



CASE STUDY: Awards of Excellence for Affordable Housing Built Responsibly

First Community Housing's Murphy Ranch



Murphy Ranch

In September 2003, First Community Housing unveiled Murphy Ranch in Morgan Hill, California. The project comprises 100 new, affordable family townhouses on 7.2 acres. There is a significant need for affordable housing in the Bay area counties, and Murphy Ranch made great strides in meeting the needs of lower income families. The high-quality units feature innovative design, green attributes and affordability for tenants earning 22-60% of the area's median income. In addition to providing residents with a comfortable, healthy living environment, the project touts high energy efficiency and convenient transit to frequented locations, free transit "eco-passes" for residents, as well as the use of recycled and environmentally friendly materials.

Greening Goals:

FCH achieved significant goals for Murphy Ranch, including exceeding California Title 24 energy use requirements by over 25%; minimizing occupant energy consumption; selecting fuel and systems to minimize utility costs; incorporating a photovoltaic system to supply power to the local utility during peak load times and to provide common area electrical use; utilizing durable and sustainable materials; incorporating recycled-content materials and those that are recyclable; minimizing occupant water consumption; promoting family health and good indoor air quality by minimizing use of products containing formaldehyde, vinyl, VOCs, and other potential toxins; and promoting transit use.

Integrated Design Process:

FCH implemented an Integrated Design process, whereby the architects, developer, construction manager, energy consultant, project manager and asset manager worked together from the initial stages of the project to produce a thorough, efficient and innovative design. First Community Housing is unique in that it has a wide range of in-house expertise and is therefore well-positioned to undertake an integrated design process.

Project at a Glance

Location: Morgan Hill, CA
Project Type: New Construction
Ownership/Rental: Rental
Size:
 100 units (2-4 BR)
 122,080 total sq. ft.
 7.2 acre site, 14 units/acre
Project Completion Date: Sept. 1, 2003
Affordability:
 All units rented to those earning 22%-60% of the area median income.
Project Team:
 Developer: *First Community Housing*
 Architect: *Fisher Friedman AIA*
 Contractor: *L & D Construction*

Development Cost:

Land cost:	\$2,531,621
Construction costs:	\$17,092,741
Soft costs:	\$ 8,195,295
Total:	\$27,819,657

Cost/Savings of Greening:

Documented increased Cost of Greening (for photovoltaics):	\$310,000
Rebates and Grants for PVs:	\$155,000
Net Cost of Greening:	\$155,000

Standards Used:
 California Title 24 (exceeded by over 25%)
 ASHRAE
 Energy Star

- Key Green Features:**
- Photovoltaic panels generate 92% of electricity for common area
 - Siting near transit with free annual transit passes for residents
 - Surpasses CA energy code requirements

Measurable Benefits

Estimated Annual Savings from PV: \$10,450
Annual Energy Savings: 47.4 Megawatts
Payback Period: 14.8 years, 6.7 ROI
CO2 emissions avoided since May 2005: 37,800 lbs



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Green Features

Site Design/Landscape Planning:

In evaluating the potential impacts of construction at the site, a geotechnical report (by Lowney & Associates), a Phase I Environmental Study (by Confidential Compliance Consultants) and a biological study were completed. All demonstrated no impact from construction and led to a Negative Declaration by the city of Morgan Hill. The site was designated as a medium density apartment site with no sensitive habitats.

The site plan for Murphy Ranch maximizes solar gain, particularly for the swimming pool's solar heating panels, the backyards, pathways and the photovoltaic panels on the carport and recreation building roofs, which provide 92% of the electricity needed for the common area.

Location and Linkages:

Access to transportation was a significant consideration in siting the project. Murphy Ranch is located on a bus line, and is within 2 blocks of the CalTrans Station, a day care center, a community center and a large shopping area.

Building Design Greening:

Energy: Energy efficiency is achieved through effective insulation and double glazed windows, fluorescent bulbs for all internal and building mounted lighting, the use of Energy Star appliances, and highly efficient HVAC systems. Energy is generated by photovoltaic panels distributed on roof tops, which provide electricity for the common space and the solar-heated pool and shower. The project sells power to the local utility at peak hours at 35 cents/KW and buys it back at night at 7 cents/KW.

Indoor Environmental Air Quality: In order to minimize the presence of pollutants in the units, the following materials and systems were used: hydronic HVAC system with whole house venting; low emitting materials including paints and adhesives; and non-formaldehyde insulation. Linoleum floors were used throughout Phase II of the project. When vinyl floors from Phase I need to be replaced in the future, linoleum will be used. The whole house venting systems, linoleum floors and kitchen and bath exhaust fans minimize indoor air pollutants. In addition, kitchen and bath fans with outside exhaust as well as the intake of fresh air as part of the HVAC systems optimize moisture management.

Resource Conservation/Materials: Pre-cut and pre-sorted packs of lumber for all interior and exterior bearing walls helped limit waste generation in the construction process. Where possible, engineered structural lumber, composed of a mix of wood by-products and chips that would otherwise become waste, replaced solid lumber. Wood, compostable and non-compostable landscaping materials, and drywall were collected in separate bins for reuse or recycling. The roofing materials were chosen for their durability and low environmental impact.

In addition, the following recycled and natural content materials were used: recycled content carpet; non-formaldehyde insulation; recycled content interior trim and baseboard; engineered structural lumber; sustainable-harvest teak lobby and outdoor pool area furniture; wheat board composite office furniture; fiber-cement siding; FSC certified wood floor in community building; and 99% recyclable office chairs.

Water Conservation: All water fixtures in the units are low-flow, water-conserving fixtures.

Operations and Maintenance: FCH developed a Green Operations & Maintenance



Murphy Ranch's common areas are powered by photovoltaic panels. Since their installation in May, 2005, the photovoltaic panels at Murphy Ranch have generated more than 18,298 kWh of electricity—enough to power 364 homes for a day.



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Green Features

manual for the property management firm. The manual identifies performance level standards for maintenance staff and lays out FCH's objectives and maintenance policies, and specifies the use of green cleaning products.

During the building turnover period, contractors and maintenance staff attended a workshop that provided information for staff on all systems in the buildings. Ongoing inspections and communications between FCH and maintenance staff aim to optimize functioning of the buildings.

Resident Education: FCH produced a Resident Manual for tenants that describes energy efficient features and the benefits of solar electricity generation and energy conservation. The manual offers tips and information on a number of topics including, recycling, energy conservation, green products, indoor air quality and pesticides.

An energy monitoring system, displayed on an LCD monitor in the community room, monitors energy produced and used on site and allows residents to view a real-time picture of energy savings from the photovoltaic system (see <http://view2.fatspaniel.net/FST/Portal/>).

Occupant Satisfaction:

"My children and I have moved to Murphy Ranch Town Homes in September 2004 and every day since I have been grateful for this privilege. Living here and especially having Eco Pass for my children to commute to school has made our life possible and pleasant."

-Murphy Ranch Resident

Green Highlights

- All gas and Energy Star appliances
- Hydronic heating and cooling
- All fluorescent light fixtures
- Low-flow water fixtures
- Double glazed windows and sliding doors
- Solar-heated swimming pool and solar shower
- Photovoltaic electricity generation for common area
- Continuous improvement of energy monitoring systems
- Replacement of toxic cleaning products wherever possible
- Free annual transit passes for residents
- Fiber-cement siding
- Non-formaldehyde insulation
- Blown-in cellulose insulation
- Sustainable-harvest teak furniture
- Wheat board composite office furniture
- 99% recyclable office chairs
- Recycled carpet content floors
- Recycled content interior trim and baseboard
- Composite hardwood flooring material that is FSC green certified



Green Highlights

First Community Housing leveraged the City of Morgan Hill's financial investments in the project development by coordinating nine different funding sources. FCH secured tax credits and rebates through government agencies, the local utility company, and third-party programs. Lenders for Community Development and the Sobrato Family Affordable Housing Fund provided predevelopment funds for the project, while nine sources provided construction and permanent financing funds.

Cost of Greening Project: Although there were costs associated with implementing various green features and products, FCH did not track these and only reported the cost of the photovoltaic system, which totaled \$310,000.

Sources of Funding/Rebates: The California Public Utilities Commission provided a rebate of \$155,000, covering 50% of the cost of the photovoltaic system.

Life-Cycle Cost Analysis: FCH did not perform a full LCA, however, they did calculate a straight payback period of 14.8 years and a return on investment (ROI) of 6.7% for the P.V. system.

For a list of funders see: www.homedepotfoundation.org



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Looking Ahead

Challenges:

Two primary challenges in the development of Murphy Ranch are noteworthy. The first relates to financing and was overcome by creating a complex financing structure involving nine different lenders from federal, state, county, private trust and commercial funding sources. The second relates to the City's Measure P growth control process which specifies that only 30-40 affordable housing units may be built each year. FCH overcame this obstacle by dividing the project into multiple phases and legal parcels, which further complicated the financing. FCH started construction before the delivery of the loan, while still keeping in mind the interests and requirements of all funders. The project was completed on time and within the budget.

"The multiple strengths of First Community Housing's Murphy Ranch—exceeding California's tough energy code (Title 24) by 25%, attention to healthy materials, reaching very low income people, offering free transit passes for residents, and creating a very nice place to live with attractive community spaces—makes this an exemplary project for the Foundation to recognize."

-Member, Awards Advisory Committee

Partnerships:

First Community Housing leveraged nine funding sources for the project, including the City of Morgan Hill. The partnership with the City is noteworthy and will be used in the near future for other projects, given the positive response to Murphy Ranch at the local state and national level. In addition, The Mexican American Community Services Agency has formed a relationship with FCH to deliver community support services (e.g., after school care) at Murphy Ranch.

Policy/Practice Implications:

The strong partnership between FCH and the City of Morgan Hill has led to improvements in the planning and design process. In FCH's next project, it will work with the City much earlier in the process to include newer and perhaps more innovative green features in the design. In addition, information about the greening of Murphy Ranch was incorporated in the FCH GREENbase project, a database of sustainable building elements and their costs, as well as the costs of comparable non-sustainable elements (http://www.frontierassoc.net/FCH_2006_GB/login.asp). The database is intended to help other developers and financiers justify additional upfront funding for green features. The database also helps in the selection of products for maintenance and retrofits.

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