ULI DEVELOPMENT CASE STUDIES

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Solara

Poway, California

Project Type: **Multifamily Rental**

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PROJECT TYPE

Located in Poway, California, a suburb of San Diego, Solara provides affordable apartments for low-income residents who earn between 30 and 60 percent of the area median income. Developed by nonprofit Community HousingWorks, the 56-unit complex is powered entirely through a 142-kilowatt photovoltaic system and is the first project recognized under California's Zero Energy New Homes program. The efficiency of the solar array—Solara exports energy to the grid even at peak demand—allows tenants to pay no utility costs. The 2.5-acre (one-hectare) project includes a number of other sustainable and green building features such as passive solar design, low-maintenance landscaping, and the use of recycled materials throughout the site.

LOCATION

Outer Suburban

SITE SIZE

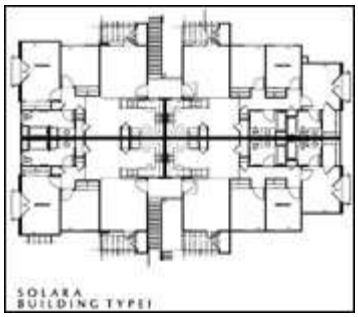
2.51 acres/1.02 hectares

LAND USES

Multifamily Rental Housing, Affordable Housing, Apartments

KEY FEATURES

- Affordable Housing
- Green Building
- Sustainable Development



- Infill Development

ADDRESS

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Poway, California

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GENERAL DESCRIPTION

Solara is a green affordable housing complex located in Poway, California—an outer suburb of San Diego. Powered entirely by solar energy, it consists of 56 units situated on a formerly blighted infill site. In an area where the average median income (AMI) is $70,000, the project offers a new source of affordable housing to low-income individuals.

At Solara, owner and local nonprofit developer Community HousingWorks (CHW) utilized an integrated design and development process to produce affordable and energy-efficient units. The developer worked closely with the city of Poway, which created an interdisciplinary team to determine regulatory concessions and streamline the project review. In choosing Global Green USA as the green adviser, CHW was able to tap creative financing options for renewable energy and make use of cost-effective, practical green technologies.

The 142-kilowatt photovoltaic array—a connected system of solar panels—at Solara supplies all electrical demand at the development. The confluence of renewable energy and sustainable design resulted in a 95 percent reduction in greenhouse gas emissions as compared with a similar multifamily complex, and the California Energy Commission has recognized Solara as the first Zero Energy New Home in the state.

SITE

As mentioned previously, Solara is located in Poway, an incorporated city 20 miles (32 kilometers) inland from downtown San Diego. With a 2007 median sales price of $640,000 for a single-family home, the municipality faces an acute demand for affordable housing. The infill site lies within the Redevelopment Project Area, which was created by the redevelopment agency to encourage renewal efforts in economically and physically distressed sections of the city.

Solara is situated along Community Road, a major arterial in central Poway. To the east lies a large shopping center with a bank, a grocery store, and restaurants. Market-rate apartments border the complex to the south, and a large community park and playground are located to the north. To the west, the project is separated from a neighborhood of single-family homes by a wide floodway.

The Metropolitan Transit System (MTS) provides bus service for southern San Diego County. Poway is served by two bus routes that link the city to downtown San Diego, and Solara is located within a quarter-mile (0.4 kilometer) of the nearest transit stop. The site is within walking distance of schools, shopping, and public services, reducing tenants' reliance on automobiles.

DEVELOPMENT PROCESS AND APPROVALS

With 25 years of experience, CHW has developed more than 1,500 affordable multifamily units in San Diego County. Having already completed four projects in Poway, the developer has fostered a strong working relationship with the city, facilitating the design and entitlement process of Solara.

In 2001, CHW identified the infill site along Community Road as a potential location for affordable housing. Lying within the city's Redevelopment Project Area, the site was vacant except for a few abandoned structures and an attorney's office. CHW entered two of the parcels into escrow, while over the next few years the city obtained—without the use of eminent domain—the remaining two parcels necessary for a buildable area of 2.5 acres (one hectare). Once the site was assembled, the city of Poway retained ownership of it and agreed to a 99-year ground lease with CHW.

After site assembly was complete, the city of Poway created an interdisciplinary team of staff members to facilitate the review of Solara. In order to meet the affordable housing requirements set forth by the state of California, the development team needed to begin construction within a year of submitting initial site plans—an ambitious timetable for the entitlement of any development. To accomplish this, the municipal staff scrapped the traditional

linear review process and adopted an integrated approach, working closely with the development team throughout the design, planning, and review of the project.

In addition to streamlining the review process, the city of Poway provided a number of regulatory concessions. After presenting parking usage data at other CHW projects in Poway, the developer was granted a variance to reduce the number of required parking spaces. A second variance was obtained to increase the site density, resulting in more affordable units than the underlying zoning designation would have accommodated.

CHW planned to incorporate green technologies at Solara; however, the full scope of the zero-energy, sustainable design was not realized until Global Green USA was brought on as green adviser. In January 2005, Global Green USA held a charrette with the development team and municipal officials to outline the range of potential green technologies. Following the charrette, the developer elected to widen its array of energy-efficient technologies to include solar energy as the project's power source.

During the planning process, the development team faced community opposition to the project. Nearby residents voiced reservations commonly associated with affordable housing, such as the adverse effect on property values, the increase in crime, and potential for unsightly design.

The developer actively addressed the community's concerns through Housing Solutions, a public/private partnership dedicated to building support for affordable housing in Poway. As a founding member of Housing Solutions, the developer held joint neighborhood planning sessions with city officials to mitigate the community's apprehensions associated with affordable housing. In addition, the architect provided detailed renderings of the project to assuage concerns about Solara's aesthetic impact.

DESIGN

Designed by Rodriguez Associates, Architects, & Planners, Inc., Solara consists of six two-story apartment buildings arranged along the perimeter of the property. In the middle of the site lies the community center, where landscaped pathways radiate outward, connecting structures and open space. Along the back of the property, a 400-foot-long (122-meter-long) pedestrian pathway offers vistas of the natural greenbelt, and provides access to the adjacent park, playground, and riparian amenities.

Solara was intended to be a collection of homes rather than monotonous apartment blocks. The architect designed articulated rooflines—pitched at different angles and directions—breaking up sightlines and endowing "movement" to the project. Stairwells, porches, and bay windows protrude from each building, enhancing the individuality of each unit. The stratified use of color further sets apart each cluster of apartments—on first glance, the structures appear to be townhomes or rowhouses rather than rental units.

The structures, including the carports, are sited facing due south wherever possible, maximizing the capture of solar radiation. The solar panels are carefully concealed atop the carports and apartment roofs, meeting aesthetic conditions required by the city. From the ground level, the large solar array is completely hidden from view.

In keeping with sustainable development practices, the site design is very compact. To offset the high density, the architect incorporated semiprivate courtyards, communal open space, and seating areas throughout the property. Second-floor landings serve also as balconies, where trellises replace walled enclosures to offer views. Also, the adjacent greenbelt and large park act as open-space multipliers, providing residents with recreational opportunities and natural vistas.

Designed to encourage interaction among residents, the site is internally connected through a series of pathways and nodes. The main corridor leads from the community center to the pedestrian pathway along the back of the site, creating a central thoroughfare and meeting place. Benches, public art installations, and shaded areas are provided where paths intersect.

The landscaping and public art at Solara are designed to engage the senses. Some landscaping features are edible—a Meyer lemon grove, for example, was planted behind the community center, and clusters of rosemary and sage are interspersed throughout the site. There is no turf to be mowed, and the landscaping strikes a sustainable balance between drought-resistant Mediterranean ornamentals and species native to southern California. Public art installations—all made of recycled materials—serve to reinforce principles of sustainability and environmental stewardship for the residents.

Solara has two automobile entrances—the primary access point along Community Road, and a secondary entrance on Hilleary Place. The main driveway leads directly to the community center, and branches off into the parking lots for each of the structures. The site contains 90 parking spaces, 58 of which are under carports.

The aforementioned community center is the focal point of the complex. It contains a seven-computer learning center, a multipurpose room, a property management office, laundry facilities, and a shared kitchen. Behind the community center, a courtyard with a tot lot and barbecue is available to all residents.

The 56 rental units at Solara range from 659 to 1,023 square feet (61.2 to 95 square meters) in size. Each one-, two-, or three-bedroom unit is either accessible to disabled residents or adaptable to be. Every dwelling contains fluorescent overhead lighting, energy-efficient appliances, and dual-flush toilets. The apartment design also utilizes passive cooling—virtually every apartment is a corner unit, allowing for cross-ventilation.

FINANCING

The three key funding sources for Solara were: 1) low-income housing tax credits (LIHTCs); 2) investment tax credits; and 3) an energy rebate for the use of photovoltaics. The utilization of solar energy opened up nontraditional funding opportunities to the development team, and maximized their returns on traditional tax credits.

In July 2005, CHW applied for LIHTC funding with the California Tax Credit Allocation Committee, the government body responsible for overseeing the highly competitive disbursal of affordable housing dollars. To encourage the use of renewable energy, California offers a threshold basis increase on LIHTCs that raises the dollar amount of eligible tax credits. The implementation of solar energy and sustainable design at Solara resulted in a maximum 9 percent basis boost, or an additional $400,000 in funding. Receiving the most points possible, CHW was awarded the tax credits in September 2005. In the end, the tax credit sale yielded $11.3 million in equity from the National Equity Fund (NEF).

The development team took advantage of additional state and federal programs designed to encourage the use of renewable energy in low-income housing. For the use of solar panels, CHW received $409,000 in renewable energy rebates from the California Energy Commission (CEC). Also, the project was eligible for federal investment tax credits that covered approximately 20 percent of the hard cost of the photovoltaic system, resulting in an additional $208,000 in funding.

Furthermore, the permanent mortgage financier, Union Bank of California, offered a 40-year amortization schedule to defray the costs of solar installation not repaid by other funding sources. Ultimately, the $1.1 million cost of the photovoltaic panels was almost entirely covered by state and federal incentives rarely used in affordable housing financing.

The remaining development costs were met by traditional funding sources. The city of Poway's redevelopment agency provided a $775,000 loan, to be repaid through residual receipts. The project also received $1 million from the County of San Diego Housing HOME funding, and a permanent loan of $2,369,500 from Union Bank of California.

GREEN FEATURES

Green building has long been regarded as too costly for the affordable housing sector, despite the clear money-saving benefits for low-income households. At Solara, the developer applied practical and cost-effective green features—often off-the-shelf technologies—to construct basic, high-performance buildings and a low-maintenance, sustainable site. The most striking feature, however, is the solar array that powers the project.

Due to the complexity of the roof design, the large photovoltaic array had to spill over onto the carports, which were reinforced to withstand the weight of the panels. The 142-kilowatt system provides all of the electricity required to power the development—and even during the summer periods of peak demand, Solara exports energy to the grid. The efficiency of the system allows the developer to offer utilities at no cost to the tenants, which protects low-income residents from volatility in energy prices.

Twenty miles (32 kilometers) inland, Poway can often be 20 degrees warmer in the summer months than downtown San Diego. To regulate indoor temperatures in this climate, each building at Solara incorporates passive design elements, such as proper siting for solar radiation and cross-ventilation, double-paned windows, solar shades, and a radiant barrier.

Inside Solara, units have fluorescent lighting, Energy Star appliances, and an airy design to increase energy efficiency. Low-VOC carpeting, formaldehyde-free insulation, and mold-preventative ventilation systems all heighten indoor air quality. Also, the decks, carpet padding, and linoleum are made from recycled or natural products, and the dual-flush toilets fulfill the developer's commitment to water conservation.

On site, drought-tolerant plantings and maintenance-free landscaping minimize water consumption and greenhouse gas emissions, respectively. The varied roof angles allow for rainwater to drain to multiple bioswales, rather than a single stormwater structure. Freonless air-conditioning units cool the site during summer months, and in winter the structures are centrally heated from a gas-fired tankless boiler.

Global Green USA oversees a monitoring system to measure the energy efficiency of Solara. To date, the green adviser has seen an 80 to 85 percent decline in energy bills, and a 95 percent reduction in greenhouse gas emissions compared with those generated by a similarly sized and located project. In addition to providing information on tenant usage, the monitoring system at Solara is delivering much-needed hard data for policy makers and developers.

As a result of the photovoltaic array, green technologies, and sustainable site design, Solara's energy efficiency exceeds California's stringent Title 24 Energy Efficiency Building Standards by 15 percent. Its practical and cost-effective design provides a model for green affordable housing, where budgets are tight.

MANAGEMENT, TENANTS, AND PERFORMANCE

The 56 units on site are reserved for those making 30 to 60 percent of the AMI. In 2007, the AMI of San Diego County was $70,000 for a family of four. At Solara, rents range from $388 for a one-bedroom apartment to $1,075 for a three-bedroom unit.

In the spring of 2006, Poway held a city-supervised lottery for potential tenants; over 700 people on the interest list entered the drawing for the 56 affordable units. Today, the project remains fully leased, with more than 400 individuals on the waiting list.

CHW operates a number of outreach programs out of the community center. For example, classes on financial literacy, leadership training, and the path to homeownership are offered. An after-school program is provided for the children at Solara, and computer access is available to all residents.

When tenants enter into a lease at Solara, they must sign a green addendum and attend a mandatory green orientation. CHW has developed a 360° Green Curriculum, which is designed to promote and reinforce environmental awareness among residents—including children. The green curriculum has become so successful that the developer is planning to unveil the program across its affordable housing portfolio.

The developer has also instituted a green maintenance program, which ensures that all cleaning products and office supplies are environmentally friendly, and all landscaping and photovoltaic maintenance are carried out in a sustainable fashion.

EXPERIENCE GAINED

As well as providing much-needed affordable housing in an upper-income suburb, Solara has served as a catalyst to spur interest in energy-efficient design and renewable energy sources. As a result of this project, CHW plans to implement its 360° Green Curriculum and other sustainable practices at all of its complexes. Both the architect and landscape architect have used the experience gained at Solara to incorporate sustainable design at other projects, and the complex has prompted the city of Poway to explore drafting an ordinance to incentivize sustainable development.

In California—and throughout the country—interest in the use of renewable energy has been growing. However, there is a lack of built examples required to demonstrate the economic feasibility of the technology. The monitoring system at Solara is designed to be a data mine for other developers interested in solar power, and for lawmakers involved in renewable energy policy.

The photovoltaic system at Solara was made feasible by a creative mix of financing options available only in California. Even there, however, the financial incentives for renewable energy are not widely known among affordable housing developers. In addition to educating the marketplace, the developer believes California must address regulatory and metering policy in order to encourage the use of renewable energy in the affordable housing sector.

PROJECT DATA

LAND USE INFORMATION

Site area (acres/hectares): 2.51/1.02
Percentage complete: 100
Gross density (units per acre/hectare): 22/54
Number of off-street parking spaces: 90 (58 covered)

LAND USE PLAN

Use	Area (Acres/Hectares)	Percentage of Site
Buildings	0.76/0.31	30.1
Streets/surface parking	0.78/0.32	31.2
Landscaping/open space	0.96/0.39	38.3
Other (trash enclosures)	0.009/0.004	0.4
Total	2.51/1.01	100.0

RESIDENTIAL INFORMATION

Unit Type	Number of Units	Area (Square Feet/ Square Meters)	Percentage Leased	Average Rent
One-bedroom/one-bathroom	8	659/61	100	$388–$775
Two-bedroom/one-bathroom	28	880/82	100	$466–$931
Two-bedroom/two-bathroom	2	883/82	100	$466–$931

Three-bedroom/two-bathroom	18	1,023/95	100	$538–$1,075
Total	56			

FUNDING SOURCES

Permanent loan (Union Bank of California): $2,369,500
Redevelopment Agency (city of Poway): $775,000
County of San Diego Housing (HOME): $1,000,000
Deferred/accrued interest: $28,300
CEC energy rebate: $409,000
Utility, tax reimbursement: $123,605
General partner capital contribution: $100
Equity generated from the sale of low-income tax credits (NEF): $11,266,278
Equity generated from the sale of investment tax credits (NEF): $208,011
Total: $16,179,794

DEVELOPMENT COST INFORMATION

Site Acquisition Cost: $0 (99-year ground lease with the city of Poway)

Site Improvement Cost: $2,703,162

Total Construction Cost: $11,314,697 (including $1.1 million for the photovoltaic array)

Soft Costs: $4,865,097
Architecture/engineering: $737,029
FFE: $50,000
Operating reserve: $147,952
City and utility permits and impact fees: $933,439
Financing: $1,285,868
Developer fee: $1,140,000
Other: $570,809

Total Development Cost: $16,179,794

DEVELOPMENT SCHEDULE

Site purchased: August 2004
Planning started: August 2004
Tax credit allocation: September 2005
Construction started: November 2005
Building permit issued: February 2006
Sales/leasing started: spring 2006
Project completed: March 2007

DRIVING DIRECTIONS

From San Diego International Airport: Take I-5 north to I-8 east. Take I-8 east to I-15 north. From I-15 north, exit onto Poway Road and travel east to Community Road. Turn left (north) on Community Road. The site is at 13414 Community Road, at the corner of Hilleary Place.

Driving time: 45 minutes in nonpeak traffic.

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Developed by Community HousingWorks, a local nonprofit organization, Solara is a 56-unit affordable housing project situated in Poway, an outer suburb of San Diego.

Courtesy of Community HousingWorks

The first project recognized under California's Zero Energy New Home program, Solara supplies all of its electrical demand through solar energy. From the ground level, the 142-kilowatt photovoltaic system is hidden from view atop the roofs of the residences and carports.

Courtesy of Rodriguez Associates Architects & Planners, Inc.

At the community center, staff members operate outreach programs on financial literacy, leadership training, and environmental awareness.

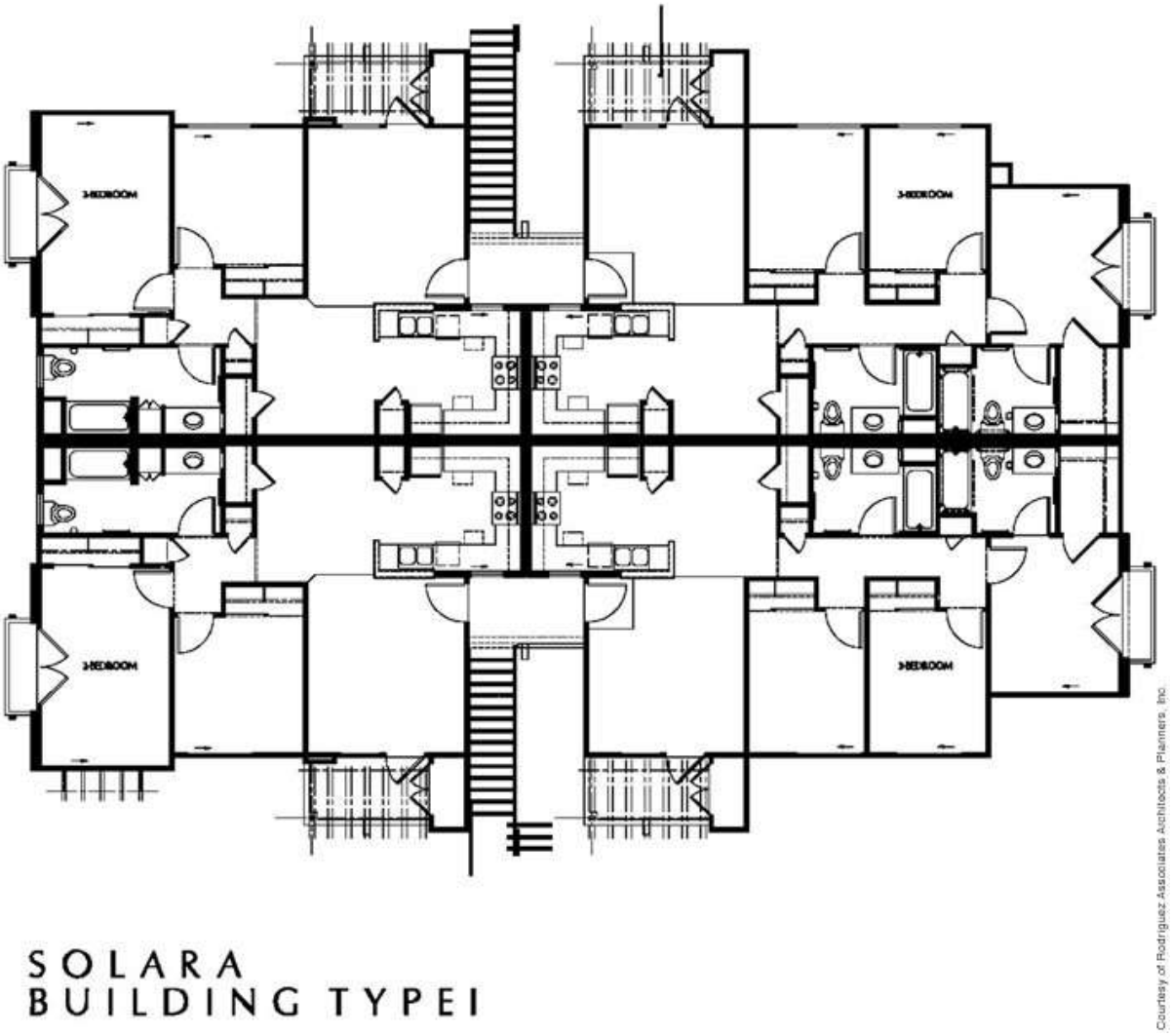
The landscape architect used drought-tolerant plantings and low-maintenance landscaping to conserve water and reduce greenhouse gas emissions.

A network of nodes and pathways provides meeting places for residents and links the site to the adjacent natural greenway and recreational amenities.

SOLARA
SITE PLAN

Courtesy of Rodriguez Associates Architects & Planners, Inc

Solara site plan.



Building I floor plan.