



La Querencia Co-Housing Project; Dickey Youth Center

Handbook for **Fresno Green** Residential and Non-Residential Checklists

***City of Fresno
Planning and Development Department
October 2009***

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Handbook for **FRESNO GREEN** Checklists

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INTRODUCTION

Welcome to the Planning and Development Department's Fresno Green program. As outlined in the *City of Fresno's Strategy for Achieving Sustainability*, Fresno is committed to building "green," thus constructing buildings and communities that are "sustainable" and environmentally responsible. The benefits are immeasurable: cleaner air, pedestrian friendly neighborhoods, support for local businesses and agriculture, more green spaces, preservation of natural resources and our local architectural heritage, and healthier indoor environments. Being green is no longer just a fad and technologically cool... it is an imperative. To quote a Lakota Sioux proverb:

***"We do not inherit the earth from our ancestors;
we borrow it from our children."***

This handbook is intended to give the builder additional information on how to qualify for the Fresno Green program. A proposed Fresno Green project must have a minimum of 20 points spread over at least 5 of the major categories in either the Residential or Non-residential program. Incentives for certified Fresno Green projects include:

- 25% fee reductions of many planning fees (*Site Plans, CUPs, EAs etc.*)
- 20% minor deviation from development standards, if needed (*25% if public art is incorporated into the project*)
- Expedited processing through the "Green Team"
- Eligibility for a Fresno Green award and use of the Fresno Green brand for the project.

There are three routes that one can take to become a branded Fresno Green project: 1) satisfy the requirements of one of the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) Programs; 2) qualify for Build It Green's GreenPoint rating system for residential building; or 3) follow the Fresno Green checklists. Fresno Green has in fact borrowed from these national and state programs but was specifically developed to be more holistic in approach to the "greening of communities" Thus credits exist for historic preservation, historic landscapes and public art. Many credits are also specifically tied to the City's 2025 General Plan.

Another source of information on grants, rebates and the City's free energy survey program is our Sustainability Division: (559) 621-8059.

MINOR DEVIATIONS

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According to FMC Section 12-407, the Planning Director may grant a Minor Deviation from certain provisions of the Zoning Ordinance. A Minor Deviation is intended to provide limited flexibility from specific development standards provided that the proposed development is not detrimental to the public welfare or injurious to property and improvements in the area.

A Minor Deviation can be requested to modify up to ten percent of any Property Development Standard noted in the Zoning Ordinance. Property Development Standard shall mean any definitive, measurable characteristic or aspect of a development, such as but not limited to:

1. Yard setbacks
2. Parking
3. Building height
4. Space between buildings
5. Lot area and dimensions
6. Defined linear distances (such as for signs)
7. Spacing requirements
8. Size of zone districts

As an incentive to incorporate either Public Art or environmentally friendly design and construction methods ("Green" buildings) a **Minor Deviation of up to 20% from the above listed standards may be granted. If both Public Art and Green buildings are proposed, a Minor Deviation of up to 25% from the above listed standards may be granted.** A Minor Deviation does not apply to any standard related to the use of property, such as population density, nor to any standard called for in any adopted Plan.

RESIDENTIAL PROJECTS

I. Location, Community and Historic Preservation

A. Site Selection:

1. *Site has not been used for commercial agriculture in past 5 years* (1 pt)

Intent: To conserve land resources and forestall conversion of agricultural land by preventing urban sprawl.

How to Meet Criteria: Project development proposals should result in the infilling of the existing urban area.

For More Information: 2025 Fresno General Plan

2. *Use of designated Brownfield or contaminated site* (2 pts)

Intent: To promote the remediation and reuse of sites which have sustained environmental damage.

How to Meet Criterion: Provide documentation that identifies the previous use of the site and the extent of existing contamination that requires remediation.

For More Information: County of Fresno, Department of Community Health, Environmental Health Division (559) 445-3370; California Environmental Protection Agency Department of Toxic Substances control Regional Office (www.dtsc.ca.gov); Regional Water Quality Control Board

3. *Site is located within an Inner City boundary or an Activity Center or Mid-Rise/High-Rise Corridor* (1 pt)

Intent: To further the goals, policies, and objectives of the 2025 Fresno General Plan by encouraging appropriate development in defined urban areas, including: 1) Promoting growth within the four defined Inner City boundary areas which include Downtown, Pinedale, Highway City and Herndon Townsite; 2) Supporting a multiple community center concept of urban design by locating more intensive concentration of urban uses in defined Activity Center areas; and 3) Locating mid-rise/high-rise mixed-use development along freeway corridors.

How to Meet Criterion: Select a development site located within a defined boundary, center, or corridor.

For More Information: 2025 Fresno General Plan

RESIDENTIAL PROJECTS

I. Location, Community and Historic Preservation

B. Historic Preservation:

Intent: The most dynamic cities incorporate a mix of new development with the old, thus new buildings are mixed with extant historic buildings and sites that convey a “sense of place” and “authenticity.” The City of Fresno also supports the preservation and rehabilitation of existing viable (“non-historic”) buildings as an alternative to demolition since building debris accounts for 40% of the refuse in the nation’s land fills. The City’s Green Building policies also endorse a holistic approach to sustainability and include numerous provisions that move beyond buildings and address landscape features.

1. Renovation of a designated historic building or structure; Or (1 pt)

2. Renovation or adaptive reuse of a building within a proposed historic district (1 pt)

How to Meet Criterion: Properties are eligible if they are listed individually or as a contributor to a historic district through Fresno’s Local Register of Historic Resources, the California Register of Historical Resources or the National Register of Historic Places. Renovation of the building’s exterior must follow the Secretary of Interior’s Standards for the Treatment of Historic Properties.

3. Adaptive reuse of an existing non-historic building (75% of existing walls, floors and roof retained) (1 pt)

How to Meet Criterion: Rehabilitation of an existing building on site with retention of at least 75% of the original materials; as proved through submission of site plans and building permits.

4. Relocation of existing building for housing (1 pt)

How to Meet Criterion: Relocate a building for reuse that otherwise might be demolished.

5. Retention of existing historic landscape features (e.g. row of palms) (1 pt)

How to Meet Criterion: Retain on site an existing historic landscape feature, such as a row of 100 year-old palms, olives or eucalypts or include in the project a historic garden and/or other historic landscape feature. This criterion is not to be used for the retention of individual mature trees (see also “Sustainable Sites”)

For More Information: Contact the City’s Historic Preservation Project Manager at 621-8520 and/or check the Historic Preservation Home Page through the City of Fresno website. See also the City’s Historic Preservation Ordinance (Chapter 12 Article 16 of the Fresno Municipal Code) as well as the 2025 Fresno General Plan pp.148-155.

RESIDENTIAL PROJECTS

I. Location, Community and Historic Preservation

C. Community Resources:

1. Project approved as a Residential/Commercial Mixed-Use Development (1 pt)

Intent: To encourage projects that provide a fully integrated mixture of residential and commercial land uses, in both the horizontal and vertical axes, designed to offer and promote a user-friendly walking environment in a locale where residential uses are in close proximity to places of employment and commerce.

How to Meet Criterion: In order to receive Planning and Development Department approval, project shall be developed in accordance with defined criteria established by the Zoning Ordinance.

For More Information: Refer to Fresno Municipal Code Section 12-306-N.51

2. Located within ¼ miles of public transportation (2 pts)

Intent: Locating development in walkable proximity to transit stops or terminals that would encourage the likely utilization of public transportation and reduce vehicle trips.

How to Meet Criterion: Project site shall be located within ¼ mile of a designated public transportation stop or terminal.

For More Information: See the FAX map on the City of Fresno website.

RESIDENTIAL PROJECTS

I. Location, Community and Historic Preservation

D. Subdivision Credits:

1. Provide a bike and pedestrian path/trail for residents that leads to a community destination where otherwise not required by the City's General Plan (1 pt)

Intent: Paths/trails provide other modes of transportation that link neighborhoods and provide opportunities to reach destinations, including but not limited to bus stops, regional trails, parks (including mini, neighborhood, community, regional parks, etc.), schools, shopping centers, or other subdivisions.

How to Meet Criterion: Provide pedestrian connections for any block in excess of 500 feet in length. Pedestrian/trail connections shall have adequate paved width and landscaping sufficient to provide shading. All paths/trails shall lead to a destination.

For More Information:

2. Provide open space that is equal to or exceeds the City's requirement by 5% (1 pt)

Intent: To reduce the amount of paved surface area needed for vehicle circulation and parking. Also, to promote increased area dedicated to open space in the form of both hardscape and landscape. Benefits include reducing the heat island effect, improving air quality, conserving energy, and reducing maintenance to paved surface areas.

How to Meet Criterion: Design the site to include open space that exceeds the City's requirement by 5%. The site may include passive or active spaces, hardscape and/or landscape. Another option is to install either an intensive or extensive vegetated (green/living) roof, wherein the roof is partially or completely covered with vegetation and soil or a growing medium, which is planted over a waterproof membrane. Container gardens on roofs are **not** considered a vegetated roof. All open space for this criterion shall meet the minimum dimensions defined under the Fresno Municipal Code for "Useable Open Space" in order to be considered as contributing to this criterion.

For More Information: Contact the Traffic, Planning, and Landscaping representatives in the Planning Department and Development Department at (559) 621-8277.

3. Incorporation of public art as defined by the City of Fresno (1 pt)

Intent: The City of Fresno encourages the inclusion of aesthetic features such as Public Art as an important contribution to the "New City Beautiful."

How to Meet Criterion: Include within the project an installation that meets the definition of "Public Art," as defined in Section 12-105-P-16 of the Fresno Municipal Code, such as a sculpture, mural, a water feature etc.

For More Information: Contact the Public Art Coordinator at 621-8520; reference Section 12-105-P-16 of the Fresno Municipal Code.

4. Incorporation of historic canal with construction of wayside exhibit (1 pt)

Intent: Fresno's early settlement was based on the development of irrigated "colonies," which attracted farmers from throughout the United States and Europe. The intent of this credit is to incorporate and thus retain these canals as an integral part of the City's historic landscape. Landscaped canals (such as the Bankside Project along the Herndon Canal) encourage a pedestrian friendly environment and lead to better community health.

How to Meet Criterion: Incorporate a historic water conveyance feature into a development for aesthetic and recreational purposes. Create a permanent wayside exhibit to explain the history of the canal.

For More Information: Contact the Historic Preservation Project Manager at (559) 621-8520. Historic photos may also be available through the Fresno City and County Historical Society or through a particular irrigation district.

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5. *Restoration of natural habitat on site; or design 100% of on-site landscaping with native species*

(2 pts)

Intent: To preserve, restore, or replace a natural habitat's physical location or type of environment in which an organism or biological population lives, occurs, or depends upon for perseverance; restore and support biological diversity; reinforce Fresno's image through the creation of a "sense of place"; reduce water consumption; reduce energy and pollution created from landscape maintenance; reduce use of chemical fertilizers and pesticides; and reduce the amount of materials directed to landfill.

How to Meet Criterion:

Restoration of Natural Habitat:

- a) Preservation; protect or maintain, in a natural state, areas, open spaces, or lands that contain significant food, water, or cover for native biological species.
- b) Restoration; perform actions to reestablish a natural habitat's functional characteristics and processes that have been lost or are threatened by alterations, development activities, or events.
- c) Compensation;
 - i) In-kind; replace a natural habitat with a substitute natural habitat whose characteristics closely approximate those destroyed or degraded by a regulated activity.
 - ii) Off-site; replace a natural habitat with a habitat away from the site which has been impacted by a regulated activity.
 - iii) On-site; replace a natural habitat at, or adjacent to, the site which has been impacted by a regulated activity.

Native Landscape Design:

Assist in the establishment of a native plant community and "sense of place" through designing 100% of all on-site landscaping using identified native endemic plant species. Submit landscape plans identifying location and type of native species with landscape professional certification (species must be professionally identified/recognized native endemic plant species).

For More Information: www.cngf.org (California Native Garden Foundation);
www.losethelawn.com; www.nativehabitats.org;
[www.landscapestandards.com/index.php/California Native Plant Professionals List](http://www.landscapestandards.com/index.php/California_Native_Plant_Professionals_List).

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E. Compact Development:

1. **90% or greater but not less than 6 units per acre of the density range permitted by planned use designation of the allowed density range permitted** (1 pt)

Intent: To meet housing goals, objectives, and policies by efficiently utilizing land resources and providing the maximum number of dwelling units permitted by the planned land use designation.

How to Meet Criterion: Creatively design development to provide the maximum number of units permitted while also meeting all applicable development standards, including required setbacks, open space and off-street parking requirements. In certain instances, property may need to be rezoned in order to achieve maximum density.

For More Information: Planning counter and 2025 Fresno General Plan

RESIDENTIAL PROJECTS

II. Sustainable Sites

A. Site Stewardship:

1. **Provide erosion controls during construction per SWPPP** **Mandatory**

Intent: Reduce air and water pollution from construction activities by controlling soil erosion, waterway sedimentation and airborne dust generation.

How to Meet Criterion: Develop and implement a Storm Water Pollution Prevention Plan (SWPPP) which specifies Best Management Practices (BMPs) that will prevent all construction pollutants from contacting storm water and with the intent of keeping all products of erosion from moving off site into receiving waters in accordance with State Water Resources Control Board (SWRCB) WATER QUALITY ORDER 99-08-DWQ and a Dust Control Plan in accordance with San Joaquin Valley Air Pollution control District Regulation VIII, most recent edition.

For More Information: For State of California Water Resources Control Board Information on SWPPP see: <http://www.swrcb.ca.gov/stormwtr/docs/finalconstpermit.pdf> or contact at (916) 341-5250, fax (916) 341-5252

For San Joaquin Valley Air Pollution Control Board information see:
http://www.valleyair.org/busind/comply/PM10/compliance_PM10.htm
or contact them at:
CENTRAL REGION
1990 E. Gettysburg Ave.
Fresno, CA 93726
(559) 230-6000
(559) 230-6061 FAX

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2. Provide on-site collection and diversion for recycling of construction Waste

Mandatory

Intent: Divert 100% construction and demolition wastes from disposal in landfills through a certified recycling facility. Redirect recyclable recovered resources back to the manufacturing process. Redirect reusable materials to appropriate sites.

How to Meet Criterion: Fresno City Ordinance requires 100% of all construction wastes in excess of 8 cubic yards to be diverted from landfills. Materials, including but not limited to concrete, metals, wood, gypsum board, etc., should be redirected to suitable recycling centers. Provide documentation to support redirection of construction wastes including, material type, weigh bills, and destination. Conform to all other waste disposal requirements of Fresno City Ordinance.

For More Information:

<http://www.fresno.gov/Government/DepartmentDirectory/PublicUtilities/SolidWaste/ConstructionandDemolition.html>

B. Landscaping

1. Install drought resistant/water efficient landscaping.

Mandatory

Intent: To conserve water and reduce run off.

How to Meet Criterion: Implement code section FMC 12-306-N-23-b

For More Information: Fresno Municipal Code (through City Clerk at www.fresno.gov).

2. Locate and plant trees to shade hardscapes to achieve 50% shade in 5 years (1 pt)

Intent: Create shade thereby reducing the reflective heat that contributes to heat islands. Reducing heat also reduces poor air quality.

How to Meet this Criterion: Submit landscape plans showing drip line at 5 years growth. Recommend developer initially plant 48" box size shade trees. In a single-family subdivision this requirement can be met by shading 50% of the public sidewalk and driveways.

For More Information:

3. Retention of mature trees on site (that are not historic landscapes) (1 pt)

Intent: To preserve established or existing shade canopy and established habitat. Benefits include a more comfortable environment, less energy needed for indoor comfort; economic savings and reduction of greenhouse gases.

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How to Meet Criterion: Advise the developer in the **pre-application** stage to design the building(s) and improvements around established trees. Require the developer to submit a protection plan for the preservation of established trees during construction. Established trees would be indicated on the site plan and the landscape plan. Established trees will be included in the landscaping and parking shade.

For More Information: Sustainable Urban Design and Climate, U. S. Green Building Council Website, www.usbc.org.

4. Development of on-site bioswales (1 pt)

Bioswales are open channels possessing a dense cover of grasses and other herbaceous plants through which runoff is directed during storm events. Bioswales can be incorporated into the landscape design and consists of primarily herbaceous plants whose stems and leaves retard water flow, settling pollutants, which with the aid of the roots, decompose into the soil.

Intent: Reduce heat island effect by landscaping and improve groundwater quality through filtration of pollutants from the storm water runoff.

How to Meet Criterion: Design and install a bioswale to filter hardscape runoff. Depict on site plans.

For More Information:

C. Parking and Alternative Transportation

1. Use pervious hardscape materials for a minimum of 50% of the site's parking, driveway and access roads. (1 pt)

Pervious hardscape is a structural concrete (or approved equivalent) with a large volume (15%-35%) of interconnected voids. Like conventional concrete it is typically made from a mixture of cement, coarse aggregates and water. However, it contains little or no sand, which results in a porous open-cell structure that water passes through readily.

Intent: Reduce the amount of untreated runoff discharging into storm sewers, directly recharge groundwater to maintain aquifer levels, channel more water to tree roots and landscaping, reducing need for irrigation; mitigate pollutants that can contaminate watersheds and harm sensitive ecosystems; eliminate hydrocarbon pollution from asphalt pavements and sealers (comprise 90%-95% of hydrocarbons in urban runoff), reduce the heat island effect, reduce energy consumption.

How to Meet Criterion: Use pervious hardscape materials for a minimum of 50% of the site's parking, driveway and access roads. Must maintain a 2% slope to meet building department requirements.

For More Information:

2. Use of innovative parking on-site (1 pt)

Intent: To reduce heat island effects, reduce overall footprint of building projects and preserve open space by using new technology of vertical or "stacked parking."

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How to Meet Criterion: Incorporate a stacked parking feature with a minimum of two vertical spaces.

For More Information:

3. *Provide parking and facilities for low-emission vehicles* (1 pt)

Intent: Reduce global warming (vehicle emissions, namely carbon dioxide, are a major contributor to global warming); prevent ozone depletion from human-made greenhouse gases (such as emission of carbon dioxide into atmosphere)

How to Meet Criterion: Provide preferred parking closest to main entrance excepting handicap spaces *or* discounted parking passes for low-emission vehicles (including hybrids) for 5% or more of required parking spaces; or provide either electric vehicle charging stations or “clean” alternative fuel refueling stations.

For More Information: Low Emission Vehicles (LEV) and Zero Emission Vehicles (ZEV) are classified by the California Air Resources Board (www.arb.ca.gov). Also see, the American Council for an Energy Efficient Economy (ACEEE) annual vehicle rating guide.

4. *Multi-family complexes: provide on-site secure storage for bicycles* (1 pt)

Intent: Encourage the use of alternative transportation by providing a safe and secure way to store bicycles.

How to Meet Criterion: Provide bicycle racks plus bike security and storage for residents, visitors and employees. Install City owned bike lockers available for rent at key locations.

For More Information:

RESIDENTIAL PROJECTS

III. Energy and Atmosphere

A. Energy

1. *Install Energy Star appliances (or appliances that meet similar standards)* (1-3 pts)

Intent: Reduce demand on local electrical grid and fossil fuel generated power by use of energy efficient appliances

How to Meet Criterion: For all Energy Star eligible appliances installed on the project, including, but not limited to: Range, Oven, Dishwasher, Microwave, Water Heater (Tank or Tankless), Trash Compactor, Refrigerator, Freezer (Deep), Washer, Dryer. (Excluding HVAC and Lighting Products) 50% of all appliances=1 Credit, 70%=2 Credits, 90%=3 Credits

For More Information: Department of Energy/Energy Star

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- 2. *Install photovoltaic (PV) system with a minimum capacity of 3kw for every 10,000 square feet*** (1-2 pts)

Intent: Reduce demand on local electrical grid and fossil fuel generated power by installation of on-site Photovoltaic Power

How to Meet Criterion: Install 3kW of Photovoltaic Power System for each 10,000 Square Feet of Building: 3kW = 1 Credit, 6kW = 2 Credits

For More Information: PG&E

- 3. *Exceed energy use reduction for currently adopted Title 24 by 15%; Or,*** (1 pt)

- 4. *Exceed energy use reduction for California Title 24 by 25%*** (2 pts)

Intent: Exceed energy use reduction for California Title 24; Please note that percentages required to exceed Title 24 may change with the adoption of the 2008 standards in January 2010.

How to Meet Criterion: Achieve increased level of energy performance beyond state mandated minimums:

15% = 1 Credit, 25%or more = 2 Credits as determined by Energy Pro™

For More Information: State info Title 24

- 5. *Install solar water heating system*** (1 pt)

Intent: Achieve increased level of energy performance by installing a solar water heating system.

How to Meet Criterion: 40 Square Feet of Collector with storage tank capacity of 56 gallons = 1 Credit

For More Information:

- 6. *Install an alternative water heating system*** (1 pt)

Intent: Reduce use of natural gas or electricity and associated environmental effects by using a more efficient method of water heating.

How to Meet Criterion: Install a demand or tankless water heater, heat pump water heater or other alternative system and demonstrate a 25% energy savings compared to a typical gas water heater.

For more information, go to www.eere.energy.gov, which is the US Department of Energy's consumer webpage: Energy Efficiency and Renewable Energy

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7. *Install a cool roof*

(1 pt)

Intent: Reduce global warming by reducing CO₂ and other emissions associated with fossil-fuel generated electricity used for air conditioning, and reduce the urban heat island effect.

How to meet criterion: For slopes greater than 2:12, install a roof with an SRI (solar reflective index) of greater than or equal to 29; for slopes less than or equal to 2:12, install a roof with an SRI of greater than or equal to 78.

For more information, go to www.coolroofs.org.

8. *Install a Whole House Fan*

(1 pt)

Intent: Reduce use of electricity or natural gas by installing a whole-house cooling fan.

How to meet criterion: The fan must be mounted in a hallway ceiling on the top floor of a house. An insulated, airtight seal is required to prevent air infiltration in winter. Fans shall have insulated louvers or covers which close when the fan is off. Covers or louvers shall have a minimum insulation value of R-4.2. Fans should be sized to produce between 4-5 air changes per hour within the home and should have two speeds: low speed for continuous ventilation and high speed.

For more information, go to www.wholehousefan.com; for PG &E rebate go to www.pge.com/myhome/saveenergymoney/rebates/coolheat/wholehousefan/index.shtml

B. Atmosphere

1. *Install air-conditioning with Non-HCFC refrigerants*

(1 pt)

Intent: Reduce Ozone Depletion and minimize direct contributions to Global Warming.

How to Meet Criterion: Non HCFC HVAC System =1 Credit

For More Information:

RESIDENTIAL PROJECTS

IV. Water Efficiency

1. *Choose a micro-irrigation system to deliver water to landscaped grounds*

(1-2 pts)

Intent: Minimize water demand for landscape irrigation.

How to Meet Criterion:

- a) At least 50% of landscaping planting beds must have a drip irrigation system to minimize evaporation and all sprinklers must have high efficiency nozzles. (1 pt)

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- b) Design and install high efficiency irrigation system, install a moisture sensor control or rain delay controller, including but not limited to, “smart” ET controllers receive radio, pager or internet signals with evapo-transpiration information to direct the irrigation system to replace only the moisture that the landscape has lost due to heat, humidity and wind; or (2 pts)
- c) Install landscape designed by a licensed or certified landscape design professional that needs no irrigation after the first year (2 pts)

For More Information:

2. *Install a grey water reuse system*

(2 pts)

Intent: Minimize demand for potable water by re-use of indoor waste water and rainwater to help meet landscape water demand.

How to Meet Criterion: Design and install grey water re-use system, with minimum of dedicated clothes washer with 2 inch drain directly to subterranean drain field for landscape irrigation (i.e. not a septic system). Grey water system must include a storage tank that can be used as part of the irrigation system.

For More Information:

3. *Install a rainwater harvesting system to provide water for landscape irrigation*

(1 pt)

Intent: To conserve water by collecting and recycling rainwater.

Rainwater harvesting is the gathering and storing of rainwater and has many advantages, including conservation of municipal water, conservation of energy due to use within gravity fed systems, it is low in salts and good for plants, and it can reduce flooding and erosion. Rainwater can be harvested for a variety of uses including drinking water, but currently its most relevant application in Fresno is for landscape irrigation, thereby reducing the need to use municipal (and metered) water. Although the average rainfall in Fresno is only 11.23 inches per year, more than 60 gallons of water can be collected off the roof of a 10x10 garden shed in just a 1-inch rain.

To estimate the amount of water a given catchment surface can collect, multiply the impermeable collection area's footprint (measured in square feet) by the rainfall in feet; then multiply the total by 7.5. For a roof surface of 1,000 square feet, under Fresno rainfall conditions, 7,018 gallons of water can be collected per year and supplied to the landscape. Obviously for larger roof/catchment areas, yield would be proportionally greater.

Rainwater catchment systems include the following components:

1. Catchment surface
2. Gutters and downspouts
3. Leaf screens, first-flush diverters, roof washers
4. Storage tanks (cisterns)
5. Delivery system

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How to meet criterion: To obtain the point for this item, a rainwater harvesting system shall be indicated on the landscape and irrigation plans, along with calculations showing the approximate amount of water to be provided by the system (under typical year rainfall conditions).

For more information:

<http://www.builditgreen.org/files/uploads/Resources/Build%20It%20Green%20fact%20sheets/Rainwater-Harvesting.pdf>

http://en.wikipedia.org/wiki/Rainwater_harvesting

<http://www.harvestingrainwater.com/>

<http://www.forgottenrain.com/>

www.HarvestH2O.com

www.arcsa.org

RESIDENTIAL PROJECTS

V. Materials and Resources

A. Construction

1. Minimum home size is smaller than national average (1 pt)

Intent: Reduce material and energy consumption by constructing a home smaller than the national average.

How to Meet Criterion: Based on the number of bedrooms in the house the overall square footage must be less than the national average.

No. of Bedrooms	0	1	2	3	4 or more
Overall Square Footage	650	800	1,375	1,900	2,600

Multi-Family Homes (Fresno Average)					
No. of Bedrooms	0	1	2	3	4 or more
Square Footage	419	642	957	1,074	1,050

For More Information: California Integrated Waste Management Board, Designing With Vision: A Technical Manual For Material Choices In Sustainable Construction.

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Sarah Susanka 1999. The Not So Big House. Taunton Press, USA.

2. *Use material-efficient framing* (1 pt)

Intent: Optimize use of framing materials by means of efficient framing practices in order to save on lumber and improve the thermal efficiency of the structure.

How to Meet Criterion: Use a minimum of 4 of the following efficient framing practices:

- a) Space joists and studs greater than 16 inches on center
- b) Size headers for actual loads
- c) Design roof pitch / eave width to 24 inch module
- d) Use ladder blocking drywall clip
- e) Use two-stud corners
- f) Single top plates (with stack framing)
- g) Designing to module (i.e. 24") dimension
- h) Acceptable approach to maximize material efficiency submitted for review and approval

For More Information:

<http://www.eere.energy.gov/buildings/info/documents/pdfs/26449.pdf>.

3. *Construct residential buildings using universal design standards* (1 pt)

Intent: Meet all the universal design standards pursuant to the Fresno City Council Ordinance 2008-53 (see City of Fresno website).

How to Meet Criterion:

- a) Must be a "no step" entry going into the residence with a doorway at least thirty six (36) inches wide.
- b) The interior routes of each dwelling unit shall comply with each of the following:
 - (i) At least one accessible route through the hallways and passageways shall be provided from the accessible entrance of the dwelling unit to the primary floor bathroom, bedroom and kitchen.
 - (ii) All doorways shall be at least thirty-two inches wide
 - (iii) All hallways shall be at least forty-two inches wide.
- c) All dwelling units shall contain a kitchen with six square feet of kitchen counter space.
- d) All dwelling units with a ground floor of 750 square feet or more, excluding the garage floor space, shall contain ground floor facilities that comply with each of the following:
 - (i) One downstairs "flex room" which can be used as a bedroom.
 - (ii) At least one downstairs bathroom that consists of a toilet, lavatory, and bathtub or shower, or both.
 - (iii) The downstairs bathroom in the preceding paragraph shall have an unobstructed clear space measuring at least forty-eight inches by sixty inches inside the bathroom and outside the swing of the door.
 - (iv) Grab bar reinforcements consistent with CBC Chapter 11A for the toilet, and any shower or bath.

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B. Materials

1. *Use environmentally preferable flooring*

(1 pt)

Intent: Selection of products with lesser or reduced effect on human health and the environment.

How to Meet Criterion: All flooring products must be chosen from the following options or from GreenSpec:

- a) Recycled content carpet and pad or wool
- b) Linoleum
- c) Bamboo
- d) Forest Stewardship Council (FSC) certified wood
- e) Recycled content tile
- f) Sealed concrete
- g) Cork

Qualifying materials have one or more of the following attributes: FSC certified wood products, recycled content, bio-based, agricultural residue, Low-or no-VOC.

For More Information: Green Building Products: The GreenSpec Guide to Residential Building Materials, copublished by Building Green, Inc. and New Society Publishers. Available on-line at <http://www.buildinggreen.com/ecommerce/gbp.cfm>. (\$34.95)

GreenSpec is also available on-line as part of the BuildingGreen Suite, at <http://www.BuildingGreen.com>. Suite costs \$199/year or \$12.95 for a week.

2. *Building envelope includes recycled materials*

(1 pt)

Intent: Reduce waste and the need for new products

How to Meet Criterion: At least 4 of the following components must include a minimum 25% recycled content:

- a) Roofing
- b) Sheathing
- c) Wall and ceiling gypsum board
- d) Insulation
- e) Exterior wall finish
- f) Siding
- g) Doors and windows
- h) Roof framing
- i) Wall framing

For More Information: Green Building Products: The GreenSpec Guide to Residential Building Materials, co-published by Building Green, Inc. and New Society Publishers. Available on-line at <http://www.buildinggreen.com/ecommerce/gbp.cfm>. (\$34.95)

GreenSpec is also available online as part of the BuildingGreen Suite, at <http://www.BuildingGreen.com>. Suite costs \$199/year or \$12.95 for a week.

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3. *Innovation Credit: Use of historic building materials such as adobe* (1 pt)

Intent: Encourage construction using updated approaches to traditional building methods and materials such as stabilized adobe brick, rammed earth, hay bales etc.

How to Meet Criterion: Design and build a residence using traditional renewable building materials.

For More Information:

4. *Use of innovative materials for building envelope* (1 pt)

Innovative building materials include the use of Structural Insulated Panels (SIP), Insulated Concrete Forms (ICF), Autoclaved Aerated Concrete (AAC) and similar systems for solid wall systems.

Intent: To encourage alternative construction practices that reduce reliance on non-renewable materials, result in high performance (energy efficient) buildings and improve home comfort.

How to Meet Criterion: Design and construct a building which incorporates the use of Structural Insulated Panels (SIP), Insulated Concrete Forms (ICF), autoclaved aerated concrete (AAC), or similar systems, in at least 50% of the overall construction (walls, roof, floors). Walls must have a minimum R-Value of R-19 and the roof must have a minimum R-Value of R-30.

For More Information:

RESIDENTIAL PROJECTS

VI. Indoor Environmental Quality

Intent: Reduce the quantity of indoor air contaminants that are odorous, irritating and/or harmful to the well being of installers and occupants.

1. *Use Low/No-VOC Sealants and Adhesives* (1 pt)

How to Meet Criterion: Adhesives, Sealants and Sealant primers used in and within the building envelope shall meet the VOC limits of the South Coast Air Quality Management District (SCAQMD) Rule #1168.

For More Information: SCAQMD website

2. *Use environmentally preferable materials for interior finishes* (1 pt)

How to Meet Criterion: Architectural Paints, Coatings and Primers shall not exceed the VOC limits of Green Seal Standard GS-11. Anti-corrosive and anti-rust paints applied to interior ferrous metal components shall not exceed the VOC limits of Green Seal

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Standard GS-03. Clear wood finishes, floor coatings, stains, sealers and shellacs applied to interior elements shall not exceed the VOC limits of SCAQMD Rule #1113.

For More Information: SCAQMD website

3. *Use low-emitting materials for carpets*

(1 pt)

How to Meet Criterion: Carpet installed on the building interior shall comply with the carpet and Rug Institute's Green Label Plus Program; all carpet cushion used in the building interior shall meet the requirements of the Carpet and Rug Institute's Green Label Program. Carpet adhesives, if used, shall comply with requirement #1.

For More Information:

RESIDENTIAL PROJECTS

VII. Innovation and Design Process

A. Innovation

1. *Up to 3 additional points may be earned for innovative design or materials* (1-3 pts)

Intent: Incorporates green design and construction measures that produce tangible, demonstrable environmental improvements beyond those listed in the City of Fresno Green Residential Checklist.

How to Meet Criterion:

- a) Exceptional performance (e.g. achieving twice the required threshold in another City of Fresno Green Residential Checklist Category.
- b) Innovative design strategies. The builder shall prepare a written submittal to the City of Fresno Green Committee that explains the intent of the credit, the proposed requirement for compliance, the proposed documentation to demonstrate compliance and a description and an estimate of the benefit / impact provided by the proposed measure.
- c) Emerging technologies, materials or construction practices.

For More Information:

NON-RESIDENTIAL PROJECTS

I. Location, Community and Historic Preservation

A. Site Selection:

1. *Site had not been used for commercial agriculture in past 5 years* (1 pt)

Intent: To conserve land resources and forestall conversion of agricultural land by preventing urban sprawl.

How to Meet Criterion: Project development proposals should result in the infilling of the existing urban area.

For More Information: 2025 Fresno General Plan

2. *Use of designated Brownfield or contaminated site* (2 pts)

Intent: To promote the remediation and reuse of sites that have sustained environmental damage.

How to Meet Criterion: Provide documentation that identifies the previous use of the site and the extent of existing contamination that requires remediation.

For More Information:

3. *Site is located within an Inner City boundary or an Activity Center or Mid-Rise/High-Rise Corridor* (1 pt)

Intent: To further the goals, policies, and objectives of the 2025 Fresno General Plan by encouraging appropriate development in defined urban areas, including: 1) Promoting growth within the four defined Inner City boundary areas which include Downtown, Pinedale, Highway City and Herndon Townsite; 2) Supporting a multiple community center concept of urban design by locating more intensive concentration of urban uses in defined Activity Center areas; and 3) Locating mid-rise/high-rise mixed-use development along freeway corridors.

How to Meet Criterion: Select a development site located within a defined boundary, center, or corridor.

For More Information: 2025 Fresno General Plan

NON-RESIDENTIAL PROJECTS

I. Location, Community and Historic Preservation

B. Historic Preservation:

Intent: The most dynamic cities incorporate a mix of new development with the old, thus new buildings are mixed with existing historic buildings and sites that convey a “sense of place” and “authenticity.” The City of Fresno also supports the preservation and rehabilitation of existing viable (“non-historic”) buildings as an alternative to demolition. Building debris accounts for 40% of the refuse in the nation’s land fills. The City’s Green Building policies also endorse a holistic approach to sustainability and include numerous provisions that move beyond buildings and address landscape features.

1. Renovation of a designated historic building or structure, Or (1 pt)

2. Renovation or adaptive reuse of a building within a proposed historic district (1 pt)

How to Meet Criterion: Properties are eligible if they are listed individually or as a contributor to a historic district through Fresno’s Local Register of Historic Resources, the California Register of Historical Resources or the National Register of Historic Places. Renovation of the building’s exterior must follow the Secretary of Interior’s Standards for the Treatment of Historic Properties.

3. Preparation of a historic survey in an area previously not evaluated (1 pt)

How to Meet Criterion: Hire a qualified consultant to prepare a historic survey to City and State standards that includes both a historic context and survey forms for individual properties within the project area.

4. Adaptive reuse of an existing non-historic building (75% of existing walls, floors and roof retained) (1 pt)

How to Meet Criterion: Rehabilitation of an existing building on site with retention of at least 75% of the original materials; as proved through submission of site plans and building permits.

5. Retention of existing historic landscape features (e.g. row of palms) (1 pt)

How to Meet Criterion: Retain on site an existing historic landscape feature, such as a row of 100 year-old palms, olives or eucalypts or include in the project a historic garden and/or other historic landscape feature. This criterion is not to be used for the retention of individual mature trees (see also “Sustainable Sites”)

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6. Incorporation of historic canal with construction of wayside exhibit (1 pt)

Intent: Fresno's early settlement was based on the development of irrigated "colonies," which attracted farmers from throughout the United States and Europe. The intent of this credit is to incorporate and thus retain these canals as an integral part of the City's historic landscape. Landscaped canals (such as the Bankside Project along the Herndon Canal) encourage a pedestrian friendly environment which leads to better community health.

How to Meet Criterion: Incorporate a historic water conveyance feature into a development for aesthetic and recreational purposes. Create a permanent wayside exhibit to explain the history of the canal.

For More Information: Contact the City's Historic Preservation Project Manager at 621-8520 and/or check the Historic Preservation Home Page through the City of Fresno website. See also the City's Historic Preservation Ordinance (Chapter 12 Article 16 of the Fresno Municipal Code) as well as the 2025 Fresno General Plan pp.148-155.

NON-RESIDENTIAL PROJECTS

I. Location, Community and Historic Preservation

C. Community Resources:

1. Project approved as a Residential/Commercial Mixed-Use Development (1 pt)

Intent: To encourage projects that provide a fully integrated mixture of residential and commercial land uses, in both the horizontal and vertical axes, designed to offer and promote a user-friendly walking environment in a locale where residential uses are in close proximity to places of employment and commerce.

How to Meet Criterion: In order to receive Planning and Development Department approval, project shall be developed in accordance with defined criteria established by the Zoning Ordinance.

For More Information: Refer to Fresno Municipal Code Section 12-306-N.51

2. Located within ¼ miles of public transportation (2 pts)

Intent: Locating development in walkable proximity to transit stops or terminals that would encourage the likely utilization of public transportation and reduce vehicle trips.

How to Meet Criterion: Project site shall be located within ¼ mile of a designated public transportation stop or terminal.

For More Information: See FAX map on the City's Web site.

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3. *Incorporation of public art as defined by the City of Fresno* (1 pt)

Intent: The City of Fresno encourages the inclusion of aesthetic features such as Public Art as an important contribution to the “New City Beautiful.”

How to Meet Criterion: Include within the project an installation that meets the definition of “Public Art,” as defined in Section 12-105-P-16 of the Fresno Municipal Code, such as a sculpture, mural, water feature etc.

For More Information: Contact the Public Art Coordinator at 621-8520; reference Section 12-105-P 16 of the Fresno Municipal Code.

4. *Provide informational kiosk about green building and sustainability.* (1 pt)

Intent: Provide educational information that promotes green building and the tenets of sustainability.

How to Meet Criterion: Create a permanent kiosk or protected display area that provides specifics about the technology used to create this particular green building. Display may also include other general educational materials about achieving sustainability, such as energy efficiency programs, slow food initiatives, bus schedules, etc.

For More Information:

NON-RESIDENTIAL PROJECTS

II. Sustainable Sites

A. Site Stewardship:

1. *Provide erosion controls during construction per SWPPP* **Mandatory**

Intent: Reduce air and water pollution from construction activities by controlling soil erosion, waterway sedimentation and airborne dust generation.

How to Meet Criterion: Develop and implement a Storm Water Pollution Prevention Plan (SWPPP) which specifies Best Management Practices (BMPs) that will prevent all construction pollutants from contacting storm water and with the intent of keeping all products of erosion from moving off site into receiving waters in accordance with State Water Resources Control Board (SWRCB) WATER QUALITY ORDER 99-08-DWQ and a Dust Control Plan in accordance with San Joaquin Valley Air Pollution control District Regulation VIII, most recent edition.

For More Information: For State of California Water Resources Control Board Information on SWPPP see: <http://www.swrcb.ca.gov/stormwtr/docs/finalconstpermit.pdf> or contact at (916) 341-5250, fax (916) 341-5252

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For San Joaquin Valley Air Pollution Control Board information see:
http://www.valleyair.org/busind/comply/PM10/compliance_PM10.htm
or contact them at:
CENTRAL REGION
1990 E. Gettysburg Ave.
Fresno, CA 93726
(559) 230-6000
(559) 230-6061 FAX

2. Provide on-site collection and diversion for recycling of construction

Waste

Mandatory

Intent: Divert 100% construction and demolition wastes from disposal in landfills through a certified recycling facility. Redirect recyclable recovered resources back to the manufacturing process. Redirect reusable materials to appropriate sites.

How to Meet Criterion: Fresno City Ordinance requires 100% of all construction wastes in excess of 8 cubic yards to be diverted from landfills. Materials, including but not limited to concrete, metals, wood, gypsum board, etc., should be redirected to suitable recycling centers. Provide documentation to support redirection of construction wastes including, material type, weigh bills, and destination. Conform to all other waste disposal requirements of Fresno City Ordinance.

For More Information:

<http://www.fresno.gov/Government/DepartmentDirectory/PublicUtilities/SolidWaste/ConstructionandDemolition.htm>

B. Landscaping:

1. Install drought resistant/water efficient landscaping

(1 pt)

Intent: To conserve water and reduce runoff.

How to Meet this Criterion: Implement Fresno Municipal Code (FMC) Section 12-306-N-23-b

For More Information: Fresno Municipal Code (online at www.fresno.gov)

2. Locate and plant trees to shade hardscapes to achieve 50% shade in 5 years

(1 pt)

Intent: Create shade thereby reducing the reflective heat that contributes to the heat island. Reducing heat also reduces poor air quality.

How to Meet this Criterion: Recommend developer initially plant shade trees 48" box size.

For More Information:

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3. *Retention of mature trees on site (that are not historic landscapes)* (1 pt)

Intent: To preserve established or exiting shade canopy and established habitat. Benefits include a more comfortable environment, less energy needed for indoor comfort; economic savings and reduction of greenhouse gases.

How to Meet Criterion: Advise the developer in the **pre-application** stage to design the building(s) and improvements around established trees. Require the developer to submit a protection plan for the preservation of established trees during construction. Established trees would be indicated on the site plan and the landscape plan. Established trees will be included in the landscaping and parking shade.

For More Information: Sustainable Urban Design and Climate, U. S. Green Building Council Website, www.usbc.org.

4. *Development of on-site bioswales* (1 pt)

Bioswales are open channels possessing a dense cover of grasses and other herbaceous plants through which runoff is directed during storm events. Bioswales can be incorporated into the landscape design and consists of primarily herbaceous plants whose stems and leaves retard water flow, settling pollutants, which with the aid of the roots, decompose into the soil.

Intent: Reduce heat island effect by landscaping and improve groundwater quality through filtration of pollutants from the storm water runoff.

How to Meet Criterion: Design and install a bioswale as part of landscaping for project.

For More Information:

5. *Provide open, landscaped area= or > than 20% of project site* (1 pt)

Intent: To reduce the amount of paved surface area needed for vehicle circulation and parking. Also, to promote increased area dedicated to open space in the form of both hardscape and landscape. Benefits include reducing the heat island effect, improving air quality, conserving energy, and reducing maintenance to paved surface areas.

How to Meet Criterion: Design the site to include open space that exceeds the City's requirement by 5%. The site may include passive or active spaces, hardscape and/or landscape. Another option is to install either an intensive or extensive vegetated (green/living) roof, wherein the roof is partially or completely covered with vegetation and soil or a growing medium, which is planted over a waterproof membrane. Container gardens on roofs are **not** considered a vegetated roof. All open space for this criterion shall meet the minimum dimensions defined under the Fresno Municipal Code for "Useable Open Space" in order to be considered as contributing to this criterion.

For More Information: Contact the Traffic, Planning, and Landscaping representatives in the Planning Department and Development Department at (559) 621-8277.

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6. *Restoration of natural habitat on site or design 100% of on-site landscaping with native species*

(2 pts)

Intent: To preserve, restore, or replace a natural habitat's physical location or type of environment in which an organism or biological population lives, occurs, or depends upon for perseverance. Project applications must include a biological survey of the site, prepared by an appropriate specialist in the field. For landscaping with native species the intent is to restore and support biological diversity; reinforce Fresno's image through the creation of a "sense of place"; reduce water consumption; reduce energy required and pollution created from landscape maintenance; reduce use of chemical fertilizers and pesticides; and reduce the amount of materials directed to landfill.

How to Meet Criterion:

- a) Preservation; protect or maintain, in a natural state, areas, open spaces, or lands that contain significant food, water, or cover for native biological species.
- b) Restoration; perform actions to reestablish a natural habitat's functional characteristics and processes that have been lost or are threatened by alterations, development activities, or events.
- c) Compensation;
 - i) In-kind; replace a natural habitat with a substitute natural habitat whose characteristics closely approximate those destroyed or degraded by a regulated activity.
 - ii) Off-site; replace a natural habitat with a habitat away from the site which has been impacted by a regulated activity.
 - iii) On-site; replace a natural habitat at, or adjacent to, the site which has been impacted by a regulated activity.

Native Landscape Design:

Assist in the establishment of a native plant community and "sense of place" through designing 100% of all on-site landscaping using identified native endemic plant species. Submit landscape plans identifying location and type of native species with landscape professional certification (species must be professionally identified/recognized native endemic plant species).

For More Information: www.cngf.org (California Native Garden Foundation);
www.losethelawn.com; www.nativehabitats.org;
www.landscapestandards.com/index.php/California_Native_Plant_Professionals_List.

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C. Parking and Alternative Transportation:

1. ***Use pervious hardscape materials for a minimum of 50% of the site's parking, driveway and access roads*** (1 pt)

Intent: Reduce the amount of untreated runoff discharging into storm sewers, directly recharge groundwater to maintain aquifer levels, channel more water to tree roots and landscaping, reducing need for irrigation; mitigate pollutants that can contaminate watersheds and harm sensitive ecosystems; eliminate hydrocarbon pollution from asphalt pavements and sealers (comprise 90%-95% of hydrocarbons in urban runoff), reduce the heat island effect, reduce energy consumption.

How to Meet Criterion: Use pervious hardscape materials for a minimum of 50% of the site's parking, driveway and access roads.

For More Information:

2. ***Reduction of heat islands through use of submerged or stacked parking on site*** (1 pt)

Intent: To minimize a dominant, obtrusive, and sometimes unattractive element of urban form. (The needs of motor vehicles take up one-third of the space of an average city.) To reduce impervious surfaces and thus reduce the amount of untreated runoff and pollutants discharging into storm sewers and contaminating watersheds. Underground structures (which can incorporate vegetated or green roofs or be landscaped with open space areas at grade) help replenish subsurface water resources. To reduce energy use (underground parking typically saves 50%-80% in energy use/costs). To reduce heat islands and their effects.

How to Meet Criterion: Incorporate the construction of stacked or below-grade parking structures within development proposal.

For More Information:

3. ***Provide preferred parking and/or facilities for low-emission vehicles for 5% of required spaces*** (1 pt)

Intent: Reduce global warming (vehicle emissions, namely carbon dioxide, are a major contributor to global warming); prevent ozone depletion from human-made greenhouse gases (such as emission of carbon dioxide into atmosphere),

How to Meet Criterion: Provide preferred parking for low-emission vehicles for 5% of required parking spaces; Implement program for employee vehicle certification and pass/access provisions to preferred employee parking; provide electric vehicle charging stations; provide "clean" alternative fuel refueling stations.

For More Information:

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4. ***Provide preferred designated on-site parking for car/van pools for 10% of required spaces*** (1 pt)

Intent: Encourage employees to carpool by providing various incentives.

How to Meet Criterion: Employers install designated carpool/vanpool parking stalls. Obtain special parking pass from city that allows discounted or free parking in various parking garages or at parking meters

For More Information:

5. ***Provide on-site secured parking or storage for bicycles*** (1 pt)

Intent: Encourage the use of alternative transportation by providing a safe and secure way to store bicycles.

How to Meet Criterion: Provide mandatory bicycle racks for minor employers and mandatory bicycle storage for major employers. Install City owned bike lockers available for rent at key locations

For More Information:

6. ***Provide showers for employees who bike to work*** (1 pt)

Intent: Encourage employees to bike to work by providing them a place to shower and change into appropriate work attire.

How to Meet Criterion: Locker rooms incorporated into office building. City/COG coordinates program where bicyclists can shower at health clubs, gyms or other locations throughout town for free or small fee

For more information:

NON-RESIDENTIAL PROJECTS

III. Energy and Atmosphere

A. Energy:

1. ***Install photovoltaic (PV) system that meets 5% of Title 24 energy survey*** (1 pt)

Intent: Reduce demand on local electrical grid and fossil fuel generated power by installation of on-site Photovoltaic Power

How to Meet Criterion: Install On-site Photovoltaic Power System for 5% Title 24 Energy Survey (Energy Pro™): 5% = 1 Credit

For More Information:

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- 2. Exceed energy use reduction for currently adopted Title 24 by 15%; Or (1 pt)**
- 3. Exceed energy use reduction for California Title 24 by 25% or more (3 pts)**

Intent: Exceed energy use reduction for California Title 24. Please note that percentages required over Title 24 may change with the adoption in January 2010 of Title 24-2008.

How to Meet Criterion: Achieve increased level of energy performance beyond state mandated minimums:

15% = 1 Credit, 25% = 2 Credits, Exceeding 25% = 3 Credits as determined by Title 24 Energy Modeling (Energy Pro™)

For More Information: State information on Title 24

- 4. Install solar water heating system (1 pt)**

Intent: Achieve increased level of energy performance by installing a solar water heating system.

How to Meet Criterion: Install 40 square feet of collector with storage tank capacity of 56 gallons for every 5000 square feet of office space.

For More Information:

- 5. Install a cool roof (1 pt)**

Intent: Reduce global warming by reducing CO₂ and other emissions associated with fossil-fuel generated electricity used for air conditioning, and reduce the urban heat island effect.

How to meet criterion: For slopes greater than 2:12, install a roof with an SRI (solar reflective index) of greater than or equal to 29; for slopes less than or equal to 2:12, install a roof with an SRI of greater than or equal to 78.

For more information, go to www.coolroofs.org.

B. Atmosphere:

- 1. Install air conditioning with Non-HCFC refrigerants (1 pt)**

Intent: Reduce Ozone Depletion and minimize direct contributions to Global Warming.

How to Meet Criterion: Non HCFC HVAC System =1 Credit

For More Information:

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2. *Provide daylight for 75% of interior work spaces* (1 pt)

Intent: Reduce demand for artificial lighting by introduction of useable Daylight to interior work spaces in order to promote better health and job performance.

How to Meet Criterion: Demonstrate, through records of interior light measurements, that a minimum daylight illumination level of 25 foot candles has been achieved in at least 75% of all regularly occupied areas. Measurements must be taken on a 10 foot grid for all occupied spaces and must be recorded on the floor plan. In all cases, provide daylight redirection and/or glare control devices to avoid high-contrast situations that could impede visual tasks.

For More Information:

3. *Provide 80% of office equipment that carries the energy star label* (1 pt)

Intent: Reduce demand on local electrical grid and fossil fuel generated power by use of energy efficient equipment and appliances:

How to Meet Criterion: For all Energy Star eligible equipment and appliances installed on the project, including electronics, office equipment and commercial food service equipment (Excluding HVAC and Lighting Products)
80%=1 Credit

For More Information:

4. *Install an alternative water heating system* (1 pt)

Intent: Reduce use of natural gas or electricity and associated environmental effects by using a more efficient method of water heating.

How to Meet Criterion: Install a demand or tankless water heater, heat pump water heater or other alternative system and demonstrate a 25% energy savings compared to a typical gas water heater.

For more information, go to www.eere.energy.gov, which is the US Department of Energy's consumer webpage: Energy Efficiency and Renewable Energy

NON-RESIDENTIAL PROJECTS

IV. Water Efficiency

A. Irrigation:

1. *Choose a micro-irrigation system to deliver water to landscaped grounds* (1 pt)

Intent: Minimize water demand for landscape irrigation.

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How to Meet Criterion:

- a) At least 50% of landscaping planting beds have a drip irrigation system to minimize evaporation; sprinklers have high efficiency nozzles.
- b) Design and install high efficiency irrigation system, install a moisture sensor control or rain delay controller. For example, "smart" ET controllers receive radio, pager or internet signals with evapo-transpiration information to direct the irrigation system to replace only the moisture that the landscape has lost due to heat, humidity and wind.
- c) Install landscape designed by a licensed or certified landscape design professional that needs no irrigation.

For Further Information:

2. Install a rainwater harvesting system to provide water for landscape irrigation (1 pt)

Intent: To conserve water by collecting and recycling rainwater.

Rainwater harvesting is the gathering and storing of rainwater and has many advantages, including conservation of municipal water, conservation of energy due to use within gravity fed systems, it is low in salts and good for plants, and it can reduce flooding and erosion. Rainwater can be harvested for a variety of uses including drinking water, but currently its most relevant application in Fresno is for landscape irrigation, thereby reducing the need to use municipal (and metered) water. Although the average rainfall in Fresno is only 11.23 inches per year, more than 60 gallons of water can be collected off the roof of a 10x10 garden shed in just a 1-inch rain.

To estimate the amount of water a given catchment surface can collect, multiply the impermeable collection area's footprint (measured in square feet) by the rainfall in feet; then multiply the total by 7.5. For a roof surface of 1,000 square feet, under Fresno rainfall conditions, 7,018 gallons of water can be collected per year and supplied to the landscape. Obviously for larger roof/catchment areas, yield would be proportionally greater.

Rainwater catchment systems include the following components:

1. Catchment surface
2. Gutters and downspouts
3. Leaf screens, first-flush diverters, roof washers
4. Storage tanks (cisterns)
5. Delivery system

How to meet criterion: To obtain the point for this item, a rainwater harvesting system shall be indicated on the landscape and irrigation plans, along with calculations showing the approximate amount of water to be provided by the system (under typical year rainfall conditions).

For more information:

<http://www.builditgreen.org/files/uploads/Resources/Build%20It%20Green%20fact%20sheets/Rainwater-Harvesting.pdf>
http://en.wikipedia.org/wiki/Rainwater_harvesting

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<http://www.harvestingrainwater.com/>
<http://www.forgottenrain.com/>
www.HarvestH2O.com
www.arcsa.org

B. Interior Water Use:

1. **Demonstrate that interior water use will be reduced by at least 20% as Described in LEED NC 2.2 WR Credit 3.2 OR** (1 pt)

Intent: Maximize water efficiency within buildings to reduce the burden on municipal water supply and wastewater systems.

How to Meet Criterion: Employ strategies that in aggregate use 20 % less water than the baseline calculated for the building (not including irrigation) after meeting the Energy Policy Act of 1992 fixture performance requirements. Calculations are based on estimated occupant usage and shall include only the following fixtures (as applicable to the building): water closets, urinals, lavatory faucets, showers and kitchen sinks.

For More Information:

2. **Demonstrate that interior water use will be reduced by at least 30% as described in LEED NC 2.2. WR Credit 3.2** (2 pt)

Intent: Maximize water efficiency within buildings to reduce the burden on municipal water supply and wastewater systems.

How to Meet Criterion: Employ strategies that in aggregate use 30 % less water than the baseline calculated for the building (not including irrigation) after meeting the Energy Policy Act of 1992 fixture performance requirements. Calculations are based on estimated occupant usage and shall include only the following fixtures (as applicable to the building): water closets, urinals, lavatory faucets, showers and kitchen sinks.

For More Information:

NON-RESIDENTIAL PROJECTS

V. Materials and Resources

A. Construction:

1. **Use material-efficient framing** (1 pt)

Intent: Optimize use of framing materials by means of efficient framing practices in order to save on lumber and improve the thermal efficiency of the structure.

How to Meet Criterion: Use a minimum of 4 of the following efficient framing practices:

- 1) Space joists and studs greater than 16 inches on center
- 2) Size headers for actual loads
- 3) Design roof pitch / eave width to 24 inch module

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- 4) Use ladder blocking drywall clip
- 5) Use two stud corners
- 6) Single top plates (with stack framing)
- 7) Designing to module (i.e. two-foot) dimension
- 8) Acceptable approach to maximize material efficiency submitted for review and approval

For More Information:

B. Materials:

1. Use of innovative materials for building envelope

(1 pt)

Innovative building materials include the use of Structural Insulated Panels (SIP), Insulated Concrete Forms (ICF), Autoclaved Aerated Concrete (AAC) and similar systems for solid wall systems.

Intent: To encourage alternative construction practices that reduce reliance on non-renewable materials, result in high performance (energy efficient) buildings and improve home comfort.

How to Meet Criterion: Design and construct a building which incorporates the use of Structural Insulated Panels (SIP), Insulated Concrete Forms (ICF), autoclaved aerated concrete (AAC), or similar systems, in at least 50% of the overall construction (walls, roof, floors). Walls must have a minimum R-Value of R-19 and the roof must have a minimum R-Value of R-30.

For More Information:

2. Use environmentally preferable flooring

(1 pt)

Intent: Selection of products with lesser or reduced effect on human health and the environment.

How to Meet Criterion: All flooring products must be chosen from the following options or from GreenSpec:

- a) Recycled content carpet and pad or wool
- b) Linoleum
- c) Bamboo
- d) Forest Stewardship Council (FSC) certified wood
- e) Recycled content tile
- f) Sealed concrete

Qualifying materials have one or more of the following attributes: FSC certified wood products, recycled content, bio-based, agricultural residue, Low-or no-VOC.

For More Information: Green Building Products: The GreenSpec Guide to Residential Building Materials, co-published by Building Green, Inc. and New Society Publishers. Available on-line at <http://www.buildinggreen.com/ecommerce/gbp.cfm>. (\$34.95)

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GreenSpec is also available on-line as part of the BuildingGreen Suite, at <http://www.BuildingGreen.com>. Suite costs \$199/year or \$12.95 for a week.

3. *At least 10 % of building materials are reused, salvaged or refurbished* (1 pt)

Intent: Reuse building materials and products in order to reduce demand for virgin materials and to reduce waste, thereby reducing impacts associated with the extraction and processing of virgin resources.

How to Meet Criterion: Use salvaged, refurbished or reused materials such that the sum of these materials constitutes at least 10 %, based on cost, of the total value of materials on the project.

Mechanical, electrical and plumbing components and specialty items such as elevators and equipment shall not be included in this calculation

For More Information:

4. *At least 20% of building materials have recycled content.* (1 pt)

Intent: Increase the demand for building products that incorporate recycled content materials, thereby reducing the impacts resulting from extraction and processing of virgin materials.

How to Meet Criterion: Use materials with recycled content such that the sum of the content constitutes at least 20 % (based on cost) of the total value of the materials in the project.

Mechanical, electrical and plumbing components and specialty items such as elevators and equipment shall not be included in this calculation

For More Information:

NON-RESIDENTIAL PROJECTS

VI. Indoor Environmental Quality

Intent: Reduce the quantity on indoor air contaminants that are odorous, irritating and/or harmful to the well being of installers and occupants.

1. *Use Low/No-VOC paint, adhesives and sealants* (1 pt)

How to Meet Criterion: Adhesives, Sealants and Sealant primers used in and within the building envelope shall meet the VOC limits of the South Coast Air Quality Management District (SCAQMD) Rule #1168.

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For More Information: SCAQMD website

2. *Use environmentally preferable materials for interior finishes* (1 pt)

How to Meet Criterion: Architectural Paints, Coatings and Primers shall not exceed the VOC limits of Green Seal Standard GS-11. Anti-corrosive and anti-rust paints applied to interior ferrous metal components shall not exceed the VOC limits of Green Seal Standard GS-03. Clear wood finishes, floor coatings, stains, sealers and shellacs applied to interior elements shall not exceed the VOC limits of SCAQMD Rule #1113.

For More Information: SCAQMD website

3. *Use low-emitting materials for carpets* (1 pt)

How to Meet Criterion: Carpet installed on the building interior shall comply with the carpet and Rug Institute's Green Label Plus Program; all carpet cushion used in the building interior shall meet the requirements of the Carpet and Rug Institute's Green Label Program. Carpet adhesives, if used, shall comply with requirement #1.

For More Information:

NON-RESIDENTIAL PROJECTS

VII. Innovation and Design Process

A. Innovation

1. *Up to 3 additional points may be earned for innovative design or materials* (1-3 pts)

Intent: Incorporates green design and construction measures that produce tangible, demonstrable environmental improvements beyond those listed in the City of Fresno Green Residential Checklist.

How to Meet Criterion:

- a) Exceptional performance (e.g. achieving twice the required threshold in another City of Fresno Green Residential Checklist Category.
- b) Innovative design strategies. The builder shall prepare a written submittal to the City of Fresno Green Committee that explains the intent of the credit, the proposed requirement for compliance, the proposed documentation to demonstrate compliance and a description and an estimate of the benefit / impact provided by the proposed measure.
- c) Emerging technologies, materials or construction practices.

For More Information:

CREDITS

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