

# Case in Point...

## A GREEN AFFORDABLE HOUSING COALITION Case Study

MF-007



## Murphy Ranch

Murphy Ranch provides affordable housing for 100 families near downtown Morgan Hill within a two block walk of the CalTrans Station, a day care center and major shopping. Tenant income is 30 to 60 percent of the area median, with rents based on a sliding scale. The colorful townhomes are arranged in 4-plexes and 5-plexes around a central spine that includes two play structures, a solar heated swimming pool and a recreation building. The design is based upon the City of Morgan Hill's desire for a high quality, rural appearance. The project's green features encourage alternative transportation and improve indoor air quality while reducing waste, resource use, and energy consumption.

*Gables and clapboard siding harmonize with Morgan Hill's small town character.*



### Project Summary

- **Location:** 310 East Dunne Ave (at Butterfield Blvd)
- **Completion date:** October, 2004
- **Owner/developer:** First Community Housing, San Jose
- **Architect:** Fisher Friedman Associates
- **General contractor:** L & D Construction, San Jose

### Project Description

Phase 1 of the Murphy Ranch project was occupied in 2003, with Phase 2 completed in October 2004. The single-family, attached town homes are clustered in four- to five-unit complexes ranging in size from two to four bedrooms and from 1,017 to 1,449 square feet. The medium-density (14 units/acre), repetitively-gabled, ranch-style design and horizontal fiber-

cement clapboard siding allow the development to mesh well with the City of Morgan Hill’s rural traditions.

The 7.14-acre site includes a centrally located community center (completed during Phase 1) providing indoor and outdoor public space, recreational opportunities—including a solar-heated pool and shower room —and resident services such as a computer center, job training, and after-school homework programs. The community center features renewable and recycled-content finish materials and furnishings, and Forest Stewardship Council (FSC) certified wood flooring.

As a whole the project exceeds California’s energy efficiency code requirements (Title 24, 2001) by over 25 percent. A combination domestic hot water and hydronic water-to-air heat-exchange climate control system conserves energy and reduces construction resources. Numerous design features emphasize easing the utility burden on tenants and improving their quality of life, including in-unit natural gas washers and dryers, operable windows, substantial daylighting, and individually controlled thermostats.

| <b>By the Numbers...</b>   |  |
|--|--|
| <b>Parcel size</b>   | Phase 1: 5.12<br>Phase 2: 2.02   |
| <b>Total sq. ft.</b>   | Phase 1: 72,246<br>Phase 2: 47,132   |
| <b>Number units</b>  | Phase 1: 62<br>Phase 2: 38   |
| <b>Site acquisition costs</b>  | \$932,007  |
| <b>Development costs (land, site improvements, &amp; construction)</b> | Phase 1: \$10,070,000<br>Phase 2: \$11,679,892   |
| <b>Funding sources</b>   | City of Morgan Hill: \$3,453,426; County of Santa Clara: \$800,000; Housing Bond Trust: \$100,000; SCC Housing Trust: \$500,000; Other rebates & grants: \$155,000 |
| <b>Ave. cost / sq. ft.</b>   | \$134  |
| <b>Ave. cost / unit</b>  | \$162,435  |

The development’s central location reduces the pressure on city utilities and provides reasonable walking and biking access to community and retail services. Alternative transportation is further encouraged by supplying each resident with an Eco-Pass, enabling free, unlimited travel on the County’s bus and light rail system. A bus stop just outside the development’s main entrance, a nearby train station, and proximity to services reduce private vehicle trips, saving residents time and money.

Creating such alternative transportation options benefits the local environment and community through decreased pollution and traffic and an increased retail customer base.

A professional study of the Eco-Pass provision program in previous FCH developments documents a significant reduction in car use and demand. To FCH, which is the largest single purchaser of single resident passes in the County, the yearly Eco-Pass program investment pays for itself not only in resident satisfaction but at the bottom line. Recognizing the effectiveness and FCH’s consistent application of the program, municipalities are granting the organization’s developments a 10 percent reduction in parking requirements.

## Planning, Design, and Development Process

Non-profit developer First Community Housing (FCH) has been creating affordable housing in Santa Clara County since 1986. Since 2001, the organization has made it a priority to incorporate

green building methodology and materials into all projects. Green building and its focus on quality, health, durability, and long-term benefits fit well with FCH's mission to enhance the sustainability—economic, social, and environmental—of its developments. Aesthetic, energy-efficient, healthy and, most importantly, a pleasant place to call home, Murphy Ranch is an example of integrating the goals of green building and affordable housing.

Planning for the Murphy Ranch development began in 2000, with construction on Phase 1's 5.12 acres and sixty-two units commencing in 2001. FCH had to apply multiple times to secure a building allotment the City under Morgan Hill's residential growth control ordinance. The voter-mandated policy limits new housing construction to 200 units per year, with 20 percent (40 units) allocated to affordable housing projects.

Once building allotments were obtained, the remaining planning steps went remarkably smoothly. The City of Morgan Hill facilitated project permitting and approvals for Murphy Ranch and the project faced no community opposition. The project's attractive architectural design and many amenities, along with FCH's organizational efficiency, undoubtedly facilitated project approval. At FCH, aesthetics share equal footing with other design objectives from day one, including the green and economic ones. FCH has worked to disprove the notion that affordable housing must look different or be more troublesome to implement than other high-quality development.

As with all FCH projects, the General Contractor was hired through a negotiated bid process and was actively involved in the project from the earliest stages of conceptual design. The developer, architect, and general contractor worked together as a team on project design. Based on FCH experience, this approach results in an improved, more feasible design in which all parties have a stake and understand. It can also enable corrections and adjustments of design components on paper rather than the significantly more expensive, disruptive, and pressured nature of those late in the project or during construction.

## Sustainability Goals

- **Energy and Atmosphere:** Exceed Title 24 (2001) energy efficiency standards by 25 percent. Meet community center power requirements with on-site solar electricity generation. Reduce automobile resource consumption and pollution by providing readily available alternatives.
- **Materials and Resources:** Specify durable, sustainable, and recyclable or recycled-content structural and finish materials wherever feasible.
- **Water:** Minimize water use by installing efficient household plumbing fixtures and incorporating water-conserving landscaping practices. Utilize drought-tolerant plantings in areas other than the turf provided for child and family recreation.



*Carports generate both electricity and shade.*

- **Health and Safety:** Create healthier indoor air quality by specifying materials that contribute no or low levels of airborne toxins. Encourage physical activity by providing pool and recreation areas as well as a development in close proximity to basic services.
- **Site and Community:** Provide a welcoming community atmosphere with amenities and on-site services that are convenient to working families. Implement proven policy of aggressive grounds maintenance and vandalism control to foster resident pride and satisfaction.



*Community Center furniture is made of wheat board, a rapidly renewable material.*

### Green Building Features at a Glance

| Green Building Feature  | Base Case   | Benefits  |
|---|---|---|
| <b>Site</b>   |   |   |
| <ul style="list-style-type: none"> <li>Located adjacent to public transit and public/commercial amenities</li> <li>Provide an Eco-Pass (free mass transit) for all residents</li> </ul> | <ul style="list-style-type: none"> <li>Located outside the city and without easy access to services or public transit</li> <li>Provide no alternative transportation options</li> </ul> | <ul style="list-style-type: none"> <li>Reduces resident reliance on auto travel and the energy consumption and pollution resulting from it, reduces demand on city services to far-flung development</li> <li>Frees up significant resident financial resources typically used for automobile transportation</li> </ul> |
| <b>Structural frame</b>   |   |   |
| <ul style="list-style-type: none"> <li>Engineered lumber for joists and beams</li> </ul>  | <ul style="list-style-type: none"> <li>Solid-sawn lumber</li> </ul>   | <ul style="list-style-type: none"> <li>Reduces demand on large, old-growth timber by utilizing wood waste or young, faster-growing trees; provides straighter, more uniform quality structural members; enables longer spans and wider spacing</li> </ul>   |
| <b>Exterior finish</b>  |   |   |
| <ul style="list-style-type: none"> <li>Fiber-cement siding</li> </ul>   | <ul style="list-style-type: none"> <li>Wood siding</li> </ul>   | <ul style="list-style-type: none"> <li>Reduces paint maintenance and the demand for redwood or cedar siding; improves durability and fire resistance.</li> </ul>  |
| <b>Electrical</b>   |   |   |
| <ul style="list-style-type: none"> <li>High-efficiency fluorescent lighting in all dwelling units and common areas</li> </ul>   | <ul style="list-style-type: none"> <li>Incandescent bulbs outdoors and in all interior rooms but kitchens and baths</li> </ul>  | <ul style="list-style-type: none"> <li>Uses up to 75% less electricity than incandescent lighting and last up to 10 times longer, drastically reducing both energy use and time/waste impacts of replacement; generates less heat, reducing cooling loads and safety concerns</li> </ul>                                |
| <b>Appliances</b>   |   |   |
| <ul style="list-style-type: none"> <li>Energy Star appliances, natural gas where applicable</li> </ul>  | <ul style="list-style-type: none"> <li>Standard, least-expensive appliance options</li> </ul>   | <ul style="list-style-type: none"> <li>Higher quality materials and fabrication, exceed minimum federal standards for energy-efficiency/water consumption by 10-50% at comparable first-cost</li> </ul>   |
| <b>Roofing</b>  |   |   |
| <ul style="list-style-type: none"> <li>Durable roofing, asphalt comp shingles with 40-yr warranty</li> </ul>  | <ul style="list-style-type: none"> <li>20-yr warranty roofing</li> </ul>  | <ul style="list-style-type: none"> <li>Increased material lifespan reduces resource, waste, and economic impacts of roof replacement</li> </ul>   |

| Insulation  |   |   |
|---|---|---|
| <ul style="list-style-type: none"> <li>Formaldehyde-free batt insulation</li> </ul>   | <ul style="list-style-type: none"> <li>Conventional fiberglass batt insulation with formaldehyde binder</li> </ul>  | <ul style="list-style-type: none"> <li>Contributes to good indoor air quality by avoiding the VOC offgassing of formaldehyde</li> </ul>   |
| Windows   |   |   |
| <ul style="list-style-type: none"> <li>High-performance windows throughout, U-value = 0.29</li> </ul>   | <ul style="list-style-type: none"> <li>Maximum allowable U-value = 0.75 ( per Title 24, 2001 edition)</li> </ul>  | <ul style="list-style-type: none"> <li>Lower U-values inhibit heat transfer and thus decrease heating and cooling energy loads</li> </ul>   |
| HVAC  |   |   |
| <ul style="list-style-type: none"> <li>Combination water / space heating system</li> </ul>  | <ul style="list-style-type: none"> <li>Stand-alone water heating and space system</li> </ul>  | <ul style="list-style-type: none"> <li>Integrated design reduces energy consumption as well as construction and operating costs</li> </ul>  |
| Renewable energy  |   |   |
| <ul style="list-style-type: none"> <li>Photovoltaic (PV) solar electric panels on the community center and carport roofs (Phase 1)</li> </ul>   | <ul style="list-style-type: none"> <li>Grid-only electricity supply</li> </ul>  | <ul style="list-style-type: none"> <li>Provide 95% of electricity for the common area/community building, reducing utility costs and the adverse environmental effects of electricity production</li> </ul>   |
| Interior finish   |   |   |
| <ul style="list-style-type: none"> <li>Low-VOC paints</li> </ul>  | <ul style="list-style-type: none"> <li>Oil-based paints</li> </ul>  | <ul style="list-style-type: none"> <li>Reduce toxics on-site and for disposal; improve indoor air quality by minimizing offgassing of odors and toxic compounds</li> </ul>  |
| Flooring  |   |   |
| <ul style="list-style-type: none"> <li>Natural linoleum in kitchens and bathrooms</li> <li>Commercial-grade, recycled-content broadloom carpet with recyclable backing in living rooms, bedrooms, and common areas</li> <li>FSC-certified wood flooring in community center.</li> </ul> | <ul style="list-style-type: none"> <li>Vinyl sheet or tile floor coverings</li> <li>Conventional non-recyclable carpet made of virgin petroleum-based materials</li> <li>Non-certified wood flooring</li> </ul> | <ul style="list-style-type: none"> <li>Reduces resource impacts due to fabrication from rapidly renewable materials; reduces waste by lasting up to 4 times longer than vinyl; avoids the release of toxics involved in vinyl production and resident exposure to chemical offgassing</li> <li>Reduces raw resource (petroleum) use in production; at the end of its useful life the product is accepted for recycling by the manufacturer as raw material for new carpeting</li> <li>Supports economically, socially, and environmentally sustainable, third-party certified forest management and production practices</li> </ul> |

## Lessons Learned

The Murphy Ranch project was notable in regards to its lack of major problems or delays, from planning and design to permitting and execution to the levels of post-occupancy satisfaction. The construction process benefited from a capable and receptive contractor superintendent, the experience of the FCH in-house construction manager, and an architect able to provide workable on-site suggestions. Final financial numbers are not yet complete for Phase 2, but Phase 1 came in three percent under contract due to change orders that actually saved money.



*Community center floors incorporate sustainably harvested, FSC-certified wood*

Such economic success was made possible in large part by the organization's structure and focus. Since Jeff Oberdorfer came on board as Executive Director in 2000, FCH has increased the intensity of its mission to develop high quality, affordable rental housing in the Bay Area. FCH emphasizes an efficient, development-focused approach carried out by qualified, experienced staff of design and construction professionals. Green building practices were a logical component of FCH's strategy to enhance the organization's long term development success and the lives of FCH residents. The 100-plus long waiting list for Murphy Ranch units speaks to the project's success and a satisfied clientele.

## Project Awards

- **2003 Flex Your Power Award**, recognizing First Community Housing and its Murphy Ranch development as being one of the best in California in implementing innovative energy-saving design strategies

## For more information

- **Project contact:**  
Marty Keller  
Director of Construction Management  
First Community Housing  
(408) 291-8650 x14  
martyk@firsthousing.org
- **Website:** [www.firsthousing.org](http://www.firsthousing.org)

## About the Green Affordable Housing Coalition

We are a coalition of San Francisco Bay Area public-sector and private-sector professionals committed to incorporating green building practices into the construction, operation, and maintenance of affordable housing. Through education and outreach, we promote the use of construction materials and practices that conserve energy and water; minimize construction waste; use resource-efficient materials; promote good health for both the construction workers and the occupants; are durable and easily maintained; are integrated to the site and region; and enhance housing affordability. Success in this endeavor will produce economic and quality-of-life benefits for tenants, improve the financial bottom line for property owners, and generate economic and environmental benefits for the local, regional, and world community.

For more information about the Coalition, visit our website at [www.greenaffordablehousing.org](http://www.greenaffordablehousing.org) or call Bruce Mast at 510-845-0472.

## Disclaimer

Development of this case study was funded by California ratepayers under the auspices of the California Public Utilities Commission (Commission). It does not necessarily represent the view of the Commission, its employees, or the State of California. The Green Affordable Housing Coalition, the Commission, the State of California, its employees, contractors, and subcontractors make no warranty, express or implied, and assume no legal liability for the information in this report, nor does any party represent that the use of this information will not infringe upon privately owned rights. This report has not been approved or disapproved by the Commission, nor has the Commission passed upon the accuracy or adequacy of the information in this report. Contents are provided for general education and informational purposes only. The actual suitability and applicability of this information for a given use depends upon a host of project-specific considerations. The Green Affordable Housing Coalition strongly encourages the reader to consult with a construction professional and/or product supplier before applying any of this information to a specific use or purpose.