

Sustainability Fact Sheet: **Environmentally Conscious Inside and Out**

This project it is on track to receive a LEED Gold rating.

ENERGY

- The new Exploratorium is targeting Net-Zero energy operation making it the largest Net-Zero energy museum in the U.S.¹
- The proposed building is predicted to use 47 kBtu/sq. ft./yr or 57% less energy than a comparable ASHRAE 90.1 baseline building.
- The building will save approximately \$160,000 in energy costs annually, not accounting for additional savings with PV.²
- The project will have (5,874) SunPower SPR-245 High Efficiency PV Modules. Each module is 13.4 sq. ft., therefore the total area of the module themselves = 78,712 sq. ft.
- These solar panels will provide 1.3 MW-AC (Mega-Watts AC) megawatts of peak AC power kWh-AC/sq. ft./year or 2,113,715 kWh-AC/yr.
- The HVAC system takes advantages of the museum's location on a pier over San Francisco by circulating bay water through two titanium heat exchangers. The bay water fluctuates between 50°F and 66°F seasonally and is used as a heat source and heat sink to efficiently produce hot and chilled water for the building's radiant slab . This also eliminated the need for cooling towers.
- High performance, fritted glass in covered walkway and Observatory will limit heat gain and provide a bird-friendly façade.



PV PANELS ON THE ROOF WILL SUPPLY 100% OF THE BUILDINGS ENERGY NEEDS.

WATER

- Domestic hot water will be supplied with high efficiency tankless electric water heaters.
- Total domestic water savings of 50-60%, or roughly one million gallons annually, are expected.³
- 16% of the roof area will capture and store up to 338,000 gallons of rainwater for toilet flushing and floor drain trappimers. Unused roof water runoff will be filtered before being returned to the bay.
- Two million gallons of potable water will be saved annually by avoiding the use of evaporative cooling towers for heat rejection.⁴

PUBLIC ACCESS

- Easily accessible by public transportation and includes ample bike parking.
- A public plaza with educational exhibits that examine natural phenomenon will be created by removing over 50,000 sq. ft. of the existing paved deck.
- Partnership with NOAA brings climate and ocean sciences to Exploratorium audiences.

INDOOR ENVIRONMENTAL QUALITY

- Better indoor air quality is achieved by ventilating with 100% outside air, using no recirculation.
- Galleries and interior clusters were designed to take advantage of natural daylight and maximize views.
- Advanced lighting controls will help limit energy use.
- Low-emitting materials and materials with recycled content will be used along with certified wood.

SUSTAINABILITY PARTNERS

- Owner, Exploratorium, Kristina Woolsey
- Architect, EHDD, Marc L'Italien
- Contractor, Nibbi Brothers, Joe Mazzetti
- Solar Energy Provider, SunPower, Bill Kelly
- Mechanical Engineers, Integral Group, Peter Rumsey
- Lighting Design, Dave Nelson and Associates, David Nelson
- Electrical Design, Camissa and Wipf, Robert Boyd
- Historical Architects, Page and Turnbull, Carolyn Kiernat
- Structural Engineers, Rutherford & Chekene, Patrick Ryan
- Furniture Designers, Teknion, Meredith Wylie
- Food Operators, Bon Appetit, Fedele Bauccio

NOTES:

¹ Compared against all projects listed in the U.S. Department of Energy's High Performance Buildings Database (<http://eere.buildinggreen.com/>).

² Energy cost savings are calculated assuming average combined consumption/demand rates of \$0.764/therm for gas and \$0.095/kWh for electricity. Does not include additional cost savings possible with rooftop solar PVarray.

³ Based on 300 FTE and 4000 visitors per day and LEED 2009 baseline.

⁴ Based on ASHRAE 90.1 baseline building heat rejection requirements.