

San Francisco Green Building Program


San Francisco, USA 



San Francisco Green Building Ordinance

San Francisco city is implementing an innovative and comprehensive group of policy initiatives along with incentive programs to improve the energy and environmental performance of new and existing buildings, denominated as "Green Building Program". Under this program, innovative ordinances have imposed green building requirements for residential and commercial buildings newly constructed and for the renovations of the existing buildings. Subsequently, California's Building Standards Commission developed in 2010 the California Green Building Standards Code designated by "CAL Green". This code is the part 11 of the twelve parts of the adoption, amendment and repeal of building regulations to the California Code of Regulations. The San Francisco Green Building Program combines via the development of the San Francisco Green Building Code the mandatory elements of the previous California building regulation (2010 California Green Building Standards Code) with stricter local requirements [9, 10].

Country/ City Profile

	Country		City	
	Population (2014)	318.9 million [4]	Population (2013)	3.27 million (city) [5] 4.335 million (metropolitan) [5]
	Land area (km²)	9.832 million [4]	Land area (km²)	600.6 (city and county)
	GDP per capita (2014, current international \$, at purchasing power parity)	54,629 [8]	GDP per capita (2014, US\$, at purchasing power parity)	n/a (city) 72,390 (metropolitan) [6]
	Region	North America	Region	Inland
City's physical geography	Location	<ul style="list-style-type: none"> ✓ San Francisco is located in the West Coast of U.S.A. at the north end of San Francisco Peninsula ✓ San Francisco has more than 50 hills within city limits. Some neighborhoods are named after the hill on which they are situated 		
	Climate	<ul style="list-style-type: none"> ✓ Cool-summer Mediterranean climate (mild winters and dry summers) ✓ On average, there are 73 rainy days a year, and annual precipitation averages 601 mm 		

Initiating context

The process started in 2008, when San Francisco City Council released a comprehensive set of green building standards together with the definition of a green building code (defining specific requirements to be a green building), and provided a comprehensive guide to new established building requirements [2, 10].

Green building legislation has increased dramatically over the last few years in several United States cities and towns, as the building sector is a major factor contributing to the country's excessive emission rates and thus has become a legitimate concern for local authorities and citizens. On federal initiative, California State assumed a forerunner environmental role throughout the several green practices that emerged on the state cities and towns. At national level, President Obama announced in 2011 the Better Buildings Initiative to make commercial and industrial buildings 20% more energy efficient over the next 10 years and to accelerate private sector investment in energy efficiency. Willing to assume its proactive approach, San Francisco City Council has emerged as the leading city of California State by establishing a comprehensive set of green building standards and a new ordinance that includes stricter and mandatory building requirements. Thus the "Green Building Program" of San Francisco became the most ambitious policy approach undertaken by any city in the US [2, 10].

Based on previous studies and recommendations, San Francisco implemented its pioneering Green Building Program for residential and commercial buildings newly constructed, and major renovations in existing buildings. Consequently, the California's Building Standards Commission developed in 2010 the California Green Building Standards Code, called "CAL Green". This has led to a new revised version of the San Francisco Green Building Code that now brings together both the mandatory elements of the 2010 California Green Building Standards Code and the strictly local requirements into one single regulation [2]. So all new construction projects of any size or occupancy must meet the CAL Green; stringent storm water management standards; and recycle at least 65% of construction and demolition debris [1].

Project description

The integrated new green building code "CAL Green" combines specific sustainability requirements for new and existing buildings, complements municipal initiatives and encourages incentive programs to improve the energy and environmental performance of the city's building park [1].

Its main vision is to improve energy efficiency in existing buildings, generate new green buildings, reduce greenhouse gas emissions, lower energy costs, and improve construction safety and general welfare of buildings in the following categories [1]:

1. Planning and design
2. Energy efficiency
3. Water efficiency and conservation
4. Material conservation and resource efficiency
5. Environmental quality

Implementation process

The Green Building Program has been implemented in 2008 by the San Francisco City Government and was revised in 2010 with the implementation of the new green building code "CAL Green". It represents a very ambitious and comprehensive policy approach to the building sector in the United States. This policy was honourably distinguished as the Best Green Building Policy by the World Green Building Council Government Leadership Awards in 2011 [3].

Projects implementation details

Process/ Leadership	To support the integration and implementation of this energy policy and initiative, the San Francisco City government established a new municipal taskforce that supervises the environmental performance principles of the city's construction projects, revises the municipal construction projects during their design and construction phases, facilitates communication on green building issues among city inhabitants and city departments, and acts as an educational forum to increase knowledge and share project successes and lessons learned [2].
Financing	<p><u>Direct incentives</u> - To assist private building owners with the policy requirements, the newly launched Green Finance San Francisco PACE (Property Assessed Clean Energy Fund) program offers 73,948,362.00 € (\$ 100m) in financing capacity for commercial energy efficiency, renewable energy, and water efficiency upgrades, with repayment collected through a property tax assessment. Energy efficiency and solar energy rebate programs are also offered.</p> <p>Also, for single family residential units or 2-4 unit buildings an incentive is available, of up to 3,562.85 € (\$4,500) under the Energy Upgrade California State-wide program, to help San Francisco homeowners increase energy efficiency comfort and indoor air quality. The Energy Upgrade California is a funding program that offers incentives to homeowners that deploy energy-saving home improvements in single-family residences [1].</p> <p><u>Indirect incentives</u> - Other types of incentives are also available to buildings owners, such as the San Francisco Energy Watch's Multifamily Plus program that offers residential property owners new energy efficient devices and professional services at low cost.</p> <p>Other innovations in financing options for commercial owners include energy services, agreements similar to solar power purchase agreements, where a private entity finances, installs, owns, and maintains certain energy installations through pre-retrofit utility costs. Also free water-wise evaluations are available that provide with costumers a comprehensive evaluation of their business water usage and can help facilities conserve water and save money on utility bills.</p> <p>Additionally for the efficient management of drinking water and wastewater systems as well as for residential appliances, several incentives were established, attributable to both existing and new residential and commercial buildings [1].</p>
Involved stakeholders	<p>The project has been designed and implemented by a cooperation of several city departments - City and County of San Francisco, which constitutes the Municipal Green Building Task Force (to oversee and assist in enhancing the environmental performance of city construction projects):</p> <ul style="list-style-type: none"> ✓ The Department of the Environment; ✓ The Division of Building Design and Construction within the Department of Public Works; ✓ The Division of Infrastructure Design and Construction within the Department of Public Works;

Projects implementation details

- ✓ The San Francisco Public Utilities Commission;
- ✓ The Recreation and Park Department;
- ✓ The San Francisco Municipal Transportation Agency;
- ✓ The Department of Building Inspection;
- ✓ The Port of San Francisco;
- ✓ The San Francisco International Airport;
- ✓ The San Francisco Public Library;
- ✓ The Department of Public Health; and,
- ✓ The Real Estate Division within the Department of Administrative Services.

In collaboration with other institutions such as the US Green Building Council-Northern California, the American Institute of Architects California Council, and the California Buildings Standards Commission [7].

Results [10]

Through this initiative, the government of the City and County of San Francisco plans to attain the following main targets:

- ✓ Meet the California Green Building Standards Code (CAL Green);
- ✓ Beat the California energy standards by at least 15%;
- ✓ Requirement for new commercial construction, and alterations above 2,323 m² must meet a “Leadership in Energy and Environmental Design” (LEED) Gold standard - one of the higher level of the LEED system - energy and environmental buildings certification;
- ✓ Achievement of LEED Gold certification standard for all municipal projects;
- ✓ Perform rigorous rainwater management standards and recycle at least 65% of construction and demolition fragments.

Achieved results [2, 10]:

- ✓ Attainment of 3,251,606 m² of LEED certified buildings;
- ✓ Attainment of 84 Energy Star labelled commercial buildings covering 3,497,798.62 m² of the city.

Lessons learned

One of the main success factors of this integrated initiative has to do with the application of a large range of policy instruments, such as:

- ✓ Establishment of San Francisco Green Building Code with substantial environmental standards for new construction and major renovations;
- ✓ Creation of a municipal green building taskforce;
- ✓ Establishment of LEED Certification and Credit Requirements for Municipal Construction Projects;
- ✓ Establishment of the residential energy conservation ordinance;
- ✓ Establishment of the existing commercial buildings energy performance ordinance;
- ✓ Launching of the Green Finance San Francisco PACE (Property Assessed Clean Energy) Fund;
- ✓ Energy services agreements similar to solar power purchase agreements;
- ✓ Online information platform;
- ✓ Green tenant toolkit.

References

- [1] San Francisco Green Building Code (2011): http://sfenvironment.org/sites/default/files/policy/sfe_zw_cd_envcode_ch7.pdf
- [2] City Government Buildings Policies, Building Codes and Task Force: <http://sfenvironment.org/buildings-environments/green-building/city-government-buildings/policy>
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- [5] World Population Review (2015): San Francisco Population 2015: <http://worldpopulationreview.com/us-cities/san-francisco-population/>
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- [7] San Francisco Green Building Ordinance: <http://sfdbi.org/green-building-ordinance>
- [8] World Bank: GDP per capita, PPP: <http://data.worldbank.org/indicator/NY.GDP.PCAP.PP.CD>
- [9] California Green Buildings Standards Code (2013): <https://law.resource.org/pub/us/code/bsc.ca.gov/gov.ca.bsc.2013.11.pdf>
- [10] The content has been also published by INTELI under the scope of the RE-GREEN project: Case of the month - San Francisco - Green building policies: <http://www.re-green.eu/en/go/case-of-the-month---san-francisco>

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