

CASE STUDY: NRDC OFFICE

Santa Monica, California

SUMMARY INFORMATION	
Occupancy	Three-story small office building
Size	15,000 sq. feet
Completed	November 2003
Owner	Natural Resources Defense Council
Developer	Tishman Construction Corporation
Architect	Moule & Polyzoides
Awards and Ratings	LEED Platinum certification; Congress for the New Urbanism Charter Award (2004).

For its Southern California office, NRDC chose to renovate a 1920s-era structure in Santa Monica's pedestrian center to take advantage of existing services like transit and to avoid building on undeveloped land. To reduce the flow of stormwater and cut potable water use, the project includes an advanced system to retain, filter and recycle rainwater and wastewater. Through the use of recycled water for toilet flushing and landscape irrigation, drought-resistant plantings and water-efficient plumbing, the building is projected to use 60 percent less potable water than a comparable non-green building. Energy savings are expected to reach 70 percent with the help of light wells, clerestories and other daylighting techniques; energy-efficient computers and equipment; dimmable electronic ballasts; occupancy and photo sensors; and tankless gas heaters. To cut back on materials and resources, the builders recycled 90 percent of the deconstruction and construction waste from the site, specified new wood from sustainable forests only and made wide use of wood alternatives and recycled content furniture. The building protects indoor air quality through the use of operable windows, low- and no-VOC materials and furnishings, environmentally sound cleaning products and an indoor air monitoring system.

COSTS AND SAVINGS

Construction Costs

Total: \$5,100,000

Per square foot: \$340

The above cost includes "soft" costs (design, consulting, etc.) of \$1,300,000/\$87 per square foot and "hard" costs (construction) of \$3,800,000/\$253 per square foot.

Greening Costs

Total: \$695,000

Soft: \$502,000

Hard: \$193,000

Projected Utility Savings

Electricity: 48,076 kWh/yr. (56% over California Title 24; 66% over ASHRAE 90.1-2001)

Natural Gas: 950 Therms (29% over California Title 24; 39% over ASHRAE 90.1-2001)

Water: 60,000 gallons/yr (\$385/yr)

Savings: \$8,200/yr. (energy only; 54% over California Title 24; 64% over ASHRAE 90.1-2001)

Projected Utility Use and Costs (regulated uses only)

Electricity: 38,150 kWh; \$5,200

Natural Gas: 2,360 Therms; \$1,834

Water: 35,500 gallons; \$2,066

Pollution Reductions

CO₂: 54 tons/yr.

NO_x: 450 pounds/yr.

SO_x: 500 pounds/yr.

STRATEGIES

Site

- Located on an existing building site in a developed area.
- A stormwater retention system captures the first three-quarter inch of rainfall from each storm, allows it to drain through filtered catch-basins from the rooftop into the cisterns and then moves it into the building's water recycling system.
- On-site showers and bike racks encourage the use of alternative transportation.
- Light-colored roofing, along with shading provided by plants and overhangs, keeps temperatures down in and around the building.
- In the courtyards, porous paving made from 100 percent post-consumer or post-industrial plastic resins allows stormwater to percolate into the ground instead of running down storm drains.

Water

- Dual-flush toilets (offering the choice between a 1.2 or 0.8 gallon flush), waterless urinals and a high-efficiency dishwasher help keep water use low.
- No potable water is used outdoors.
- Water recycling system stores, filters and disinfects water reclaimed from rainfall, showers and sinks for use in flushing toilets and irrigating landscaping.
- Drought-resistant landscaping and outdoor potted plants, including many native to Southern California, minimize irrigation needs.
- A drip irrigation system emits measured amounts of water through small tubes to each plant's root ball, limiting water loss due to evaporation.

Energy

- Light wells, clerestories and architectural glass provide natural daylighting throughout the building, reducing the need for electric lighting.
- Energy efficient computers and equipment, dimmable electronic ballasts, occupancy and photo sensors, and lighting levels matched to specific tasks further limit electricity demand.
- Energy-efficient, low-mercury fluorescent lamps minimize mercury disposal in the waste stream.
- A series of atria with rooftop monitors diffuse sunlight and fresh air throughout the building.

- Exit signs are energy efficient.
- Tankless gas heaters eliminate heat loss associated with conventional storage tanks and the need to continually maintain the temperature of a large tank of water.

Renewable Energy

- A 7.5 kW grid-connected solar electric array produces approximately 37.5 kWh of electricity per day, enough for about 20 percent of the building's electricity demand.
- To meet the rest of their energy needs, NRDC purchases renewable energy credits for wind generation. As a result, the office operates on 100 percent renewable energy.

Materials and Resources

- Construction team recycled over 250 tons of debris -- 90 percent of all the materials from deconstruction and those left over from construction.
- Sixty percent of all new wood was sourced from Forest Stewardship Council-certified, sustainable forests. Non-certified wood came from fast-growing, non-threatened species such as poplar.
- Floor mats and tiles are made from recycled rubber, countertops are made from recycled glass and veneer panels are formaldehyde free.
- Recycled-content materials and furniture in the building include glass tile, mineral fiber ceiling tiles, workspace and conference room furniture, detergent bottle toilet partitions and gypsum drywall.
- Lobby and conference room floors are bamboo laminate, a fast-growing wood substitute that is harder and more stable than red oak.
- Linoleum floors are made from linseed oil, rosin and wood flour from timber grown in controlled European forests.
- Some office furniture and light fixtures were reused from old Warner Bros. Entertainment, Inc. movie sets.

Indoor Environmental Quality

- Operable windows bring fresh air into the work space.
- Paints, adhesives and other materials emit zero or low levels of volatile organic compounds.
- The building is free of added urea formaldehyde and nearly free of vinyl.
- Areas where harmful emissions are present, such as copy rooms, were designed with negative pressure and vent outside the building.
- Carbon dioxide levels are constantly monitored.
- Cleaners use products that are bottled in recycled containers and are free of chlorinated solvents, and vacuums that are equipped with filters that prevent the release of particulate matter into the air.
- Indoor air quality is regularly monitored and tested.

For an online walkthrough of NRDC's Santa Monica office, including detailed resource lists, see <http://www.nrdc.org/cities/building/smoffice/intro.asp>