

# Case in Point...

## A GREEN AFFORDABLE HOUSING COALITION Case Study

[MF-002]



## Northgate Apartments

Northgate Apartments is an innovative “smart growth” project which incorporates a variety of Green Building techniques, including using as little vinyl as possible. Situated on an infill site in urban Oakland, large, family-size affordable housing has been created. Northgate Apartments is part of the City of Oakland’s “10K Initiative,” a redevelopment plan to build housing for 10,000 in downtown Oakland. Northgate Apartments has received support from the Telegraph-Northgate Neighborhood as well as Urban Ecology.

### Project Summary

- **Location:** 2301 Northgate Avenue, Oakland, California
- **Completion date:** December, 2003
- **Owner/developer:** Northgate Grand View, L.P. / Resources for Community Development
- **Architect:** Thomas Dolan Architecture
- **General contractor:** J.H. Fitzmaurice, Inc.
- **Other:** Title 24 calculations by Gabel Associates, LLC



*View facing courtyard*

### Project Description

Northgate Apartments is located on the corner of 23<sup>rd</sup> Street and Northgate in the Telegraph-Northgate neighborhood of Downtown Oakland. The neighborhood contains a mix of residential and commercial, single family and multifamily, small storefront shops and larger businesses. The project is in close proximity to bus lines and a Bay Area Rapid Transit (BART) station, health facilities, shopping, schools, and within ten blocks of Lakeside Park, Lake Merritt, and other recreational facilities.

The project began construction in October 2002 and completed construction in December 2003. The project is a Type V (wood frame) four story structure above a Type I (structured podium concrete) parking garage. The architectural style of the building is contemporary, and the design is focused around a central courtyard. The courtyard provides open space and encourages resident interaction and community building. The residential portion of the building wraps around the courtyard, buffering the site acoustically and visually from the adjacent freeway. The building also contains a community room for residents, laundry room, resident manager and services offices, and both ground and roof landscaping.

Northgate Apartments serves low income and very-low income families. An on-site services coordinator helps access social services for the tenants. The programs target both short and long-term goals related to educational or job training (unless employed), house meetings, peer support groups, parenting support groups, and recovery groups, if appropriate.

## Planning, Design, and Development Process

The architect acted as the main driving force behind the green project. Knowledge of Green Building techniques was an important factor for the quality of this project. Ensuring that these techniques and specifications were met was vital for the success of this project.

*Fiber cement and stucco siding provides a good substitute for wood or vinyl siding*



*Courtyard, facing south, allows natural sunlight exposure*

The General Contractor was actively involved with the value engineering. For example, one of the major changes that occurred was the decision against installing in-floor radiant heating. This was determined unsafe because the concrete would have been too heavy for this multi-story complex.

Among the green features that were incorporated to Northgate Apartments, the developer strongly specified against the use of vinyl. Therefore, there is no vinyl applied to the interior finishes.

## By the Numbers

<b>Parcel size:</b>	0.433 acres
<b>Total sq. ft.:</b>	
Floor area	75,464 ft <sup>2</sup>
Footprint	18,866 ft <sup>2</sup>
<b>Number units:</b>	
2-bedroom	16
3-bedroom	22
4-bedroom	4
Total	42
<b>Site acquisition costs:</b>	\$327,366
<b>Development costs:</b>	
Construction	\$11,596,461
Soft costs	\$1,146,529
Total	\$12,742,990
<b>Funding sources:</b>	
Limited Partner Equity	\$7,625,390 <i>Equity</i>
General Equity	\$554,000 <i>Equity</i>
City of Oakland	\$2,550,000 <i>Loan</i>
AHP	\$210,000 <i>Grant</i>
Permanent Loan	\$1,803,600
<b>Total</b>	<b>\$12,742,990</b>
Ave. cost / sq. ft.	\$675.00
Ave. cost / unit	\$303,404.00
<b>Ave. monthly utilities</b>	<b>\$76 utility allowance</b>
<b>Affordability targets:</b>	<b># of units</b>
25% med. income	3
30% med. income	4
45% med. income	4
50% med. income	21
60% med. income	9
On-site property manager	1

## Sustainability Goals

- **Energy and Atmosphere:** Minimize occupant energy consumption and reduce costs and maximize energy-related points with the Tax Credit Allocation Committee, which requires a project energy budget 15% more efficient than Title 24
- **Materials and Resources:** Incorporate durable materials, sustainable resources, materials rich in recycled content, recycle-ability and low environmental impact; minimize the use of vinyl in major areas
- **Health and Safety:** Promote good indoor air quality by minimizing use of products containing vinyl and VOCs
- **Site and Community:** Maximize utilization of the urban infill development; minimize the project's demand for additional resources that would impact the community; mitigate proximity to transportation infrastructure; promote resident self-sufficiency

*Interior view: High recycled content carpet*



## Green Building Features at a Glance

Green Building Feature	Base Case	Benefits
<b>Site and Community</b>		
<ul style="list-style-type: none"> <li>▪ Central courtyard design</li> <li>▪ Car share space</li> <li>▪ 11 hydraulic lifts (22 of 43 parking spaces)</li> <li>▪ 14 compact parking spaces</li> <li>▪ Electric car charge station</li> <li>▪ On-site programs including educational, job training, peer support groups, parenting support groups, and employment services</li> <li>▪ In-fill project</li> <li>▪ Kitchen and baths have wheelchair access</li> </ul>	<ul style="list-style-type: none"> <li>▪ No on-site amenities</li> <li>▪ Standard dimension kitchens and baths</li> <li>▪ Standard-size, single-level parking</li> </ul>	<ul style="list-style-type: none"> <li>▪ Central courtyard design maximizes natural sun exposure and buffers the site acoustically and visually from the adjacent freeway and BART line.</li> <li>▪ Car share space allows residents to borrow rather than own their own cars.</li> <li>▪ Combination of compact parking spaces and hydraulic lifts reduces parking footprint by 20% or more.</li> <li>▪ Electric car charge station promotes use of zero emissions vehicles.</li> <li>▪ On-site programs promote economic independence and encourage community support.</li> <li>▪ Using in-fill space maximizes the utilization of existing infrastructure.</li> <li>▪ Wheelchair access accommodates handicapped tenants and visitors.</li> </ul>
<b>Foundation</b>		
<ul style="list-style-type: none"> <li>▪ 35% fly ash content in concrete</li> </ul>	100% Portland cement (+ sand and aggregate)	<ul style="list-style-type: none"> <li>▪ Cement manufacture is energy intensive and produces significant carbon dioxide emissions. Using fly ash reduces the amount of cement needed, thereby decreasing the overall environmental impact, while increasing the concrete's strength and durability.</li> </ul>
<b>Structural frame</b>		
<ul style="list-style-type: none"> <li>▪ Engineered trusses</li> <li>▪ OSB sheathing</li> <li>▪ Glue-laminate on large spans</li> </ul>	<ul style="list-style-type: none"> <li>▪ Solid wood joists and trusses</li> <li>▪ Plywood sheathing</li> <li>▪ Solid wood headers and beams</li> </ul>	<ul style="list-style-type: none"> <li>▪ Engineering joists and trusses and OSB sheathing contribute to more sustainable use of resources by incorporating wood scraps rather than solid wood, thus minimizing harvest pressures on mature forests and reducing waste from excess lumber.</li> <li>▪ Engineered lumber contributes to overall project durability because components are straighter and more uniform which contributes to a more solid and water-tight project.</li> </ul>
<b>Exterior finish</b>		
<ul style="list-style-type: none"> <li>▪ Fiber cement / stucco siding</li> </ul>	<ul style="list-style-type: none"> <li>▪ Wood siding</li> </ul>	<ul style="list-style-type: none"> <li>▪ Fiber-cement and stucco siding contributes to sustainable resource use by avoiding the use of solid wood. It is considerably more durable than wood and requires less maintenance.</li> </ul>

Green Building Feature	Base Case	Benefits
<b>Electrical</b>		
<ul style="list-style-type: none"> <li>▪ Compact fluorescent / T-8 fluorescent lighting throughout</li> </ul>	<ul style="list-style-type: none"> <li>▪ Fluorescents in kitchen and baths only; incandescent in other rooms</li> </ul>	<ul style="list-style-type: none"> <li>▪ Compact fluorescent lamps reduce energy consumption and save occupants money on their energy bills. They also reduce replacement costs because they last up to 10 times longer than incandescent lamps.</li> </ul>
<b>Appliances</b>		
<ul style="list-style-type: none"> <li>▪ ENERGY STAR refrigerators and other appliances</li> </ul>	<ul style="list-style-type: none"> <li>▪ Electric stoves, water heaters, and space heaters</li> <li>▪ Conventional air conditioners</li> <li>▪ Conventional dish washers</li> </ul>	<ul style="list-style-type: none"> <li>▪ Natural gas is typically cheaper per BTU than electricity, thus contributing to lower energy bills for occupants.</li> <li>▪ ENERGY STAR appliances reduce energy consumption and save occupants money on their energy bills.</li> </ul>
<b>Insulation</b>		
<ul style="list-style-type: none"> <li>▪ Formaldehyde-free recycled content insulation</li> </ul>	<ul style="list-style-type: none"> <li>▪ Conventional fiberglass batt insulation</li> </ul>	<ul style="list-style-type: none"> <li>▪ Insulation contributes to energy efficiency, promotes good indoor air quality (by avoiding formaldehyde), and reduces consumption of raw materials.</li> </ul>
<b>Windows</b>		
<ul style="list-style-type: none"> <li>▪ Low-emissivity double-glazed aluminum frame, operable</li> <li>▪ Low sound transmission coefficient windows</li> </ul>	<ul style="list-style-type: none"> <li>▪ Single-pane windows and sliding doors</li> </ul>	<ul style="list-style-type: none"> <li>▪ Windows reduce occupant energy consumption by minimizing solar heat gain and conductive heat gains and losses.</li> <li>▪ Windows promote durability and lower maintenance costs by reducing fading of carpets, finishes, and furnishings due to UV radiation.</li> <li>▪ Avoiding vinyl reduces environmental impacts throughout product lifecycle; vinyl is also more challenging to recycle and reuse and often hazardous when disposed.</li> <li>▪ Low STC windows absorb noise from nearby freeway and BART line.</li> </ul>
<b>HVAC</b>		
<ul style="list-style-type: none"> <li>▪ Polaris combination water heating / space heating systems, 96.7% EF.</li> <li>▪ Apollo hydronic space conditioning distribution system</li> <li>▪ Baths and kitchens vent to outside</li> </ul>	<ul style="list-style-type: none"> <li>▪ Conventional water heating and space heating systems</li> <li>▪ Conventional forced air distribution</li> <li>▪ No external venting</li> </ul>	<ul style="list-style-type: none"> <li>▪ Combined space and water heating system reduces energy consumption and energy costs.</li> <li>▪ External venting minimizes internal buildup of moisture and odors, which improves indoor air quality and makes units easier to maintain.</li> </ul>

Green Building Feature	Base Case	Benefits
<b>Interior finish</b>		
<ul style="list-style-type: none"> <li>▪ No-VOC paint used throughout the interior</li> </ul>	<ul style="list-style-type: none"> <li>▪ Wood cabinets and trim</li> <li>▪ Oil-based paints and varnishes</li> </ul>	<ul style="list-style-type: none"> <li>▪ No-VOC paints contribute to good indoor air quality by minimizing off-gassing of formaldehyde and volatile organic compounds (VOCs).</li> </ul>
<b>Flooring</b>		
<ul style="list-style-type: none"> <li>▪ Linoleum floor in entry, kitchens and baths</li> <li>▪ Natural rubber flooring in common areas and stairwells</li> <li>▪ High recycled content carpet</li> </ul>	<ul style="list-style-type: none"> <li>▪ Vinyl floors in kitchen and bathrooms</li> <li>▪ Conventional wall-to-wall carpet in living rooms, bedrooms, and common areas</li> </ul>	<ul style="list-style-type: none"> <li>▪ Linoleum is more durable than vinyl (expected useful life of 30+ years, compared to 5-7 years for vinyl). Annual maintenance costs are much lower than vinyl flooring because it is inherently more durable and does not require sealers or waxes for maintenance.</li> <li>▪ Linoleum contributes to good indoor air quality by avoiding off-gassed toxins associated with vinyl.</li> <li>▪ Linoleum is made of rapidly renewable materials. The manufacturing process reuses all scrap materials and thus generates no waste.</li> <li>▪ Linoleum is recyclable; it can be ground up and composted at the end of its useful cycle.</li> <li>▪ Recycled-content carpet minimizes use of virgin materials.</li> </ul>

## Lessons Learned

The project illustrates the importance of selecting an architect who fully understands Green Building and is committed to putting it into practice. For a successful Green Building project, the architect must understand and be knowledgeable of Green Building techniques. The architect must be dedicated to making sure the goals that were set during the design process are met during construction. In this case, the architect chose the specifications and checked that the submittals matched up. For example, the architect was able to catch the near-installation of conventional insulation and instead instructed the use of formaldehyde-free insulation. Thus, the architect's on-site presence provided an important measure of quality control.

The project is also a useful example of working together as a team towards a common goal. For a project to be successfully Green, a mutual understanding of this goal must be shared by the developer, architect, and General Contractor. During the value engineering process, the General Contractor considered the projects Green Building objectives when developing cost cutting recommendations. The project benefited from the teamwork. The end result is good quality construction. The materials were chosen carefully, considering factors such as low environmental impact, durability and residents' health.

During the design and development process, many on-site factors posed obstacles. The final plan is space efficient and is sensitive to the existing landscape. The close proximity to freeways and BART, while convenient for residents, represented particular design challenges to minimize noise and visual disturbances. The project is a good example of a design solution that is not invasive to the given site while also being aesthetically pleasing.

*Gas water heater, 95+%  
energy efficient*



## For more information

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## 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 510-271-4785.

## Disclaimer

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