



GLOBAL GREEN USA CASE STUDY



Site Planning · Alternative Transportation · Energy Efficiency · Renewable Energy · Resource Conservation · Resident Health

Nueva Vista Family Housing

131-136 LEIBRANDT STREET
SANTA CRUZ, CALIFORNIA

Nueva Vista is a cutting-edge example of how a dedicated affordable housing developer can incorporate many green features into a project while working within a limited budget. A 48-unit urban infill project just steps from the Santa Cruz Beach Boardwalk, Nueva Vista reduces car trips by including a child care facility and a city community center on-site, improves the health of residents by using a variety of non-toxic finishes, and lowers operating costs by incorporating solar electricity and other energy efficient measures.

Nueva Vista grew out of a lengthy organizing and community design effort in conjunction with the project's very low and low-income residents who work in the county's tourism and agricultural sectors, and the green aspects of the project helped build political support from the Santa Cruz City Council. The example set by Nueva Vista was instrumental in leading the developer, Mercy Housing California, one of the state's largest developers of affordable housing, to establish green building guidelines for all its future building projects.

PROJECT INFORMATION

Project Size:

Two buildings, 64,802 s.f. total, 48 units with child care facility and community center

Construction Cost:

\$10 million (\$154/s.f.)

Completion Date:

November 2003

Owner/Developer:

Mercy Housing California

Architect:

Van Meter Williams Pollack

Mechanical/Electrical Engineer:

MCT Engineers

General Contractor:

Devcon Construction

Energy Consultant:

Farber Energy Design

Solar Consultant:

EcoEnergies, Inc.

Financial Consultant:

Community Economics

GREEN FEATURES

Nueva Vista was conceived as a green project from the start, an aspect that greatly contributed to its overall success. Both green design and affordable housing experience were used as key criteria in the selection of the design team. The developer also identified potential funding resources early on, taking particular advantage of changes to the allocation criteria for affordable housing tax credits in California that support sustainable design. Because of this upfront commitment and the realization that some extra resources were potentially available, many of the project's green features were not "add-ons" but integral to the design.

In the early design phases, attention was paid to building orientation so that the units could maximize the benefits of both sunlight and ocean breezes. Window-shading and

through units enabled the project to eliminate air conditioning and rely purely on natural ventilation to cool the building. Hard-coat glazing allows for heat gain during the cold winter months but still reflects harmful ultraviolet rays.

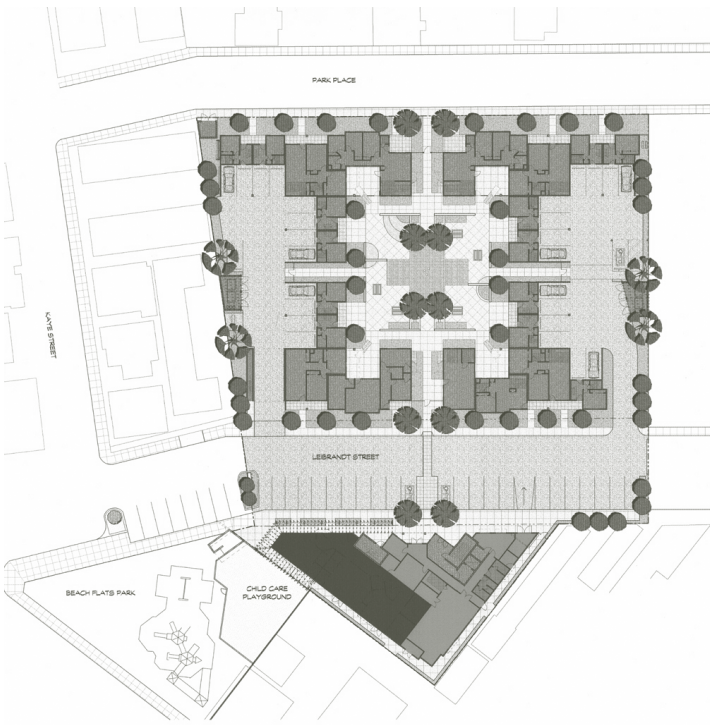
Energy efficiency was also stressed. Gas-powered hot water heaters do double duty by providing space heating in each apartment. (See Diagram) Highly efficient refrigerators were also specified for each unit. As a result of these and other measures, the entire complex is expected to exceed the standards of the California Title 24 Energy Code by at least 15%. With all units individually metered for both gas and electricity, much of the energy savings will flow directly to the residents. Meanwhile, the owner will save approximately \$5,000 per year in operating costs by directing the

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(Green Features Continued)

electricity generated by the 20 kW solar system to the common areas, including all exterior and interior common area lighting, the irrigation system, the elevator, and office machines, computers and appliances in the community room.

Researching, identifying and specifying green building materials, particularly those which have a positive effect on the health of residents, was a major challenge. The architect worked with their own appropriate materials checklist to set design criteria and explore cost implications. Later, a green design charrette, conducted by Global Green USA as construction documents were being prepared, helped narrow the choices and identify creative ways to pursue green building objectives. For example, a system of "bid alternates" was devised so that the contractor would obtain cost information for green materials that were not included in the original budget. This enabled Mercy Housing the flexibility to choose and prioritize which features could affordably be incorporated into the development.



The site plan orients the buildings to maximize the benefits of both sunlight and ocean breezes

Site Planning/Alternative Transportation

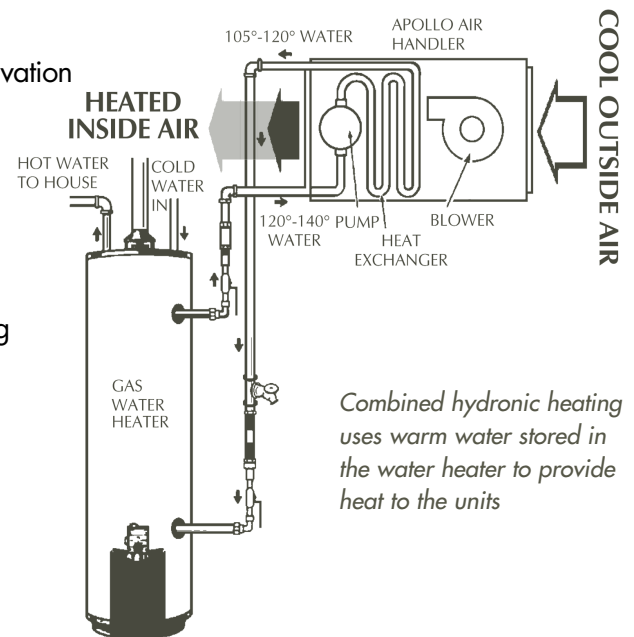
- Highly efficient drip irrigation system with scheduled timing
- Native, drought-resistant plants with low water needs
- Reduced parking
- Ample bicycle storage

Energy Efficiency and Renewable Energy

- Individual electrical and gas meters to promote energy conservation
- Hot water heaters also power space heaters (see illustration)
- Energy Star™ appliances
- All fluorescent lighting
- Double paned windows with low-E, hard-coat glazing
- No mechanical cooling
- 10 kW AC solar electric system installed on each building
- 140 roof-mounted solar panels generate approximately 35,000 kilowatt-hours per year
- Digital display of solar generation in each building, displaying \$350/month in operating cost savings

Resource Conservation

- Sustainably harvested plywood, FSC-Certified
- Permanent flow restrictors reduce water use in sinks by two-thirds
- Natural linoleum flooring in kitchens and bathrooms
- Recyclable carpet with high level of recycled content
- Construction waste recycling



Resident Health

- Fully vented cooking
- High-capacity bathroom fans to reduce spread of mold
- Formaldehyde-free batt insulation
- No-VOC paint
- Formaldehyde-free counter substrates
- Arsenic-free sill plates

FINANCING

Like most affordable housing projects, a variety of public and private sources were used to build the project. These sources included the federal and state tax credit programs for affordable housing, the Federal Home Loan Bank's Affordable Housing Program, the City of Santa Cruz and its Redevelopment Agency, a conventional mortgage from Citibank, and a grant from the David and Lucille Packard Foundation to assist with the costs of the child care facility.

Nueva Vista also benefited from a wide variety of special funds dedicated to green building. The project was awarded tax credits partially due to extra points it was granted in the tax credit allocation scoring system for besting Title 24 energy efficiency standards by 15% and for installing energy efficient appliances, fluorescent light fixtures, and water-efficient landscaping. The total cost of the solar electricity system, \$211,000, was more than offset by special funds available for installing renewable energy systems, including federal and state solar tax credits bought by the project's tax credit investor, AEGON Community Investments.

Green-specific financing included:

Funding Source	Building Component	Amount
PG&E Comfort Home Program	<i>Energy Efficient Building Components</i>	\$ 11,500
Tax Credit Basis Boost (5%)	<i>Solar Electricity Generating System</i>	\$ 289,000
Federal/State Solar Tax Credits	<i>Solar Electricity Generating System</i>	\$ 21,000 (estimated)
California Energy Commission Energy Renewables Rebate Program	<i>Solar Electricity Generating System</i>	\$ 98,000
California Public Utilities Commission LiteWash Program	<i>Energy Star™ washers and dryers</i>	\$ 2,100
Packard Foundation	<i>Non-toxic and other high quality building materials</i>	\$ 20,000

WHY BUILD GREEN?

Buildings have a profound impact on our health, economy and natural environment, using large amounts of energy and materials, while accounting for 30% of all waste in landfills. By building green, developers can mitigate these regional and global impacts, while saving money for themselves and their tenants.

Benefits to tenants and the building owner include:

- Reduced energy bills
- Reduced water bills
- Reduced maintenance costs
- Better indoor air quality

Regional benefits include:

- Stormwater retention
- Better waste management
- Less pressure on aquifers and other fresh water resources

Global benefits include:

- Forest protection
- Better air quality and reduced emissions
- Slowing down climate change
- Growth in the market for recycled materials

In affordable housing developments, green building can alleviate certain problems particular to low-income residents. The improved indoor air quality resulting from a more rigorous selection of non-toxic building materials helps to lower asthma rates, which are directly correlated to income levels. Meanwhile, lower utility bills have the greatest value to low-income residents, who on average pay 25% of their post-rent income for basic services.

CHALLENGES

Even with a committed developer, experienced design team, and a host of extra funds available to the project, Nueva Vista faced a number of challenges in the process of creating a successful green project.

- ❑ **Construction Management:** Initially the contractor had some difficulty adjusting to the different “green” specifications being considered by the design team and was reluctant to accept changes to standard construction practice. After much discussion, a process familiar to the contractor was devised whereby the contractor was asked to price certain green materials as bid alternates. This required the contractor to make an up-front commitment to providing the materials at a specified cost and allowed the developer to calculate which of various options fit within the budget. While this system of bid alternates was crucial to moving the project forward, it does have some drawbacks. The shortcomings of this approach include: the need for the design team to do a great deal of research to develop the set of alternative specs; the potential that green building materials will forever be seen by contractors as an “alternate” rather than standard practice; and the possibility that many green features will be labeled as additional cost items and ultimately be rejected by a less committed developer.
- ❑ **Carpet Recycling:** In affordable housing developments, carpeting is typically changed every 5 to 7 years. This frequent rate of replacement generates thousands of pounds of landfill waste, an issue of particular concern in Santa Cruz county where existing landfills will reach capacity within 15 years. As a result, attention focused on specifying carpet that was made of recycled material and is recyclable as well. While many carpet manufacturers claim that their carpets are recyclable – with some even offering “take-back” programs – the actual infrastructure for carpet recycling is weak. For example, one option for recyclable carpet that was considered would have required the owner to cut the old carpet into pallet-size pieces and pay to have it delivered to another county. Another manufacturer agreed to take back the carpet after removal but could not guarantee that it would actually be recycled, indicating that it might be incinerated instead. Eventually the decision was made to specify carpet with recycled content and made from nylon-6, a material with recyclable properties, with the hope that the industry and recycling infrastructure will evolve significantly over the next several years.
- ❑ **Kitchen and Bathroom Flooring:** Great effort was put into eliminating vinyl flooring – which is generally not recyclable and generates harmful pollutants when manufactured – by using natural linoleum in both the kitchen and bath. While linoleum had a higher upfront cost (\$5.00/sf versus \$3.50/sf for sheet vinyl), it should last 40 years, compared to only 7 to 10 years for sheet vinyl, thus significantly lowering operating costs over time. Nevertheless, there continues to be concern about the potential for moisture-related problems with the linoleum in the bathroom. Great care was put into installing the linoleum properly, while moisture build-up is minimized by providing high-capacity fans with no manual override (as opposed to automatic humidistat controls) in the bathrooms. Tenants will also be given material explaining the environmental benefits of linoleum versus vinyl and the need for proper maintenance.
- ❑ **Water Metering:** To promote conservation, the developer investigated providing individual water meters to the units in addition to the individual electricity and gas meters. This proved to be more difficult than expected, as each meter would have required a separate and costly hook-up fee. A system of sub-metering, whereby individual flow meters are installed and residents are billed separately by a third party, could not be set up within the time dictated by the construction schedule but remains a promising option.

CONTACTS

- **Mercy Housing California**, *Owner/Developer*
Project Manager: Elisabeth Vogel, 831-471-1910, evogel@mercyhousing.org
- **Van Meter Williams Pollack**, *Architect*
Architect: Fred Pollack, 415-974-5352, fred@vmwp.com
- **Global Green USA**, *Green Building Technical Assistance*
Program Director: Walker Wells, 310-394-7700, wwells@globalgreen.org
- **EcoEnergies**, *Solar Consultant*
Sales Manager: Mike Arenson, 831-427-9070, marenson@ecoenergies.com

