



Moscone Center Solar System and Energy Efficiency Upgrade



One of the largest publicly-owned solar systems in the United States

Installed and launched in March 2004 by Mayor Gavin Newsom and officials from the San Francisco Public Utilities Commission, the photovoltaic system atop Moscone South's Esplanade Ballroom and South lobby roof has attracted many visitors from around the world. The Moscone Center's Solar Electric System is owned by the City and County of San Francisco through the San Francisco Public Utilities Commission. The system's installation was completed by PowerLight Corporation of Berkeley, Calif.

Solar System Specifications

Number of solar panels:	5,426	photovoltaic module panels
Esplanade / upper roof:	2,680	Sanyo HIP-H552BA2 PV modules <i>(see two photos above left)</i>
South Lobby / lower roof:	2,746	Shell SP-75 PV modules <i>(see two photos above right)</i>
Photovoltaic surface area:	60,000	square feet / 5,575 m ²

The North and South exhibit hall lighting retrofit was completed in 2004 by SMG, Moscone Center's management company. All bulbs in the 27-plus foot high ceiling of five exhibit halls were replaced, covering an area larger than seven U.S. football fields.

Lighting Retrofit Specifications

Number of light bulbs:	5000	ceiling bulbs replaced
Exhibit Halls A-E:	442,000	square feet / 41,063 m ²
1981-2004 bulb type:	incandescent, T12 fluorescent, mercury vapor	
upgraded bulb type:	compact fluorescent lamps, T8 fluorescents, metal halide fixtures	



Moscone South, Halls ABC.

Savings and Payback

2006 Moscone total energy usage: 28,165,624 kWh
 Savings of both Solar and Energy Efficiency Upgrade: 18% of Moscone 2006 usage
 Payback time of ten years for solar and energy efficiency

Energy savings of Solar

Given in terms of 100-watt incandescent light bulbs:
 Annual Energy Output of Solar System: 826,000 kilowatt-hours per year
 Energy saved equals approximately 940 100-watt bulbs

Energy savings of Lighting Retrofit

Annual Energy Savings of Lighting Upgrade Alone:
 4.2 million kilowatt hours annually
 Energy Saved equals approximately 4,800 100-watt bulbs



Moscone North, Halls DE.

Environmental impact

Given in terms of tons of carbon dioxide (CO₂)
 Solar system: 317 tons of CO₂ annually displaced
 Lighting upgrade: 1,616 tons of CO₂ annually displaced



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Project Funding

The Solar electric system was funded by the San Francisco Mayor's Energy Conservation Account (MECA). Established in 2001, MECA has directed funding to finance solar and energy efficiency programs in City buildings and facilities. The project also received rebates through programs of the California Public Utilities Commission and California Energy Commission.

Cost before Incentives

Solar system	\$4,677,992
Energy efficiency	\$3,464,076
Total costs	\$8,142,068

Incentives

CPUC Self Gen Incentive Program	\$2,250,345
CEC Energy Efficiency Incentive	\$ 186,000

Net Cost after Incentives

Solar system	\$2,427,647
Energy efficiency	\$3,278,076
Total cost after incentives	\$5,705,723



Shell PV modules atop Moscone South's lobby rooftop

Glossary of Terms

Kilowatt-hour (kWh)

A kilowatt-hour (kWh) is a standard unit of measurement for electricity. The average home in San Francisco uses approximately 4,500 kWh/year of electricity.
One kilowatt-hour (kWh) is equal to 1,000 watt-hours (Wh).

Example: A 100 watt light bulb in use for 10 hours uses 1000 watt-hours, or 1 kilowatt of electricity. (100 watts x 10 hours = 1000 watt-hours = 1 kWh)

Solar power

Solar power is produced using solar cells, also known as photovoltaics. Photovoltaic cells can turn light ("photo") energy into electricity ("voltaics").

Solar cells generate direct current (DC) which is then converted to alternating current (AC) using inverters. Solar cells are built into arrays that can be used to generate electricity on-site at facilities.

Related Links

- Permissions-free photographs of Moscone Center solar system
- Latest news about publicly-owned solar power in San Francisco
- Map of solar systems installed in San Francisco

For more information on the solar system at San Francisco's Moscone Center, go online to the San Francisco Public Utilities Commission at www.sfwater.org