spaces. High efficiency, low sone exhaust fans are required.
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Combustion Appliances inside conditioned space	Power vented or direct-power vented unit. No natural draft combustion appliances in conditioned space.
Radon Mitigation	In EPA Zone 1 areas, passive radon-resistant features below the slab and a vertical vent pipe with junction box within 10 feet of an electrical outlet shall be installed.
Interior wall paint	Low Volatile Organic Compound (VOC) paint shall be used for interior walls. Paint shall comply with VOC limits in Table 1 of the CARB Suggested Control Measure for Architectural Coatings.

Extra Points

HVAC System Protection 1 point	Ducts covered during construction, with tape, plastic, sheetmetal or other methods from rough-in to finish.
High MERV air filter 13 = 1 points 16 = 2 points	Install MERV 13 or higher air filter in HVAC, adequate air flow design details in plans.
Low VOC Insulation 2 points	Thermal Insulation installed meets UL GreenGuard Gold low VOC or equivalent.
Low VOC kitchen and bath cabinets 3 points	Kitchen and bath cabinets meet CARB Composite Wood Air Toxic Contaminant Measure Standard or equivalent.

<p>Hard Surface Flooring Systems 3 points</p>	<p>Hard surface flooring meets one of the following: 1.Products certified under UL GREENGUARD Gold 2. Certification under the Resilient Floor Covering Institute (RFCI) FloorScore program.</p>
<p>Low VOC carpet, cushion and adhesive 2 points</p>	<p>Carpet, carpet cushion and carpet adhesives shall meet the testing and product requirements of one of the following: 1. Carpet and Rug Institute’s Green Label Plus Program 2. California Department of Public Health, “Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers,” Version 1.1, February 2010 (also known as Specification 01350). 3. NSF/ANSI 140 at the Gold level 4. Scientific Certifications Systems Indoor Advantage™ Gold. Carpet cushion installed in the building interior shall meet the requirements of the Carpet and Rug Institute’s Green Label program.</p>
	<p>Green Label Program</p>
<p>Composite Wood Products 3 points</p>	<p>Composite Wood Products Hardwood plywood, particleboard and medium density fiberboard composite wood products used on the interior or exterior of the building shall meet the requirements for formaldehyde as specified in the CARB Air Toxics Control Measure for Composite Wood</p>

Moisture Content of Building Materials 1 point	Building materials with visible signs of water damage not to be installed. Wall and floor framing not to be enclosed when the framing members exceed 19% moisture content
No Smoking Policy 3 points	Agreement to establish a no-smoking policy for project (including all indoor common areas, units, and balconies/patios) and within 25 feet of buildings and include a non-smoking clause in the lease for each household.
Energy Recovery Ventilation System 2 points	Install Energy Recovery Ventilation System

Resource Efficiency – No Mandatory Measures

Extra Points

Construction Waste Management 60% = 2 point 75% = 3 points	Non-hazardous construction waste is recycled: Recycle 60% of three items below Recycle 75% of three items below Cardboard, concrete, wood, drywall, asphalt and metals.
Recycling Station for Occupants 2 points	Provide readily accessible station/dumpster on site for recycling, must include paper, cardboard, glass, plastics (#1 #7), and metals.
Recycle Bins 2 points	Recycle bins adjacent to other waste receptacles in common areas and walkways.

<p>Building Materials With Recycled Content 2 points per component</p>	<p>Use materials with 25% recycled content value for a minimum of 75% of the total value of the building component, based on estimated cost of materials on the project.</p> <p>Insulation Framing Sheathing Flooring Roofing Siding Concrete (may use fly ash or slag for recycled content)</p>
<p>Sustainably Harvested Wood 3 points</p>	<p>All wood in the building must be certified by the Forest Stewardship Council, or equivalent.</p>

Site Development – No Mandatory Measures

Points

<p>Walkability, 3 points</p>	<p>The site (or designated center of scattered-site projects) is within 1/2 mile from 3 or more of the following: grocery, pharmacy, bank, school, parks, community centers, medical facilities, library, place of worship, post office (day care facilities not applicable for Senior Housing projects)</p>
<p>Infill Site, 3 Points</p>	<p>The project is on an infill site with existing infrastructure such as roads, water and sewer connections, etc. and the site boundary is adjacent to existing development on at least one side.</p>

<p>Wellness/Exam Room 2 point</p>	<p>Provide a room for tenants to see medical professionals for routine wellness services and exams</p>
<p>Shuttle Bus Service 2 points</p>	<p>Provide shuttle service to occupants a minimum of 1 day per week for transportation to appointments and shopping</p>
<p>Transit Access 2 points</p>	<p>Project is located within $\frac{1}{2}$ mile of existing or planned transit service</p>
<p>Outdoor Amenity 2 points</p> <p>With Shade, 4 points</p>	<ol style="list-style-type: none"> 1. Picnic area equipped with, for every 100 units, a minimum of three charcoal or gas barbeque units and one 6' picnic table with benches on separate concrete slabs no less than 200 square feet evenly distributed throughout the project. 2. Provide shade tree or shade structure for picnic areas.
<p>Computer/Study Room 2 points</p>	<p>Computer/study room with full Internet access that is a minimum of 100 square feet and is equipped with at least one computer for every 20 units. (meet QAP requirements)</p>
<p>Recreation Areas 2 points</p>	<p>Install two recreation areas from the following: Shuffle Board, Horseshoe Pits, Sand Volleyball Court, Pool Table, Piano, or Dog Park (meet QAP requirements) adult exercise stations</p>
<p>Electric Vehicle (EV) Charging 2 points / station</p>	<p>Install Level 2 electric vehicle supply equipment (EVSE) in EV designated parking space</p>

<p>Electric Vehicle (EV) Charging with Renewable Power 4 points / station</p>	<p>Install Level 2 electric vehicle supply equipment (EVSE) in EV designated parking space. Charger energy supplied by renewable energy source.</p>
<p>Electric Vehicle Charger Ready 1 point / space</p>	<p>Install EV charging infrastructure in designated EV parking space</p>
<p>Heat Island Mitigation 3 points 2 points/25% additional covered parking</p>	<p>Do one of the following 1. Install reflective paving with a Solar Reflectance Index (SRI) of at least 29. 2. Provide covered parking (with light colored top) where not required by development code. Minimum of 50% of the spaces.</p>
<p>Tree Canopy 1 point each additional 10% increase</p>	<p>Exceed local jurisdiction code requirements for tree canopy</p>
<p>Light Pollution Reduction 2 points</p>	<p>Reduce light pollution by using full cutoff exterior lighting and using downlighting only</p>