

Renewable Energy and Energy Efficiency



Sacred Heart School's Library, Atherton, was the first U.S. library to receive ILFI's net-zero energy building certification.

Credit: WRNS Studio

The expanding electric vehicle (EV) charging infrastructure in San Mateo County is encouraging more EV purchases.

Credit: cleantechnica.com

This dual-axis solar carport in Burlingame charges EVs and provides 90% of the power needed at Kahala Tower.

Credit: solarpowerworldonline.com

Executive Summary

Conventional fossil fuel energy sources are huge contributors to greenhouse gases (GHG) and climate change. In 2020 Sustainable San Mateo County's annual Key Indicator focused on Renewable Energy and Energy Efficiency measures in San Mateo County (SMC). We took a closer look at how they apply to buildings, water use and waste management, land use and transportation. We also explored how equitable financing and community outreach efforts can strengthen demand for renewable energy.

SMC's roadmap to decarbonization includes leveraging smart building technologies to optimize energy use in existing and new buildings. It also includes a rapid community shift to 100 percent greenhouse gas-free electricity as well as fostering innovative, clean, local energy sources and carbon offset projects. Modernizing the grid to build energy resilience, and prioritizing social equity while expanding clean energy access, are also integral parts of SMC's path to decarbonization and its transition to clean energy.



**Sustainable
San Mateo County**
Economy. Equity. Environment.

Full Indicators Report available on our website

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Renewable Energy and Energy Efficiency

Improving Building Efficiency

Improving building energy efficiency is the foundation of SMC's strategy toward decarbonization. The focus is to reduce energy use by leveraging passive solar and climate-smart construction technologies in new buildings. In addition, the county aims to promote policies and support zero energy in existing construction by optimizing retrofits and encouraging the transition to renewable energy. To realize California's goal for all residential and commercial buildings to be zero net carbon by 2045, through the Renewables Portfolio Standard, SMC cities have been pushing for more advanced local building codes known as "reach codes."

ILFI BUILDING CERTIFICATIONS

Stepping up to a Living Future

LIVING BUILDING CHALLENGE

PETAL CERTIFICATION

One pillar of deep regenerative design built on a holistic high-performance foundation.

All Core Imperatives are required, plus the remaining Imperatives to complete either the Water, or Energy or Materials Petal.

CORE GREEN BUILDING CERTIFICATION

Responding to climate change with holistic high performance.

Required Imperatives:

C1	01 Ecology of Place
C2	04 Human Scaled Living
C3	05 Responsible Water Use
C4	07 Energy + Carbon Reduction
C5	09 Healthy Interior Environment
C6	12 Responsible Materials
C7	17 Universal Access
C8	18 Inclusion
C9	19 Beauty + Biophilia
C10	20 Education + Inspiration

ZERO CARBON CERTIFICATION

Carbon neutral with top tier efficiency.

- 100% building energy load offset with on- or off-site renewables
- For existing buildings, combustion allowed
- Embodied carbon reduction and offset

World class efficiency and characteristics, reinforcing a fossil fuel free future.

- 100% building energy load offset with on-site renewables, driving efficiency
- Pathway for premium off-site renewables for certain project types

LIVING CERTIFICATION

Summit of holistic aspiration and attainment; fully restorative.

All Imperatives must be achieved to certify:

01	Ecology of Place
02	Urban Agriculture
03	Habitat Exchange
04	Human Scaled Living
05	Responsible Water Use
06	Net Positive Water
07	Energy + Carbon Reduction
08	Net Positive Carbon
09	Healthy Interior Performance
10	Healthy Interior Environment
11	Access to Nature
12	Responsible Materials
13	Red List
14	Responsible Sourcing
15	Living Economy Sourcing
16	Net Positive Waste
17	Universal Access
18	Inclusion
19	Beauty + Biophilia
20	Education + Inspiration

Credit: International Living Future Institute



These purple pipes on the Stanford campus carry reclaimed water from sinks and laundry rooms to landscaped areas.

Credit: John Loo, Flickr

Adopting a Model Water Efficient Landscape Ordinance (MWELO) to integrate water conservation and efficient use of water into landscaping practices is also strongly recommended. Another good practice is developing "purple pipes" infrastructure to carry and distribute gray water, notably for irrigation purposes. Gray water also helps prevent stormwater pollution, which is part of the county's strategy. Another key area to consider is rainwater harvesting.

Transportation and Clean Energy

The [Complete Streets](#) approach allows cities to design and build roads with users of all ages and abilities in mind, thus making active transportation modes accessible to everyone. High Occupancy Vehicle (HOV) lanes, initially used by carpoolers, are now also available to drivers using plug-in hybrid, alternative fuel or clean-air vehicles. The Highway 101 Express Lanes Project will convert the fast lane into a toll lane while allowing buses and carpoolers to travel free of charge. These are effective traffic management strategies to promote and encourage ride sharing. San Mateo County also offers a variety of ride-sharing programs for residents and commuters. Electrifying transportation and expanding EV infrastructure are some of the county's key strategies toward decarbonization. Peninsula Clean Energy is offering rebates of up to \$1,000 on EV purchases through December 31, 2020, as well as other EV incentives. At the state level, California has created a \$100 million fund for the Clean Transportation Program to deploy advanced transportation and fuel technologies. The state will ban the sale of new gasoline-powered cars starting in 2035.



SamTrans is rolling out a fleet of electric buses.

Credit: San Mateo County Transit District

Support our work! Learn more at sustainablesanmateo.org

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Energy and Land Use

The Wright Solar Facility, a 200MW utility-scale project in the Central Valley, is an example of at-scale solar photovoltaic installation. PCE has an exclusive 25-year power purchase agreement (PPA) with Wright Solar Park LLC to buy all of the facility's electricity to power more than 100,000 SMC homes. The Hoover Solar Emergency Microgrid in Redwood City creates cost savings on utilities and is a community resource in case of a natural disaster. A microgrid is a local energy grid which can get disconnected from the traditional grid and operate autonomously. Community and mobile microgrids offer additional ways to be efficient and flexible with space and energy, as illustrated by the microgrid on the Stanford campus in Redwood City. The Burlingame dual-axis solar carport, one of the largest in the country, features 100 solar panels on each its six trackers. It yields 45 to 60 percent more energy than a fixed-tilt solar array using the same number of solar panels, at a cost of about 50 percent less than fixed-tilt.



The Wright Solar Park in Los Banos, Calif., will provide enough power for 100,000 homes in San Mateo County.

Credit: Peninsula Clean Energy

Waste and Energy and Waste Management



The anaerobic wastewater treatment plant in Redwood Shores represents a fundamental shift in water treatment technology.

Credit: Stanford.edu

Converting waste to energy is an efficient means of managing waste while providing a source of alternative energy. Residents of 12 cities in the county receive CartSMART, a weekly curbside collection service for recycling, composting and trash. The service is part of a 10-year contract (begun in 2011) between Recology and RethinkWaste.

The county's Office of Sustainability also runs a community garden program that partners with local community organizations and businesses to build vibrant community gardens and promote sustainable composting techniques. Composting helps keep organic waste from ending up at Ox Mountain, SMC's sole landfill, which is near capacity. RethinkWaste initiated an Organics to Energy program to separate organics from trash, convert it to a liquid slurry and transport it to wastewater

treatment plants to convert to methane. The methane is then used to generate electricity and power engines. In addition, Stanford University is collaborating with Silicon Valley Clean Water on a demonstration anaerobic treatment plant in Redwood Shores that is designed to reduce energy use and cut costs. This pilot is slated to operate until March 2021.

See how individuals, government and businesses are making a difference at SSMC's website

Renewable Energy and Energy Efficiency

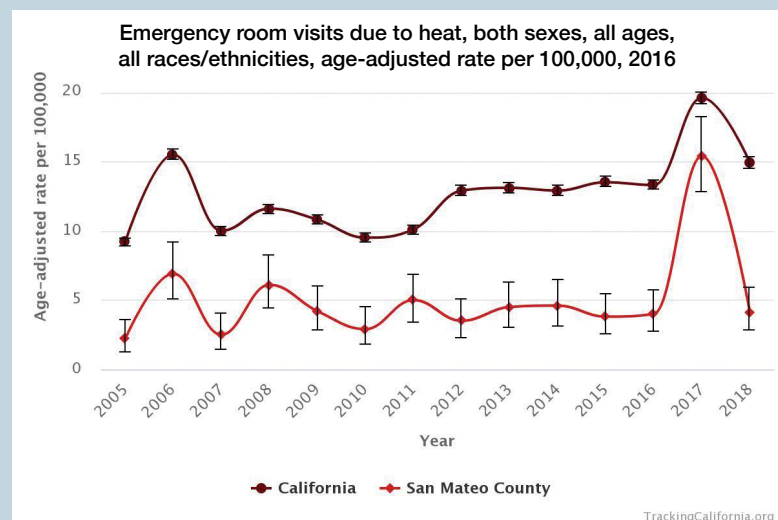
Renewable Energy Financing

San Mateo County provides a variety of financial incentives to encourage demand for clean energy. The Property Assessed Clean Energy (PACE) program allows property owners to finance the up-front costs of eligible energy improvements and repay the costs over time. It allows people to benefit from energy efficiency immediately while allowing project costs to be spread out over a set period, typically 10 to 20 years. If the property is sold, the repayment obligation may transfer to the new owner. Peninsula Clean Energy (PCE) has committed up to \$10 million over three years to fund clean backup power for SMC's medically vulnerable residents and essential service providers during safety power shutoffs. The California Public Utilities Commission's Self-Generation Incentive Program (SGIP) program promotes energy resilience by offering rebates for installing energy storage technology.



Peninsula Clean Energy's Power-On Peninsula program helps people access clean backup power and other resources during power outages. Find out more: peninsulacleanenergy.com/pop-medical/

Energy Resilience and Social Equity



As the energy landscape undergoes a transformation from fossil fuels to cleaner energy and navigates the impacts of climate change hazards, it is imperative to build energy resilience, both on the supply and on the demand side. A resilient grid hedges against the negative effects of increasingly intense weather events and supports continuous, critical electricity service. Modernizing existing grids and designing new, resilient, grids able to quickly resume their system functions after a disturbance helps achieve supply-side energy resilience. However, the stability of our electricity supply may impact energy pricing and continuous power availability, which may result in negative impacts on the demand side.

We must ensure that at-risk populations, including those belonging to lower-income and/or medically vulnerable communities, can afford clean and reliable energy supply and the needed storage options during emergencies. Additionally, the costs associated with insurance from damages due to wildfires and sea level rise, as well as coastal flooding, place a greater financial burden on San Mateo County residents who are vulnerable to these hazards. Solutions that provide affordable options for all communities will ensure equitable demand-side energy resilience.

Sustainable San Mateo County's Mission

To drive impactful action on economic, environmental and social equity issues that leads to sustainable practices and improves the long-term health of San Mateo County.

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