

City of Santa Cruz Residential Green Building Guideline

Guideline for
Residential New Construction Checklist
and
Residential Additions and Alterations Checklist



January 1, 2022

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Introduction to the City of Santa Cruz Green Building Program

The City of Santa Cruz continues to take a leadership role to ensure development in Santa Cruz is sustainable, practical, and achievable. Green building is quality design and construction that:

- Minimizes environmental impact
- Conserves and effectively utilizes natural resources and energy
- Provides a healthy living and workspace environment
- Reduces maintenance, utilities, and operating costs.

The City of Santa Cruz Green Building Program Has Been Updated

The California Building Standards Commission adopted the first mandatory statewide *Green Building Standards Code* (CALGreen), which went into effect on January 1, 2011. The mandatory CALGreen requirements preface the updated City of Santa Cruz's Green Building Program and the City's Building Department is responsible for enforcing them. In addition to mandatory measures required by CALGreen, there are additional City green building measures from which applicants are required to choose to obtain their building permit.

All measures are described in the updated Santa Cruz Green Building Guidelines and associated Green Building Checklists. Some features of the updated program include:

- Highlighted CALGreen mandatory requirements for ease of identification that ensure your project complies with CALGreen.
- Updated user-friendly program Guidelines and Checklists.
- Continued use of a flexible point system to achieve building permits (required), prioritized permit processing (optional), Green Building Certificate (optional), or Green Building Plaque for Exceptional Design (optional).



How to Use the Residential Green Building Guidelines and Checklists

These Guidelines are for developers, builders, and homeowners planning to construct a new residential project or addition/alteration for a Residential project in the City of Santa Cruz. The Guidelines provide step-by-step guidance for compliance with the Green Building program requirements. The Guidelines assist in completion of the Residential New Construction Checklist and the Residential Addition/Alteration Checklist and provide resources to help achieve (or exceed) compliance with the program.

The Residential New Construction Checklist and the Residential Addition/Alteration Checklist are available in hard copy and electronic format as Microsoft Excel documents. The Excel document calculates the point totals associated with selected green building measures. All program documentation can be downloaded from the City's [Green Building Program](http://www.cityofsantacruz.com/greenbuilding) webpage.

A Microsoft Excel version of each Green Building Checklist can be downloaded at:
www.cityofsantacruz.com/greenbuilding



Compliance Requirements for Residential New Construction and Additions/Alterations

The Green Building Program applies to all Residential and Nonresidential projects within the City of Santa Cruz and includes compliance standards (per the [City of Santa Cruz Green Building Regulations, Chapter 24.15](#)) for the following:

- All new Residential construction¹.
- Residential additions² and alterations 350 square feet or more³.
- Residential projects that are single-family or multifamily residences.
- Residential and Nonresidential (Mixed-Use) will be considered separately. A mixed-use project with ground level commercial space and Residential space above will use the Nonresidential Checklist for the Nonresidential ground level space and the Residential Checklist will be used for the residential space.

Permit applicants choose from the Checklist of green building measures, and each green building measure has an assigned point value. Applicants need to meet a minimum number of points for receipt of a building permit or other optional levels of action such as Prioritized Permit Processing or a Green Building Award Certificate. Compliance is measured by the total points selected by the applicant and points are verified by building inspectors during the inspection process.

The project must meet a minimum number of points for the following levels of action:

1. **Receipt of a building permit (mandatory).** *All projects must meet a calculated minimum number of points to receive a building permit.*
2. **Prioritized permit processing (optional).** Upon review and approval by all required departments, priority is given to building permit issuance by expediting standard processing timelines. Inter-departmental review time is not reduced.
3. **Green Building Award Certificate (optional).** Projects receive a Green Building Award Certificate and prioritized permit processing.
4. **Green Building Plaque for Exceptional Design (optional).** Projects receive a Green Building Plaque and recognition by the City of Santa Cruz City Council and prioritized permit processing.

Permit applicants must complete an Index of Selected Green Building Measures to include it on the cover of the project's Building Plans.

As part of the permit application process, applicants must complete an *Index of Selected Green Building Measures* (Index) summarizing selected measures and include the Index on the cover of the building plans with selected measures identified on the plan set. Projects are required to implement the green measures identified in the Index. The Index serves as the basis of compliance and the measures are verified by building inspectors. Projects must successfully pass the final point verification during the final inspection process. When the project is completed and the required Green Building measures are implemented and verified, occupancy will be granted.

¹ Construction of a detached unit on property with existing dwellings is considered new residential construction.

² Addition represents an extension or increase in floor area of an existing building or structure.

³ Stand-alone decks less than 350 sf and non-habitable residential structures less than 1,000 sf are exempt from green building requirements.

STEP 1: Determine the Point Requirements for Your Project

Residential New Construction Projects

Calculating Point Requirements

1. Calculate project square footage (building footprint + decks + porches).
2. Calculate the required points for each Action Level using the Point Calculation Table below (or use the Microsoft Excel Checklist to automatically calculate points). Enter square footage of project (A). Perform calculations B and C. Multiply by the appropriate multiplier for the desired level of action (e.g., permit issuance, prioritized permit processing, Green Building Award Certificate, or Green Building Plaque for Exceptional Design) to calculate D, E or F. Add to D, E or F the indicated number for the desired level of action to calculate total required points for the level of action.
3. Exceeding the minimum point requirements by 15-20% is recommended to allow for project modifications.

Residential New Construction Point Calculations	Value
Square feet (A) =	
Value used to determine additional required points (B) = A – 350	
Points per 100 square feet (C) = B ÷ 100	
Permit Issuance Multiplier (D) = C X 1.5	
Prioritized Permit Processing Multiplier (E) = C X 2.5	
Green Building Award Certificate Multiplier (F) = C X 3.5	
Permit Issuance (Required Points) = D + 20	
Prioritized Permit Processing (Optional) = E + 45	
Green Building Award Certificate (Optional) = F + 75	
Green Building Plaque for Exceptional Design (Optional) = (F + 75) X 1.2	

Non-habitable structures may be approved with a lower point requirement or may be exempt from program requirements. Non-habitable structures are detached or attached structures, which are incidental to the main dwelling unit and do not have living quarters (e.g., kitchen, bathroom, living room or bedroom) and does not meet the California Building Code requirements for habitable space. Habitable structures meet Building Code requirements for habitable space that protect health and safety.

Residential New Construction Compliance Standards

The following table is from the City of Santa Cruz Green Building Regulations ([Chapter 24.15](#)) and explains the required points for residential new construction projects.

New Construction Compliance Standards		
Action Level	Points Required to Receive Action	
	First 350 sq. ft. ¹	Each Additional 100 sq. ft.
R-N-1. Building Permit Issuance	20	1.5
R-N-2. Prioritized Building Permit Processing	45	2.5
R-N-3. Green Building Award Certificate	75	3.5
R-N-4. Green Building Plaque for Exceptional Design ²	20% above minimum Green Building Award requirement	

¹Decks less than 350 square feet and non-habitable residential structures of less than 1,000 square feet are exempt.

²Exceptional Design is determined by the principal planner, building official or their designee. The project is eligible for a Green Building Plaque that may be displayed on the structure and is recognized by the City of Santa Cruz.

Residential Addition/Alteration Projects

Calculating Point Requirements

1. Calculate project square footage (footprint of addition + all alterations + all affected decks and porches).
2. Calculate the required points for each Action Level using the Point Calculation Table below (or use the Microsoft Excel Checklist to calculate points). Enter square footage of project (A). Perform calculations B and C. Multiply by the appropriate multiplier for the desired level of action (e.g., permit issuance, prioritized permit processing, Green Building Award Certificate, or Green Building Plaque for Exceptional Design) to calculate D, E or F. Add to D, E or F the indicated number for the desired level of action to calculate total required points for the level of action.
3. Exceeding the minimum point requirements by 15-20% is recommended to allow for project modifications.

Non-habitable structures may be approved with a lower point requirement or may be exempt from program requirements. Non-habitable structures are detached or attached structures, which are incidental to the main dwelling unit and do not have living quarters (e.g., kitchen, bathroom, living room or bedroom) and does not meet the California Building Code requirements for habitable space. Habitable structures meet Building Code requirements for habitable space that protect health and safety.

Residential Addition/Alteration Point Calculations	Value
Square feet (A) =	
Value used to determine additionally required points (B) = $A - 350$	
Points per 100 square feet (C) = $B \div 100$	
Permit Issuance Multiplier (D) = $C \times 1.1$	
Prioritized Permit Processing Multiplier (E) = $C \times 1.9$	
Green Building Award Certificate Multiplier (F) = $C \times 2.5$	
Permit Issuance (Required Points) = $D + 15$	
Prioritized Permit Processing (Optional) = $E + 35$	
Green Building Award Certificate (Optional) = $F + 45$	
Green Building Plaque for Exceptional Design (Optional) = $(F + 75) \times 1.2$	

Residential Addition/Alteration Compliance Standards

The following table is from the City of Santa Cruz Green Building Regulations ([Chapter 24.15](#)) and explains the required points for residential addition/alteration projects.

Addition/Alteration Compliance Standards		
Action Level	Points Required to Receive Action	
	First 350 sq. ft. ¹	Each Additional 100 sq. ft.
R-R/A-1. Building Permit Issuance	15	1.1
R-R/A-2. Prioritized Building Permit Processing	35	1.9
R-R/A-3. Green Building Award Certificate	45	2.5
R-R/A-4. Green Building Plaque for Exceptional Design ²	20% above minimum Green Building Award requirement	

¹Exception: no points required for additions or alterations less than 350 square ft. or decks less than 350 square ft.

²Exceptional Design is determined by the principal planner, building official or their designee. The project is eligible for a Green Building Plaque that may be displayed on the structure and is recognized by the City of Santa Cruz.

Requirements for Residential Multifamily Projects

Your project is Residential Multifamily if it has one or more of the following characteristics:

1. Housing units have shared utility meters, **or**
2. Project has common space (e.g., community rooms, lobbies, meeting rooms, central laundry, or
3. Project has three or more housing units included within the same building envelope.

If your project qualifies as Residential Multi-Family, there are three methods for determining the square footage for the points calculation:

1. The square footage of the largest unit if all fixtures in all the units are similar, **or**
2. The average square footage of the units provided the fixtures in all units are similar, and the largest unit is not more than 25% larger than the rest of the units being averaged, **or**
3. The square footage of each unit type if each unit is to be considered separately.

STEP 2: Review and Complete the Green Building Checklist

Review the checklist for green building measures that should be considered for integration **as early as possible in the project, during the planning stage**, well in advance of permit application. There are separate Checklists for residential new construction projects and residential addition/alteration projects. For additional information and instructions, be sure to review the *Intent* statements associated with the measures.

Exceeding the minimum point requirement by 15-20% is recommended to allow for project modifications.

For ease of reference, each Checklist includes mandatory measures (including CALGreen mandatory measures) highlighted at the beginning of each category. The following table summarizes the mandatory CALGreen residential measures.

STEP 3: Complete the Index of Selected Green Measures

After completion of the Checklist, include your selected green measures in an *Index of Selected Green Measures* on the cover of the plans submitted for your permit application. The Index must include the point category, features, points, and plan page number. See the following table for an example of an *Index of Selected Green Measures*. The Index must be cross-referenced on the plan page with callouts specific to the green measure location, application, utilization, or installation. The points for your project will also be reviewed during the plan check process.

EXAMPLE Index of Selected Green Measures		
Category and Measure	Points	Plan Page
A. Green Design for Planning Stage		
M1. 4.201.1 - Meet CA Energy Code Minimum Standards: Title 24	M	A-2
A7. No Garage or Construct Detached Garage or Carport	2	A-1
B. Site		
M1. 4.106.2 - Develop & Implement Storm Water Drainage Plan During Construction	M	L-1
M2. 4.106.3 - Grading and Paving	M	L-1
M3. 4.304.1 - Meet City of Santa Cruz Water Efficient Landscaping Ordinance	M	L-1
M4. 4.408.1 - Construction Waste Management	M	L-1
B14. Provide Rainwater Catchment System	3	L-1
↳ Number of Gallons (1 Point per 100 Gallons; 10 Points Maximum)	300	
B15. Utilize Permeable Paving for ≥ 25% of Non-Structural Site Paved Area	3	L-1
C. Foundation		
M1. 4.505.2 - Install Vapor Retarder & Capillary Break at Slab on Grade	M	S-1
C2. Reduction in Cement Use	6	S-1
C4. Foundation Drainage System	7	S-1
D. Structural Frame		
M1. 4.406.1 - Protect Annular Spaces Around Openings in Plates at Exterior Wall	M	S-2
M2. 4.505.3 - Check Moisture Content of Building Materials Before Enclosure	M	S-2
D4.1. Use FSC-Certified Wood for All Dimensional Lumber, Studs, and Timber	10	S-2
D6. Use Steel Interior Web Trusses	2	S-2
D13.1. Design Using 2' Modules: Length	2	S-2

STEP 4: Implement Green Measures Selected and Pass Inspections

Implementation of the measures on the *Index of Selected Green Building Measures* must be verified via inspections by city staff. Minor measure substitutions are allowed provided they are at least equal in merit to the original measures indicated on the plans. Major changes require re-submittal in writing for approval/verification by the Building Department.

The Index is the basis of compliance. The inspectors will verify compliance with CALGreen and City of Santa Cruz mandatory requirements. The following are examples of measures that would be inspected during the site/foundation inspection, underfloor frame inspection, frame/insulation (close-in) inspection, and the final inspection. These inspections must be successfully passed prior to concealing work or proceeding to the next phase of the project.

Grading/Site – Verify Grading and Site Development:

- (B. Site) SWPPP and BMP's measures in place and functional
- (B. Site) Verify 65% minimum construction waste management and diversion (required)

Foundation – Prior to placing foundation concrete:

- (C. Foundation) Verify reduction in foundation concrete by the percentage specified

Underfloor/Underslab – Prior to covering under slab or under-floor work:

- (C. Foundation) Verify vapor retarder and capillary break for slab on grade are in place
- (C. Foundation) Verify vapor barrier and sump pump are placed in under floor crawlspace

Framing (Close in) – Prior to concealing work in walls and ceilings:

- (D. Structural Frame) Verify all annular spaces around pipes, conduits, cables and exterior openings are sealed
- (D. Structural Frame) Verify moisture content of building materials before enclosure

Final Inspection – Prior to Certificate of Occupancy issuance:

- (N. Indoor Air Quality and Finishes) Verify the use of low or no-VOC-emitting paints, sealants, and finishes
- (B. Site) Verify installation of soil moisture or weather-based landscape irrigation controllers
- (O. Flooring) Verify finished concrete for 50% of flooring

Projects must successfully pass the final measure and point verification during the final inspection process. If the project does not pass final inspection, the permit holder must remedy the deficiencies, or occupancy will be denied until inspection is successful

City of Santa Cruz Green Building Program

Green Building Measures Guidance and Intent Statements



A. Green Building Design Measures for Planning Stage

The most effective way to include any quality building measures into a project is by concentrating on quality results early in the design process. By establishing benchmarks of performance and incorporating sustainable features in the project from the outset, the impact on the environment is minimized and the project will be cost-effective.

4.201.1 - Meet Minimum Energy Standards of the California Energy Code (Title 24, Part 6)

Intent: Energy efficiency is the cornerstone of every green home. Improving energy efficiency is one of the most effective ways of reducing energy costs, improving air quality, and reducing greenhouse gas emissions.

Design Smaller Homes – Single-Family Only

Refer to the Home Size Table below. Decks and porches are included in the square footage.

Intent: Building smaller homes conserves resources, lowers energy consumption, and preserves open space. Clearly show the number of bedrooms and the conditioned floor area on the cover sheet of the plans.

Area of Home (Square Feet)	Home Size Table					
	Number of Bedrooms					
	1	2	3	4	5+	Points
	970	1510	2050	2810	3080	0
	900	1400	1900	2600	2850	1
	830	1300	1760	2400	2640	2
	770	1200	1630	2230	2440	3
	710	1110	1500	2060	2260	4
	660	1030	1400	1910	2090	5
	610	950	1290	1770	1940	6
	560	870	1190	1630	1790	7
	520	800	1090	1490	1650	8
	480	730	990	1360	1510	9
	440	660	900	1230	1380	10

Pre-Construction Kickoff Meeting with Green Building Specialist

Contact the Santa Cruz Green Building Specialist to schedule a time for a meeting.

Intent: Increase effective communication and the level of awareness of the green features.

Include Certified/Accredited Green Building Project Staff:

1. Designer
2. Builder
3. Management

Provide certification/accreditation. Certifications/accreditations must be currently active to receive credit.

Intent: Having experienced, accredited professionals on staff helps ensure that the designated green features for the project are understood and implemented properly.

Certified Energy Analyst (CEA) to Complete Title 24 Compliance Documentation

Have a current Certified Energy Analyst complete the Title 24 compliance documentation and include their active certification number. Residential CEAs must have an "Active-Current" designation and can be found in the following link: [Search All Residential CEAs - CABEC.org](https://www.cabec.org/search-all-residential-ceas)

Intent: The *California Energy Code* becomes increasingly complex and stringent with each code cycle update; having a qualified professional assess the energy-related components and requirements in the design phase provides long-term benefits to the project.

Design Project Without Fencing or With Eco-Friendly Fencing

Note on site plans. Examples of eco-friendly fencing include, but are not limited to the following: living fences, reclaimed wood, recycled content, bamboo, and FSC-certified materials.

Intent: Discourage temporary plastic fencing which has a limited use before needing to be discarded in the landfill and reduce the need to produce virgin materials.

No Garage or Construct Detached Garage or Carport

Locate the detached garage or carport on the plans and the plot map. Projects without garages are eligible to receive credit.

Intent: Garages contain toxic gases released from cars, paints, power tools and other typical household goods. Separating the garage from the house, or constructing a carport, prevents pollutants from entering the home and degrading the indoor air quality.

No Fireplace / Remove Existing Fireplace

Locate existing fireplace/s in demolition plans. Only applies to Single-Family projects.

Intent: Fireplaces provide an inefficient way to heat a building, can harm indoor air quality, and are a weak point in the building envelope for thermal heat loss. Masonry chimneys are prone to collapse, even when built to modern standards.

All-Electric Building or Renovation

Specify in the plans and provide the manufacturer's specifications. Renovations must remove natural gas infrastructure, appliances, and cap gas to the property, including the removal of the gas meter. Buildings that are all-electric before permit submittal do not qualify for this credit.

Intent: All-electric buildings powered by clean energy help to reduce greenhouse gas (GHG) emissions and limit our dependency on non-renewable energy sources.

Residence Entry Views

Illustrate at least one of the following in the elevations: clear sidelight windows or tall windows with low sill heights, doors with integrated clear windows, upper and lower peepholes with a minimum viewing height for the lower peephole at 32 inches, or video doorbell, security camera, or similar device.

Intent: Promote safety and social interaction through casual neighborhood observation.

Full-Function Independent Unit

Include an independent, detached rental unit in the single-family project. Must be a fully functioning dwelling with a full bathroom, kitchenette (refrigerator, sink, cooktop, and stove), closet, and a private entrance. No entrance attached to the main house is permitted.

Intent: The unit is to be used as a source of neighborhood diversity and a secondary income, or to take care of elderly parents if needed.

B. Site

Integrated system design includes the surrounding environment as a necessary component of the building process. By being conscious of the existing flora and fauna on the building site, the water that runs on, under and away from the site, and the materials hauled away as garbage or recycling, the impact that construction has on our environment can be mitigated.

4.106.2 – Develop and Implement a Plan to Manage Storm Water Drainage and Retention During Construction

Construction plans shall indicate acceptable methods of implementation such as retention basins shown on site plan, filtering storm water to a public drainage system, best management practices such as silt fencing, inlet protectors, erosion control matting, straw wattles, etc..., and compliance with local storm water ordinances. Refer to the City's Storm Water Management Plan:

[Storm Water Management Plan | City of Santa Cruz](#)

Intent: Prevent flooding, damage to adjacent property and pollution from storm water runoff, by retaining soil on-site or by providing soil containment methods to prevent sediment from reaching storm water drainage systems and receiving creeks, streams, rivers, and lakes or the ocean.

4.106.3 – Grading and Paving

Construction plans shall indicate how the site grading or drainage system will manage all surface water flows to keep water from entering buildings. Examples of methods to manage surface water include, but are not limited to, the following:

1. Swales
2. Water collection and disposal systems
3. French drains
4. Water retention gardens
5. Other water measures which keep surface water away from buildings and aid in groundwater recharge.

Intent: Site design and proper installation of drainage systems will help builders protect structures from the dangers of flooding or subsurface water infiltration. This is especially important in areas where setbacks or obstacles interfere with proper surface drainage.

4.304.1 – Meet the City of Santa Cruz’s Water-Efficient Landscaping Ordinance

Residential developments shall comply with the local water-efficient landscape ordinance.

Intent: Reduce the use of potable water.

4.408.1 – Construction & Demolition Waste Management. 65% Recycle Rate Required

Complete the City’s Construction Waste Management Plan before permit issuance. Designate how and what materials will be recycled. Provide an index of materials to be recycled by type and volume and specify the final disposition of materials. Locate on the site plan where materials will be stored and classified throughout construction. Recycle and/or salvage for reuse a minimum of 65 percent of the nonhazardous construction and demolition waste. Waste tags must be provided to demonstrate compliance at the final inspection. Exceptions:

1. Excavated soil and land-clearing debris.

Intent: Construction waste diverted from landfills will help reduce landfill production of methane gas, a direct greenhouse gas. In addition, reusing and recycling materials typically results in less energy use than producing materials from virgin materials, conserving original resources and reducing the burden on landfills.

Recycle Job Site Construction & Demolition Waste. 65% Recycle Rate Required

- 70-79% Recycling Rate = 1 point
- 80-89% Recycling Rate = 2 points
- >90% Recycling Rate = 4 points

Provide an index of recyclable materials by type and volume and specify the final disposal of materials. Locate on the site plan where materials will be stored throughout construction. Waste tags must be provided to demonstrate compliance at the final inspection.

Intent: Promote recycling efforts and reduce pressure on landfills and the need to harvest new resources.

Topsoil Protection

Add notes and instructions to plans. Indicate the areas to be protected and the measures to be used to protect them such as mulch, chipped wood, straw, vegetative cover, tarps, etc.... Provide source verification for materials to be used. Removed topsoil should be stockpiled in designated areas and protected from erosion. Install fencing or clearly flag topsoil stockpile areas to protect them from construction activities. Heavy equipment or vehicle traffic is to be restricted to areas that will be paved.

Intent: Provides for conservation of topsoil as a natural resource, and methods to preserve soil quality and function.

Water-Efficient Landscapes

Provide at a minimum a landscape plan specifying and documenting the native and/or Mediterranean species and avoid all invasive plant species. Postconstruction landscape designs shall accomplish one or more of the following:

1. Areas disrupted during construction are restored to be consistent with native vegetation species and patterns.
2. Utilize at least 75 percent native California or drought-tolerant plant and tree species appropriate for the climate zone region.
 - a. List of Native and Mediterranean Plants:
 - i. [All Plants for Santa Cruz, CA \(Calscape.org\)](#)
 - b. List of Invasive Plants to Avoid:
 - i. [Invasive Plant Checklist for California Landscaping](#)

Intent: Planting with native species and hydro-zoning (placing plants that require similar amounts of sun and water in zones together) saves water.

Protect Water Quality with Landscape Design

Detail and locate in plans. Construct bio-retention or bio-filtration features on site. This includes routing downspouts through the landscape. Consider hiring a professional (such as a landscape architect, designer, or civil or geotechnical engineer) to help with design and sizing.

Intent: On-site bio-retention and filtration features capture runoff, reduce the volume of runoff discharged to the storm drain system at one time, and facilitate groundwater recharge through infiltration.

No Turf or Turf Less than 10% of the Total Lot Area Minus the Building Footprint

Note and show clearly on the plot map or site plan locations with alternative ground covers.

Intent: Reduce water, fertilizer, and pesticide use, and eliminate over-watering in hardscaped areas.

Reuse Materials/ Use Recycled Content Materials for Landscape Areas

Specify on plans the location and types of materials to be used (Example: use recycled plastics or composites for benches or edging, concrete debris as planters or pathways). Note on the plan page specific to the installation/ utilization location. This does not apply to fencing as it is covered by another measure.

Intent: Recycling and using recycled materials decrease the flow of waste to the landfill and minimizes the harvest of raw materials.

Roof Drainage

Add a note and specify the roof drainage system on the plans. Install gutter and downspout systems to route water at least 5 feet away from the foundation or connect to landscape drains that discharge to a dry well, sump, bioswale, rainwater capture system, or other approved location.

Intent: Reduce the risk of moisture-related damage by diverting rainwater away from the structure's foundation.

Exterior Door Protection

Exterior doors to the dwelling are covered to prevent water intrusion by one or more of the following:

1. An awning at least 4 feet in depth is installed.
2. The door is protected by a roof overhang at least 4 feet in depth.
3. The door is recessed at least 4 feet.
4. Other methods that provide equivalent protection.

Intent: Protect from water intrusion at exterior entries and openings from wind-driven rain.

Material Protection

Protect building materials delivered to the construction site from rain and other sources of moisture. Provide a narrative or set of instructions on the plans that adequately detail how this will be accomplished.

Intent: Reduce costs and waste by protecting building materials from moisture.

Rainwater Catchment System

Provide location, size, and details on plans for the onsite rainwater catchment system.

Rainwater catchment systems shall be designed and installed per the *California Plumbing Code*.

Intent: Storing water during the wet season decreases the demand for our water sources. Just one inch of rain on a 1,000-square-foot roof produces 600 gallons of runoff.

Utilize Permeable Paving for $\geq 25\%$ of Non-Structural Site Paved Area

Provide specifications and locate the area to be paved on the plan page specific to the installation location. At least 25 percent of the total parking, walking, or patio surfaces shall be permeable. Some examples of permeable surfaces include porous asphalt, pervious concrete, permeable pavers, grid pavements, and the inclusion of areas of grass or low-lying vegetation.

Intent: Permeable pavements allow air, water, and water vapor to permeate the material. As the surface temperature increases, the moisture evaporates and cools the surface through evaporative cooling.

Install Outdoor Solar (PV) Lights

Note the location(s) of the lights on the plans and provide the manufacturer's specifications.

Intent: Solar walkway lights store energy from the sun during the day for use at night. This conserves energy and resources. The lights should not be hard-wired.

Community Garden for Multifamily Projects

Locate on site plan and detail calculations that meet threshold for credit. Provide a community garden that accomplishes the following:

1. Grants permission to residents to grow produce in the community garden.
2. Located on-site and within 0.5 miles of all residences.
3. Minimum size of 4 square feet per unit and excludes pathways, storage and all other areas not available for planting.
4. Has sufficient solar access (minimum 8 hours per day), fencing, a water supply, and defined planting areas.

Multiple community gardens can be used to meet the criteria listed above.

Intent: Community gardens encourage community interaction, educate people about basic food production, provide access to healthy produce, and reduce the pollution created from transporting food.

C. Foundation

Sustainable practices such as replacing a percentage of the Portland cement in your concrete with fly ash or reusing form boards save resources and divert materials from the landfill.

4.505.2 – Install Vapor Retarder and Capillary Break at Slab-on-Grade

Specify in the foundation sections.

Intent: Installing vapor retarder and capillary break at slab on grade can keep moisture from accumulating and causing damage to the structure and floor finishes and prevent mold growth.

Reduction in Cement Use

Specify the cement substitute and recycled content or reclaimed aggregate in plans. Use concrete that meets at least one of the following criteria:

1. 25% fly ash, slag, silica fume, rice hull ash, etc... used as a cement substitute and 50% recycled content/reclaimed aggregate.
Or
2. 90% recycled content/reclaimed aggregate.

Intent: Reduce the amount of carbon dioxide (CO₂) emissions generated by the manufacturing of cement and promote the use of available industrial waste materials as a substitute for a portion of Portland cement in the concrete mix.

Exterior Walls are Insulated Concrete Forms (ICFs)

Provide information on the material to be used, methodology, and specifications from the engineer. Make note of the location on the plans.

Intent: Reduce waste generation through a more efficient construction process. Increase the R-value, air tightness, durability, and structural strength of the building envelope.

Use Rammed Earth Foundation (Must Meet Engineering Requirements for Seismic Zone 4)

Provide information on the material to be used, methodology, and specifications from the engineer. Make note of the location on the plans.

Intent: Rammed earth uses natural materials that are readily available in most regions and is one of the most environmentally friendly building materials available.

Sealed Crawlspace

Specify the following criteria in the plans:

- A premium vapor retarder system, with a minimum 10-mil thickness, is installed over the entire crawlspace or basement floor.
- The vapor retarder is extended up the wall and piers, and is affixed with adhesive/caulk, furring strips, or treated wood nailer or equivalent sturdy and air-tight attachment.
- The vapor retarder is sturdy, continuous, air/watertight, with seams and joints lapped 12 inches, staked to the ground, taped, and fully sealed with mastic at piers, pipes, etc.
- Any penetrations or other areas where the vapor barrier has been compromised have been sealed with tape and mastic to remain air/watertight.

It is recommended that the vapor retarder be as thick as possible for durability purposes, and that the vapor retarder be white. Black or translucent plastic will make the space very dark and difficult to navigate when accessing the space in the future.

Intent: Improve indoor air quality and structural durability by reducing moisture migration from the crawlspace into the home.

Foundation Drainage System

The system must be specified and detailed in the plans. A perimeter drain is installed on all footings, a waterproof membrane or coating covers all foundation walls, and a deliberate, ventilated drainage panel is installed on the exterior of all foundation walls. The perimeter drain must meet all of the following criteria:

- The bottom of the perforated pipe is installed below the level of the basement floor or crawlspace floor, and the top of the pipe is not more than six inches above the top of the footing.
- The pipe is wrapped with filter fabric and surrounded with a prescribed minimum of clean gravel, crushed stone, or recycled aggregate that extends 12 inches beyond the edge of the footing.
- Drainage discharges by gravity or mechanical means into an approved drainage system.
- All outfalls tie into the storm drain or discharge at least 10 feet away from the foundation.

Please note that a standard French drain does not meet the requirements of this measure, the system must be installed in accordance with CBC 1805.4.2 and 1805.4.3., and representative photos should be captured of this

Intent: Improve indoor air quality and structural durability by reducing moisture migration into the home from the foundation.

D. Structural Frame

Advanced framing techniques that reduce the amount of framing in stud-framed walls improve the thermal performance of the walls by allowing more room for insulation and reducing thermal bridging—the heat transfer that happens through wood framing that extends from the inside surface to the outside surface of the wall. Not only will advanced framing reduce energy consumption and costs, but it also saves costs on labor and resources.

4.406.1 – Rodent Proofing: Protect Annular Spaces Around Pipes, Electric Cables, Conduits or Other Openings in Plates at Exterior Walls

Add detail or instruction to plans: Annular spaces around pipes, electric cables, conduits, or other openings in sole/bottom plates at exterior walls shall be protected against the passage of rodents by closing such openings with cement mortar, concrete masonry, or similar method acceptable to the City of Santa Cruz.

Intent: This section requires barriers in exterior openings to prevent rodents from entering the dwelling and causing health hazards and/or damage to a building's components and systems.

4.505.3 - Moisture Content of Building Materials

Add a note to plans: Building materials with visible signs of water damage shall not be installed. Wall and floor framing shall not be enclosed when the framing members exceed 19 percent moisture content. Moisture content shall be verified and confirmed by an inspector prior to the enclosure of wood framing members and insulation.

Intent: To provide additional safeguards against the growth of mold or other biological growth in moist, enclosed areas. This requires field verification of moisture content and prevents the enclosure of wood framing members exceeding 19 percent moisture content. This also prevents the enclosure and use of wet or moist insulation products.

Substitute Solid Sawn Lumber with Engineered Lumber

Note the location and type of engineered lumber on the plans. (Glulam, LVL, LSL, PSL, OSB) Provide the specifications for the lumber and note on the plan page specific to the installation location.

Intent: Available lumber is typically expensive and of poor quality. Engineered lumber such as laminated beams and I-Joists provide solutions to both issues. These products are produced using younger, rapidly renewable species of trees. They are also straighter, stronger, and cheaper than their solid-sawn counterparts.

Use FSC-Certified Wood for All Dimensional Lumber, Studs, Timber, and Panels

Provide FSC Certification and supply provider/lumber yard information to the inspector for verification for each type at the time of framing inspection.

Intent: The Forest Stewardship Council (FSC) guarantees that the lumber that they certify comes from a sustainably harvested forest.

Use Wood I-Joists for Floor and Ceilings

Note the location and type of engineered lumber on the plans. (Glulam, LVL, LSL, PSL, OSB) Provide the specifications for the lumber and cross-reference to the Checklist.

Intent: Engineered lumber comes from smaller, younger, rapid renewable sources and minimizes the demand for old-growth forests.

Use Steel Interior Web Trusses

Note the location of web trusses on the plan page specific to the installation location. Provide specifications for the trusses.

Intent: Increases the durability of construction by installing materials that reduce damage caused by common pests, rot, and fire. Promote recycling efforts and reduce pressure on landfills by using recycled content and recyclable steel.

Use Raised Heels on Trusses

Note the location and design of trusses on the plan page specific to the installation location. Raised heels must be tall enough to fit the installed insulation throughout the attic. For example, if R-38 batts are to be installed at the ceiling level, the energy heels must be tall enough to support that level of insulation. Reference SBCA SRR1605-05 for additional information.

Intent: Designing trusses with raised heels allows for more efficient insulation and increases the comfort and performance of your home.

Use Oriented Strand Board (OSB)

Replace applicable references of plywood with Oriented Strand Board (OSB) and note installation location and specifications on the appropriate plan page.

Intent: Engineered lumber comes from smaller, younger, rapid renewable sources and minimizes the demand for old-growth forests.

Use Finger-Jointed Studs for Non-Structural Vertical Applications

Add a note and locate finger-jointed studs on the plan page specific to the installation location. Provide specifications.

Intent: Finger-jointed studs are fabricated using small sections of lumber. The result is straighter studs that reduce the demand for solid-sawn lumber.

Use Engineered Studs for Vertical Applications

Note the location and type of engineered studs on the plan page specific to the installation location. Provide specifications and cross reference on the Checklist.

Intent: Engineered lumber comes from smaller, younger, rapid renewable sources and minimizes the demand for old-growth forests.

Use Recycled Content Steel Studs for Interior Framing

Add a note and locate this feature on the plan page specific to the utilization location.

Intent: Increases the durability of construction by installing materials that reduce damage caused by common pests, rot, and fire. It also promotes recycling efforts and reduces pressure on landfills by using recycled content and recyclable steel.

Design With 8-Foot-High Plate

Add a note and locate this feature on the plan page specific to the utilization location.

Intent: Designing and building 8' high plates maximize the dimensions of studs and reduce waste of materials.

Design Using 2' Modules

Building design dimensions should show that the structure is built in two-foot increments by length, width, and/or roof pitch.

Intent: Building dimensions and layouts are designed to minimize waste.

Apply Advanced Framing Techniques

Add notes and show the location of advanced framing techniques on plans. (Example: framing 24 inches on center instead of 16 inches on center). Check with building officials early in the design process to ensure that advanced framing techniques meet wind, seismic, and other codes. Try to select a contractor familiar with this approach.

Intent: Reduce framing material consumption and related costs. Increase the comfort and performance of the home by decreasing thermal bridging.

Use Reclaimed Lumber for Non-Structural Applications

Add a note, show the location of reclaimed lumber usage on the plan page specific to the installation location. Provide documentation. Must account for 80% of non-structural lumber.

Intent: Reduces pressure on landfills and the need to harvest new resources.

E. Exterior Finish

Durability is a key characteristic of any material that you choose to use during the construction of your home. Materials that maintain their integrity do not require replacement, save money on maintenance costs, and protect from damage that occurs when products deteriorate. Be sure to thoroughly research the green products you intend to use for their benefits.

Use Sustainable Siding Materials

Show and reference the location of the siding material to be installed and provide product information. Siding material must be one of the following to qualify for points: fiber cement, metal, wood, adobe and Earth products, stone, stucco, or hempcrete.

Additional points may be accrued if the siding is FSC-certified, reclaimed, recycled, composite, lime plaster that does not contain cement, or is hempcrete. Specify in plans.

Intent: Promote durability and reduce material consumption with sustainable products.

Prefinished Siding or Exterior Wall Coverings

Provide manufacturer's specifications and note location on plans.

Intent: Reduce construction time and improve quality control to increase cost savings.

Use Recycled Low- or Zero-VOC Paint

Specify the product to be used and provide manufacturers' information (MSDS Sheet) to verify whether recycled or reclaimed paint is low VOC or is a Zero-VOC paint and note on the plan page specific to the application location.

Intent: Reduce waste and conserve materials by using recycled products. Modern Zero-VOC paint—paint without volatile organic compounds—is healthier, safer, and produced more sustainably than other types of paint, making it better for users and the environment.

Provide Flashing and Weatherproofing Details

Provide flashing details that comply with accepted industry standards or manufacturer's instructions. Details need to be shown at all the following locations: Around windows and doors, roof valleys, deck connections to structure, roof-to-wall intersections, chimney-to-roof intersections, and drip caps above windows and doors with architectural projections.

Intent: Flashing and other waterproofing procedures decrease moisture intrusion that leads to better indoor air quality, and increased life of the structure.

Use Sustainable Decking Materials

Show and reference the specific location of the decking material to be installed and provide product information. Decking must be FSC certified, recycled or reclaimed wood, composite, or be extracted, processed, and manufactured within 500 miles. 50% of the plastic portion needs to come from post-consumer content regardless of the ratio of plastic to wood.

Intent: Promote recycling efforts, reduce pressure on landfills, reduce the need to harvest new resources, promote use of sustainably harvested materials as designated by the Forest Stewardship Council (FSC) and reduce transportation efforts.

F. Plumbing

The average American uses between 80-100 gallons of water per day. By installing low-flow and high-efficiency fixtures, we can conserve water, energy, and costs.

4.303.1 – Water-Conserving Plumbing Fixtures and Fittings

Plumbing fixtures (water closets and urinals) and fittings (faucets and showerheads) shall comply with specified performance requirements in CALGreen.

Intent: Reducing the amount of indoor water use also results in a decrease in the amount of energy needed to transport, process, and treat water, thereby contributing to the reduction of greenhouse gas emissions.

4.303.2 – Submeters for Multifamily Buildings and Dwelling Units in Mixed-Use Residential/Commercial Buildings

Add detail or note to plans: Submeters shall be installed to measure water usage of individual rental dwelling units in accordance with the *California Plumbing Code*.

Intent: Allows tenants to be billed for their individual usage which encourages water conservation and reduces overall water usage.

4.303.3 – Standards for Plumbing Fixtures and Fittings

Plumbing fixtures and fittings shall be installed in accordance with the *California Plumbing Code*, and meet the applicable standards referenced in Table 1701.1 of the *California Plumbing Code*.

Intent: Reducing the amount of indoor water use results in a decrease in the amount of energy needed to transport, process, and treat water, thereby contributing to reduction of greenhouse gas emissions.

Install Whole-House Water Filter

Locate this feature on the plans and specify the make or manufacturer of the whole-house water filter on the plan page specific to the installation location.

Intent: Significantly improves water quality in the entire home, eliminates the need for bottled water and helps prevent plumbing issues.

Install ENERGY STAR Rated Heat Pump Water Heater

Provide location of heat pump water heater and provide manufacturers specifications and listings on plan page specific to the installation location.

[ENERGY STAR Certified Water Heaters](#) | [EPA ENERGY STAR](#)

Intent: Reduce consumption of energy required to heat water. Water heating accounts for a significant portion of a household's energy use.

Install Heat Pump Water Heater using R744 Refrigerant

Specify in the plumbing schedule.

Intent: R744 is a natural refrigerant that is climate-neutral, energy-efficient, non-toxic, and non-flammable.

Install Drain Pan Connected to Drainpipe Under Water Using Appliances

Add note and details on the plans. The drainpipe shall lead to the exterior of the building.

Intent: Reduce water damage potential by installing a drain pan, connected to a drainpipe, under water-using appliances.

Install Graywater Recovery/Reuse System

Locate graywater system on plans. Provide manufacturers specifications and system information as well as a piping diagram showing size, routing, and type of piping to be used.

Intent: Reduce potable water consumption and pressure on sewage infrastructure and treatment facilities by utilizing Graywater for irrigation purposes. (i.e. Capturing water from the bathroom sink to flush in the toilet.) See City ordinance at [Chapter 16.08 SEWER SYSTEM ORDINANCE](#). Graywater systems must register with the Department of Public Works.

Install Water Heater Flush Kit

Add a note to plans and specify in the plumbing schedule.

Intent: Prolong water heater's lifespan, improve water heater efficiency, and prevent sediment build-up in the tank.

Design Compact Hot Water Distribution System (CHWDS) to 2022 CEnC References Appendices (RA3.6.5 & RA4.4.6)

Specify in plumbing sheets and on diagram. Plan calculations must be completed that demonstrate the water heater to fixture proximity is more compact than a threshold criteria that is based on the dwelling unit conditioned floor area and number of stories. See links for requirements and calculations:

[RA4.4.6 Compact Hot Water Distribution Systems \(energycodeace.com\)](#)

[RA3.6.5 Field Verification of CHWDS \(energycodeace.com\)](#)

Intent: To conserve energy by reducing the distance hot water needs to travel to the main plumbing fixtures in a home through optimal design.

Install at Least R-4 Insulation on All Domestic Hot Water Piping

Add note to plans and specify in the plumbing schedule.

Intent: Reduce energy consumption and the burden on water supply and wastewater systems by increasing the efficiency of hot water distribution.

Install Water Leak Detection Sensors Connected to a Local Network or Internet

Add note and details to plans. Install water sensors connected to a local access or network or internet. The leak detection system should initiate alarm upon a leak detection.

For Single Family, water sensors must be installed on at least one of the following water subsystems:

1. Project irrigation system at the point of entry, if irrigation is included in the project scope
2. Flush fixtures

The homeowner or tenant must be able to access the sensor data in real-time via local network, cloud service, app, or online database.

For Multifamily, water sensors must be installed on the following:

1. Project irrigation system at the point of entry, if irrigation is included in the project scope
2. Each dwelling unit. Sensors must be able to sense all flush fixtures in each dwelling unit. For multifamily projects, four stories or higher, install sensors for at least 10% of the dwelling units.
3. Centralized makeup water systems (e.g., swimming pools, process water systems)

Dwelling unit owners and/or tenants must be able to access the dwelling unit sensor data in real-time via local network, cloud service, app, or online database. The facility manager, owner and/or contractor who maintains the project landscape and irrigation system must be able to access the irrigation system sensor data in real-time via local network, cloud service, app, or online database.

Intent: To further support water conservation and management, reduce leakage, and limit potential material waste due to water leak damages through the installation of smart water submeters.

Install Kitchen Faucet \leq 1.5 GPM Flow Rate

Locate in the plumbing schedule. Must be applied to all kitchens within the scope of work.

Intent: Reduction of water use also results in decreasing the amount of energy needed to transport, process, and treat water, thereby contributing to the reduction of greenhouse gas emissions.

Submeter Water for Multifamily Tenants

Locate submeters in plans.

Intent: Encourage and incentivize tenants to conserve water. Submeters measure the water consumption of individual units (rather than a master meter for the whole building), allowing building owners and managers to accurately allocate water and sewer costs to residents. When residents are responsible for their own water and sewer costs, they are more likely to reduce water use.

G. Electrical

The *California State Energy Code* (Title 24, Part 6) ensures growth towards a sustainable future. Exceeding Title 24 requirements helps your project to stay ahead of the curve and increases property value.

4.106.4.1 – New One – and Two-Family Dwellings and Townhouses with Attached Private Garages

Add note to plans: For each dwelling unit, install a listed raceway to accommodate a dedicated 208/240-volt branch circuit. The raceway shall not be less than trade size 1 (nominal 1-inch inside diameter). The raceway shall originate at the main service or subpanel and shall terminate into a listed cabinet, box, or other enclosure in close proximity to the proposed location of an EV charger. Raceways are required to be continuous at enclosed, inaccessible, or concealed areas and spaces.

Intent: Encourage and support the use of electric vehicles (EVs) as an alternate means of transportation and to help reduce greenhouse gas emissions released into the environment.

4.106.4.2 – New Multifamily Dwellings, Hotels and Motels and New Residential Parking Facilities

1. Forty (40) percent of the total number of parking spaces shall be equipped with low-power Level 2 EV charging receptacles. EV charging receptacles required by this section shall be located in at least one assigned parking space per dwelling unit where assigned parking is provided but need not exceed forty (40) percent of the total number of assigned parking spaces provided on-site.
2. Ten (10) percent of the total number of parking spaces shall be equipped with Level 2 EV chargers. At least fifty (50) percent of the required EV chargers shall be equipped with J1772 connectors. Where common use or unassigned parking is provided, EV chargers shall be located in common use or unassigned parking areas and shall be available for all residents or guests.

Intent: Encourage and support the use of electric vehicles as an alternate means of transportation and to help reduce the amount of greenhouse gas emissions released into the environment.

Install Level 2 Electric Vehicle Charging Station (EVCS)

Add a note and locate it in the plans. For single-family projects only.

Intent: Encourage homeowners to install level 2 electric vehicle charging stations, which will assist in reducing the greenhouse gas emissions from the largest source of emissions in California, transportation.

H. Appliances

Installing efficient appliances can lower utility costs as well as the demand on our power grid.

Install ENERGY STAR Dishwasher

Provide product information and show this feature as a notation on the plan page specific to the installation location.

Intent: High-efficiency dishwashers reduce water and energy use.

Install ENERGY STAR Front-Load Washing Machine

Provide product information and show these features as a notation on the plan page specific to the installation location.

Intent: Qualified washing machines use substantially less water and energy than conventional washers.

Washing Machine Equipped or Retrofitted to Filter Microplastics

Provide product information and show these features as a notation on the plan page specific to the installation location.

Intent: Most clothing on the planet is made from plastic-based materials like polyester, rayon, nylon, and acrylic. When washed, synthetic clothing sheds tiny plastic fragments known as microfibers. Today, scientists estimate that textiles produce 35% of the microplastic pollution in the world's oceans (in the form of synthetic microfibers), which would make textiles the largest known source of marine microplastic pollution.

Install ENERGY STAR Rated Heat Pump Dryer

Provide product information and show these features as a notation on the plan page specific to the installation location.

Intent: Easier to install since they do not require ventilation, can reduce energy use by at least 28% compared to standard dryers, and dries laundry at lower temperatures, which results in them being gentler on fabrics.

Install ENERGY STAR Refrigerator

Provide product information and show these features as a notation on the plan page specific to the installation location.

Intent: Energy Star qualified refrigerators can reduce the total annual electricity bill by more than 10%. Choosing a refrigerator that is properly sized for your home will further reduce energy consumption.

Install Built-In Recycling and Composting Center

Install an assembly with a minimum of three bins (trash, recycling, and composting). The bins must have lids to seal odors and prevent pests from accessing them and be built into the kitchen's base cabinets. Temporary standalone bins and city-provided bins do not qualify to receive this credit.

Intent: Increase the rate of recycling and composting by providing features that make these activities easier.

Install Induction Cook Top

Specify in the plans. Provide manufacturer's specifications. Please note that this equipment can interfere with the performance of pacemakers.

Intent: Induction cooktops are faster, more energy efficient, transfer more heat to the food, and are better for indoor air quality than gas cooktops.

Install Gearless Elevators

Specify in electrical plans and schedules. Provide manufacturer's specifications. Hydraulic elevators cannot be a part of the scope of work.

Intent: Conserve energy and avoid generating hazardous waste that can pollute soil and groundwater.

I. Insulation

The most efficient way to increase the comfort and performance of your home is to install your insulation properly and sufficiently.

Install Continuous, Exterior Rigid Insulation

Add section details to plans that demonstrate continuous, exterior rigid insulation.

Intent: Continuous rigid insulation reduces thermal bridging, reduces noise transfer, assists in air sealing, and increases the building's lifespan by acting as an air, vapor, and weather-resistive barrier for the building's exterior.

Install Recycled-Content, Formaldehyde-Free Fiberglass Insulation

Provide the product specifications and show features on plans as a notation specific to the installation location.

Intent: Improve indoor air quality by installing insulation with reduced levels of toxic chemicals.

Use Environmentally Preferable Insulation Materials

Specify type of insulation, manufacturer, R-value, and location on plan page specific to the installation location. Examples include but are not limited to the following: mineral wool, hemp, cellulose, wood fiber, sheep's wool, cotton/denim, ThermaCork and soy-based polyurethane. Although fiberglass insulation is made with some recyclable materials, it is energy intensive to produce which disqualifies it from being an environmentally friendly option.

Intent: Using materials with recycled content reduces reliance on virgin raw materials.

Install Straw Bale Insulation at Least 18" Thick

Provide the engineer's calculations on plans and reference the green features index.

Intent: When designed and built correctly, straw bale homes can be efficient and long lasting. Straw is an inexpensive and rapidly renewable resource used as a building material.

Install Structural Continuous Insulation Beneath Slab

Detail horizontal rigid foam insulation panels beneath the slab. Minimum R-20.

Intent: Easy to install, eliminates condensation and moisture on concrete, and creates a thermal barrier between the soil and the concrete.

J. Windows

Natural light increases productivity and is good for our health and well-being. High-efficiency fenestration can achieve better insulation while maintaining adequate daylighting which reduces the need for supplemental lighting and heating and cooling costs.

Install Energy-Efficient Windows

Specify the fenestration types and features on the window schedule or the plan page specific to the installation location. 80% or more of the total glazing area needs to meet or exceed 0.25 U-factor within the scope of work (excludes skylights and solar tubes) and must be NFRC-rated.

Intent: Windows play a big role in the energy efficiency of homes. In the summer, they can allow unwanted heat into the house, and in the winter, they can account for as much as 25% of the home's heat loss. High-performance windows reduce heating and cooling costs, keeping the home more comfortable.

Prefinished Windows

Note on plans and provide manufacturer's specifications.

Intent: Reduce construction time, improve quality control, and minimize waste to increase cost savings.

K. Heating, Ventilation, and Air Conditioning

Heating and cooling accounts for 35% of a building's overall energy use on average. Selecting efficient HVAC equipment and optimal design provides substantial savings long-term.

4.503.1 – Install Direct-Vent Sealed-Combustion Type Gas Fireplace OR EPA New Source Performance Standards (NSPS) Woodstove/Pellet Stove

If part of the scope of work, add note to plans: Any installed gas fireplace shall be a direct-vent sealed-combustion type. Any installed woodstove or pellet stove shall comply with U.S. EPA New Source Performance Standards (NSPS) emission limits as applicable and shall have a permanent label indicating they are certified to meet the emission limits.

Intent: Prevent the use of indoor air for either combustion or exhaust of combustion products.

4.504.1 – Cover Duct Openings and Other Related Air Distribution Component Openings During Construction

Add note to plans. At the time of rough installation, during storage on the construction site and until final startup of the heating, cooling and ventilating equipment, all duct and other related air distribution component openings shall be covered with tape, plastic, sheetmetal or other methods acceptable to the enforcing agency to reduce the amount of water, dust, and debris, which may enter the system.

Intent: Ensuring air distribution component openings are covered will prevent the dust and debris that could accumulate in the system, cause air quality issues and damage mechanical equipment.

4.506.1 – Bathroom Exhaust Fans

Add note to plans. Each bathroom shall be mechanically ventilated and shall comply with the following:

1. Fans shall be ENERGY STAR compliant and be ducted to terminate outside the building.
2. Unless functioning as a component of a whole house ventilation system, fans must be controlled by a humidity control.
 - a. Humidity controls shall be capable of adjustment between a relative humidity range of ≤ 50 percent to a maximum of 80 percent. A humidity control may utilize manual or automatic means of adjustment.
 - b. A humidity control may be a separate component to the exhaust fan and is not required to be integral (i.e., built-in).

Intent: The functions of a bathroom exhaust fan are to exhaust odors and excess humidity. This mandatory measure is intended to reduce moisture inside the residence through use of bathroom exhaust fans controlled by humidity sensing devices.

Part of the *California Energy Code* requirements for Indoor Air Quality (IAQ) involves HERS verification for a minimum, continuous airflow rate per the Title 24 energy calculations.

4.507.2 – Heating and Air-Conditioning System Design

Add note to plans. Heating and air-conditioning systems shall be sized, designed and have their equipment selected using the following methods:

1. The heat loss and heat gain is established according to ANSI/ACCA 2 Manual J—2016 (Residential Load Calculation), ASHRAE handbooks or other equivalent design software or methods.
2. Duct systems are sized according to ANSI/ACCA 1 Manual D—2016 (Residential Duct Systems), ASHRAE handbooks or other equivalent design software or methods.
3. Select heating and cooling equipment according to ANSI/ACCA 3 Manual S—2014 (Residential Equipment Selection) or other equivalent design software or methods.

Intent: Requires HVAC systems to be appropriately sized to the heating and cooling loads (heat gain/heat loss) of the structure. Proper equipment sizing helps accelerate the design process and increases the overall efficiency of the system which reduces overall costs and energy usage.

702.1 – Installer Training

Add note to plans. HVAC system installers shall be trained and certified in the proper installation of HVAC systems, including ducts and equipment by a nationally or regionally recognized training or certification program. Uncertified persons may perform HVAC installations when under the direct supervision and responsibility of a person trained and certified to install HVAC systems or contractor licensed to install HVAC systems. Examples of acceptable HVAC training and certification programs include but are not limited to the following:

1. State certified apprenticeship programs.
2. Public utility training programs.
3. Training programs sponsored by trade, labor or statewide energy consulting or verification organizations.
4. Programs sponsored by manufacturing organizations.
5. Other programs acceptable to the City of Santa Cruz.

Intent: Establish minimum requirements for HVAC installers by requiring appropriate training or supervision. This training/certification list is not a complete list so additional training or certification programs may be appropriate if acceptable to the City of Santa Cruz.

Install Ductwork and Air Handling Units Within Conditioned Space

Provide a schematic drawing or graphic depiction detailing how ducting will be run within the conditioned space of the building and the location of the air handlers.

Intent: Bringing ductwork and air handlers into the conditioned space improves energy efficiency and reduces the likelihood of condensation and moisture problems.

Install Variable Capacity Heat Pump

Add a note on the plan page specific to the installation location and provide manufacturer's specifications to verify variable capacity.

Intent: Variable Capacity Heat Pumps (VCHPs) work more efficiently and with less stress than single speed heat pumps which results in reduced overall costs in the long term.

Install Whole-House Ductless Heat Pump OR Hybrid System of Ducted & Ductless Heat Pumps

Provide a schematic drawing or graphic depiction detailing the system layout.

Intent: Ductless heat pumps provide better efficiency through not having to push conditioned air through ducts and providing zonally controlled comfort conditioning which does not involve having to condition every part of the home at once, saving costs on energy. Installing ductless units in bedrooms and office spaces while having a ducted system feed the main area of the home is also acceptable. Routine maintenance and cleaning of ductless units is highly recommended to maintain the efficiency and lifespan of the equipment.

Install Zoned, Hydronic Radiant Heating

Provide a system schematic and product listings.

Intent: Hydronic radiant heating can provide even heat throughout a room, reduce drafts, and eliminate duct leakage. The hydronic radiant heating system area is easily zoned, allowing residents to turn off heat in areas where it is not being used.

Install Balanced Ventilation

Locate supply and exhaust fans in the mechanical plans.

Intent: Balanced ventilation systems can control indoor pollutants and provide good indoor air quality (IAQ). They provide fresh air through intake ducts and expel polluted air through exhaust ducts. A typical balanced ventilation system is designed to supply fresh air to bedrooms and living rooms where occupants spend the most time. It also exhausts air from rooms where moisture and pollutants are most often generated (kitchen, bathrooms, and perhaps the laundry room).

Install Heat Recovery Ventilator (HRV) or Energy Recovery Ventilator (ERV) with Bypass Function

Add a note and locate on the plan page specific to the installation location. Provide the manufacturer's specification sheets.

Intent: HRVs provide balanced ventilation, which supplies filtered air, and conserves energy by recovering heat from conditioned air exiting the building to pre-heat and filter the fresh air supplied to the building. ERVs balance heat and humidity between incoming and outgoing air. The summer bypass function allows cooler air to be brought directly into the dwelling when the inside temperature has increased above the set comfort temperature.

Install a Separate Garage Exhaust Fan

Provide manufacturer's specifications as a note on the plan page specific to the installation location.

Install a minimum 70 cfm fan (for non-ducted units) or 100 cfm fan (for ducted units) on the opposite wall or reasonably far from the door to the house. The fan should be hardwired and rated for continuous operation. The fan should run continuously or is designed with an automatic timer control (linked to the occupant sensor, light switch, or garage door opening/closing mechanism).

For multifamily projects, fans must be controlled by carbon monoxide sensors where demand-controlled ventilation of garages is required.

Intent: A fan helps keep VOC's and other compounds released from chemicals, equipment, and vehicles from entering the residence while protecting indoor air quality.

Enroll in at Least One of PG&E's Demand Response Program

Add a note and cross-reference the Green Building checklist. Provide proof of enrollment.

Intent: Reduce energy consumption, promote grid reliability and sustainability, and offer financial incentives to participants. See PG&E's Demand Response Program Manual for more information: [Demand Response Programs \(pge.com\)](http://pge.com)

Install ENERGY STAR Thermostats

Note this feature on the plans.

Intent: Energy-efficient thermostats can save homeowners up to \$180 per year on heating and cooling costs, according to the EPA. Energy Star-certified thermostats' intuitive interfaces and remote access capabilities simplify the task of controlling temperature settings and managing energy consumption.

Install ENERGY STAR Ceiling Fan

Provide product information and show these features as a notation on the plan page specific to the installation location. Ceiling fans must be installed in the living room and bedrooms to receive full credit. ENERGY STAR fans with built-in lights or add-on light kits must have ENERGY STAR-qualified efficient light fixtures. ENERGY STAR fans without lights also qualify for this measure.

Intent: Reduce cooling energy consumption, particularly during peak load periods, by providing low energy forms of comfort.

L. Renewable Energy and Roofing

Sunlight is an abundant and consistent source of renewable energy. With careful consideration, we can build homes that take advantage of this natural resource.

Install Solar Water Heating System

Provide a piping diagram showing the size, routing, and type of piping to be used. Show the proposed location of solar collectors. Provide manufacturer's specifications including listings, and approvals for all solar water heating equipment.

Intent: Solar hot water heating systems use solar panels and water storage to collect and store heat from the sun for domestic hot water use or space heating. It is more cost effective now because of advances in technology, especially with increasing energy costs.

Solar Photovoltaic (PV) Panels

Specify the location and total kWdc (Kilowatts in Direct Current) of the solar panels on the plans. New projects must exceed the Title-24 requirement to receive credit and existing projects will be rewarded for adding solar panels on a per kW basis.

Intent: Increase the production of clean energy and reduce monthly utility costs.

Install Solar Tubes

Note and show on plans installation location of solar tubes and reference the green features index.

Intent: Utilization of natural light decreases the need to use artificial sources and conserves energy. Natural light has the added benefits of increased productivity and elevated moods.

Sustainable Roofing Materials

Specify roofing materials. Examples include but are not limited to the following: Treated cedarwood shakes or shingles, metal with non-toxic enamel, FSC-certified wood, clay, slate, concrete, fiber cement, and solar shingles qualify. Avoid untreated metals that can corrode quickly. Do not include copper, lead, or lead solder in flashing, gutters, or downspouts. Petroleum-based (e.g. asphalt, modified bitumen, tar, and gravel) and heavy metal-based (copper) roofing products and materials do not comply with this measure.

Intent: Reduce the amount of waste sent to our landfill. Less than 10% of the 12 million tons of asphalt shingles torn off roofs in the U.S. every year are recycled into roads or other paving projects, while the remaining 90% ends up as waste in landfills, according to estimates by the Environmental Protection Agency (EPA).

Use Roofing Materials With at Least 33% Recycled Content

Specify in plans. Provide manufacturer's specifications to verify content.

Intent: Utilization of recycled materials keeps waste out of landfills and reduces the need for the harvest of virgin materials.

Install a Green Roof (Sod or Other Living Roof)

Provide the engineer's calculations as well as landscape plan and reference the green features index.

Intent: Living roofs decrease the heat island effect by absorbing rather than reflecting light and heat.

Install Energy Storage: 1 Point per 2.5 kWh Energy Capacity - 5 kWh minimum; 12 points maximum (30 kWh)

Add a note on the plan page specific to the installation location and provide manufacturer's specifications to verify storage capacity.

Intent: Reduce strain on our grid at times of high demand, provide backup power during outages, and promote grid independence.

M. Natural Heating and Cooling

Time-tested techniques such as thermal mass, solar orientation and new photovoltaic technology allow modern homes to be more comfortable while consuming less energy.

Incorporate Passive Solar Heating

Add a note and locate the following passive solar features on plans: properly oriented windows (sufficient amount of unobstructed, South-facing glazing), thermal mass (Trombe wall), distribution mechanisms (transfer of solar heat in home), and control strategies (overhangs, blinds). See attached link for further guidance: [Passive Solar Homes | Department of Energy](#)

Intent: Passive solar design takes advantage of a building's site, climate, and materials to minimize energy use. A well-designed passive solar home first reduces heating and cooling loads through energy-efficiency strategies and then meets those reduced loads in whole or part with solar energy.

Install Ground-Coupled Heat Exchangers

Provide piping diagram showing size, routing, and type of piping to be used and location of system on the site map.

Intent: At a depth of 6" the earth maintains a temperature of +/- 55 degrees. By running air through tubes that are buried at this level, air can be conditioned to 55 degrees before being either heated or cooled. This lowers the energy consumed for heating and or cooling.

Construct Oversized Overhangs Around Entire Structure

Note and illustrate the size of overhangs.

Intent: Larger overhangs decrease moisture intrusion that leads to better indoor air quality, and increased life of the structure.

Install Exterior Operable Shades, Removable Awnings, or Deciduous Canopy South and West Facade

Note features in plans. Shading can be provided by natural landscaping or by building elements such as awnings, overhangs, and trellises.

Intent: During cooling seasons, external window shading is an excellent way to prevent unwanted solar heat gain from entering a conditioned space.

N. Indoor Air Quality and Finishes

Americans, on average, spend approximately 90 percent of their time indoors, where the concentrations of some pollutants are often 2 to 5 times higher than outdoor concentrations.

4.504.2.1 – Adhesives, Sealants and Caulks

Add note and [VOC Limit Tables](#) to plans. Provide manufacturer's specifications to verify VOC content. Adhesives, sealants and caulks used on the project shall meet the requirements of the Residential VOC Limit Table 4.504.1 or 4.504.2, as applicable.

Intent: Volatile organic compounds are recognized as one of several factors that can affect indoor air quality and occupant health and comfort. Requiring the use of low-emitting construction materials can greatly help improve indoor air quality.

4.504.2.2 – Paints & Coatings

Add note and [VOC Limit Tables](#) to plans. Provide manufacturer's specifications to verify VOC content. Architectural paints and coatings shall comply with VOC limits in Table 1 of the ARB Architectural Suggested Control Measure, as shown in Table 4.504.3.

Intent: Compliance with the California Air Resources Board (CARB) VOC limits or more restrictive local VOC limits helps improve indoor and outdoor air quality.

4.504.2.3 – Aerosol Paints & Coatings

Add note and [VOC Limit Tables](#) to plans. Provide manufacturer's specifications to verify VOC content.

Intent: Ensure that 80% of floor area receiving resilient flooring complies with the VOC-emission limits defined in the Collaborative for High Performance Schools (CHPS) Low-Emitting Materials List or be certified under the Resilient Floor Covering Institute (RFCI) Floor Score Program. Ensure wood finishes meet the requirements of CALGreen. Verification and documentation are to be provided to City.

4.504.5 – Composite Wood Products

Add note and [VOC Limit Tables](#) to plans. Provide manufacturer's specifications to verify formaldehyde content.

Intent: Compliance with these VOC limits will help improve air quality and reduce health risks. This section adopts formaldehyde emission limits for certain composite wood products as specified in ARB's Air Toxics Control Measure for Composite Wood.

Install Whole House Vacuum System

Note the installation location on the plans and provide the manufacturer's specifications.

Intent: Provides better performance than most vacuums, quieter operation, and offers cleaner air with the vacuum motor and filters located in a centralized location.

Use Zero-VOC Paint

Specify the product to be used and provide the manufacturers' information (MSDS Sheet) to verify that the paint contains 5 g/L VOCs or less regardless of sheen. All interior paints and primers must meet the specified threshold.

Intent: Modern zero-VOC paint—paint without volatile organic compounds—is healthier, safer, and produced more sustainably than other types of paint, making it better for users and the environment.

Use Formaldehyde-Free Plywood for Interior Applications

Note this on the plan page specific to the installation and utilization location.

Intent: Eco-friendly plywood is less toxic, reducing the risk of respiratory problems, allergies, and other health issues associated with exposure to harmful chemicals.

Use FSC-Certified Materials for Interior Finish

Note and show location on plans. Provide manufacturer's specifications.

Intent: The Forest Stewardship Council guarantees that the lumber they certify comes from a sustainably harvested forest.

Use Finger-Jointed or Recycled Content Trim

Provide product specifications and notes on the plan page specific to the installation location.

Intent: Finger-jointed trim, studs, and fascia are manufactured from short pieces of wood glued together to create finished material. Finger-jointed elements are straighter and more stable than conventional clear wood and are a more efficient use of raw materials.

Use Recycled Content Countertops and Finishes

Provide the supplier's or manufacturer's product listing and documentation that verify recycled content in ceramic countertops and finishes and show location on plans.

Intent: Using recycled content materials reduces waste and conserves resources.

Use Alternative Drywall Materials

Provide product specifications and note on the plan page specific to the installation location.

Products include but are not limited to the following: Synthetic, recycled, gypsum-free, bamboo, compressed fiber panels, hempcrete, and rammed earth panels. USG EcoSmart gypsum wallboards or similar products are also acceptable.

Intent: Drywall production has a noticeable environmental impact. Processing the gypsum releases particulates from the gypsum powder in addition to sulfur dioxide, nitrous oxide, and carbon monoxide. Heating gypsum also has a high energy cost.

O. Flooring

From FSC certified hardwoods and bamboo, to recycled content tile and finished concrete; these options provide durable, rapidly renewable options that reduce harm to the environment and conserve natural resources.

4.504.3 – Carpet Systems

Add note and [VOC Limit Tables](#) to plans. Provide manufacturer's specifications to verify VOC content. All carpet adhesives shall meet the requirements of Table 4.504.1. Provide documentation from supplier that the carpet is certified with at least one of the following programs: [List of Certifications Programs that use CDPH Standard Method v1.2](#)

Intent: Reduce indoor emission levels thereby improving the overall indoor air quality.

4.504.4 – Resilient Flooring Systems

Add note and [VOC Limit Tables](#) to plans. Provide manufacturer's specifications to verify VOC content. 80 percent or more of the total resilient flooring must be VOC-emissions compliant.

Intent: Compliance with these VOC limits will help improve indoor and outdoor air quality and reduce building occupants' exposure to chemicals that can have adverse effects on human health at higher levels.

Use Environmentally Preferable Flooring Materials

Specify flooring material in the finishes schedule. Provide documentation (from supplier) that verifies flooring is certified as a rapidly renewable material, FSC-certified, or contains at least 30 percent recycled content and show location on plans. Examples of rapidly renewable materials include but are not limited to bamboo, cork, natural linoleum, and natural fiber carpeting such as wool, sisal, seagrass, jute, or hemp.

Intent: Use interior finish products that preserve natural resources.

Use Finished Concrete on the Ground Floor

Note location of this feature on the plans and specify materials to be used as finish, provide product or manufacturer's specifications and listings and note location of this feature on the plans and designate areas to be finished by shading, dotting, cross hatching etc.

Intent: Conserve resources and reduce the amount of waste that will need to be disposed of or recycled at the end of its lifespan. With slab-on-grade construction, the concrete can be polished, scored with joints in various patterns, or stained with pigments to make an attractive finished floor.

Resilient Flooring

Add note and [VOC Limit Tables](#) to plans. Provide manufacturer's specifications to verify VOC content. Same requirements as 4.504.4 – Resilient Flooring Systems, but 100 percent of resilient flooring must comply with VOC limits as opposed to 80 percent.

Intent: To reduce air pollutants and improve indoor air quality by decreasing the amount of formaldehyde emitted from wall and ceiling insulation.

P. Other

Incorporate List of Green Features into Cover of Plans

Note on cover of plans. Listing must be legible and include the pursued Green Building measures.

4.410.1 – Operation and Maintenance Manual

At the time of final inspection, a manual, compact disc, web-based reference, or other media acceptable to the City of Santa Cruz which includes all of the following shall be placed in the building:

1. Directions to the owner or occupant that the manual shall remain with the building throughout the life cycle of the structure.
2. Operation and maintenance instructions for the following:
 - a. Equipment and appliances, including water-saving devices and systems, HVAC systems, photovoltaic systems, electric vehicle chargers, water-heating systems and other major appliances and equipment.
 - b. Roof and yard drainage, including gutters and downspouts.
 - c. Space conditioning systems, including condenser and air filters.
 - d. Landscape irrigation systems.
 - e. Water reuse systems.
3. Information from local utility, water, and waste recovery providers on methods to further reduce resource consumption, including recycling programs and locations.
4. Public transportation and/or carpool options available in the area.
5. Educational material on the positive impacts of an interior relative humidity between 30-60 percent and what methods an occupant may use to maintain the relative humidity level in that range.
6. Information about water-conserving landscape and irrigation design and controllers which conserve water.
7. Instructions for maintaining gutters and downspouts and the importance of diverting water at least 5 feet away from the foundation.
8. Information on required routine maintenance measures, including, but not limited to, caulking, painting, grading around the building, etc.
9. Information about state solar energy and incentive programs available.
10. A copy of all special inspection verifications required by the City of Santa Cruz or the *Green Building code*.
11. Information from Department of Forestry and Fire Protection on maintenance of defensible space around residential structures.
12. Information and/or drawings identifying the location of grab bar reinforcements.

Intent: To ensure owners and occupants are provided information regarding proper operation and maintenance of a building, its equipment and components. To provide additional building and residence related information for increased sustainable use and longevity of the building, enhanced performance, and an optimal living environment.

4.410.2 – Recycling by Occupants

Where 5 or more multifamily dwelling units are constructed on a building site, provide readily accessible area(s) that serves all buildings on the site and are identified for the depositing, storage and collection of nonhazardous materials for recycling, including (at a minimum) paper, corrugated cardboard, glass, plastics, organic waste, and metals, or meet a lawfully enacted local recycling ordinance, if more restrictive.

Intent: Ensure multifamily dwellings are provided with a readily accessible area for depositing, storage and collection of nonhazardous materials for recycling, or meet a lawfully enacted local recycling ordinance, if more restrictive.

Exceed Title 24 Compliance

Title 24 compliance documentation should demonstrate compliance exceeding baseline values. See the checklist for the threshold for points for new construction and addition/alteration projects.

Intent: Exceeding Title 24, Part 6, *California's State Energy Code* can result in lower utility bills and being part of the solution to global warming. Energy generation is a major contributor to global climate change; meeting or exceeding Title 24 energy requirements ensures homes are energy efficient.

Design, Provide and Install Compost Bin

Note and show the location of the compost bin on the plan page specific to the installation location.

Intent: Composting organic materials on site diverts matter sent to our landfills and reduces the overall amount our local waste haulers need to transport back to their facility.

Entryways Designed to Reduce Tracked-In Contaminants

Specify and show location on plans. Deliberately designed, built-in features near entryways (such as drawers, shelves, and benches) encourage and facilitate the removal and storage of shoes. Entryways should be made of hard surface flooring, such as hardwood, bamboo, concrete, ceramic tile, or natural linoleum. Carpet in entryways is prohibited.

Single Family: Design and build a deliberate and obvious hard surface area at the home's main entrance. This area must offer room for occupants and visitors to comfortably take off their shoes. The area must include a specifically designed and permanently installed assembly (such as shelves, drawers, cubicles, etc.) for shoe storage that is overtly obvious to visitors. A permanently installed bench or shelf with shoe storage that is installed on the porch meets this measure as well. Standard coat closets do not qualify for this measure, as they are not an obvious shoe storage assembly that will encourage visitors to use.

Multifamily: Install a deliberate and obvious hard surface area at every main entrance to the building(s). A built-in, permanent walk-off mat or grill (for a minimum of six feet of continuous travel) should be provided at the entrance to the building(s).

Intent: Improve indoor air quality by reducing the spread of outdoor contaminants throughout the home.

Install Permanent Clothesline

Note and show the location on the plan page specific to the installation location.

Intent: Using a clothesline does not consume electricity or natural gas as opposed to a drying machine.

Implement Four (4) Universal Design Components as Identified in the "Accessible Home Design and Remodel Checklist"

Note features in plans. A component represents sections Walkways and Ramps, Doorways and Hallways, Flooring, etc.... Everything listed under each targeted component must be met to receive credit.

Intent: Implementing at least four components from the "[Accessible Home Design and Remodel Checklist](#)" supports home design that allows increased access and maneuverability. These design components can assist people with vision, hearing, mobility, cognitive awareness, and other challenges in their efforts to remain in the housing circumstances of their choice.

Innovation Points (Requires Submittal of Innovative Measure Verification Form)

Complete and submit [Innovative Measure Verification Form](#) to the city's Green Building Specialist to determine the number of points earned. If points are to be accrued, the Green Building Specialist is to return the form to the original sender and the form is to be added to the plans prior to permit submittal.

Intent: Provide alternative ways for projects to receive points for their creativity, intent and effectiveness; anything that could be considered innovative or greatly exceeds expectations set forth in the Green Building Guidelines.