



thermal times

information in the pipeline

It's a Natural

Federal Building embodies sustainable design

When the San Francisco Federal Building opened in 2007, its unique features created quite a buzz. But the General Services Administration (GSA) that owns and operates the building could not have imagined the building would nearly “stop traffic” on the day it opened: The building’s first visitor was a California Highway Patrol officer who asked if the building could turn off its stunning new James Turrell neon light sculpture because it was causing a “gawker slowdown” on a nearby freeway!

Although commuters soon got used to the sculpture’s light, the Federal Building—an NRG Energy Center San Francisco customer—has been in the spotlight ever since. Professionals and visitors alike have flocked to the site to learn more about its sustainable design.

“We moved people into the building in March 2007 and between March and September of that year we gave 433 tours to 6,900 people,” says Warren Sitterley, Deputy Property Manager, GSA’s San-some Street Field office. “We still take architecture students and other groups through the building, but most people do self-guided tours now.”

The building was just a glimmer on the horizon 11 years ago. That’s when GSA tapped architect Thom Mayne and Morphosis Architects of Los Angeles to design a sustainable urban landmark to bring federal employees in San Francisco together under one roof.

The result is a building that has been certified as LEED-New Construction Silver by the U.S. Green Building Council and has an Energy Star rating of 94 out of 100. It has also garnered so many awards that they are kept in a special display case.

Located at the corner of Seventh and Mission streets, the building was constructed using materials that minimized waste and consumption. In fact, contractors used a special 50% slag concrete mix—a cement replacement product. Bare concrete is used for the walls; the floors are polished concrete. “Polished concrete significantly reduces our maintenance costs,” says GSA’s Sitterley. “We can pretty much just use a dust mop and keep it in great shape.”



Photo by John Louie

Overall the Federal Building is designed to consume one-third less energy than a typical California office building. The tower takes optimal advantage of San Francisco’s moderate climate with an innovative natural ventilation system. The narrow tower features high ceilings and operable windows that render stunning views, let in natural daylight and facilitate natural ventilation on floors 6 through 18. The tower’s exterior metal sunscreen automatically regulates the amount of direct sunlight that enters the building.

Steam from NRG San Francisco’s facility heats water that is distributed throughout the tower and the annex for space heating. On tower floors

A striking landmark, the 640,000-square-foot San Francisco Federal Building houses 1,700 workers in an annex and a tower and boasts 99.99% occupancy.

6 through 18, heat is distributed through fin-tube convectors. In the rest of the building, heat is provided through variable-air-volume boxes. Steam is also used to heat the building’s domestic water.

“GSA is committed to driving the industry’s carbon footprint even lower,” says Sitterley. “It’s an agency objective nationwide. Even though the San Francisco Federal Building is new, we continue to look

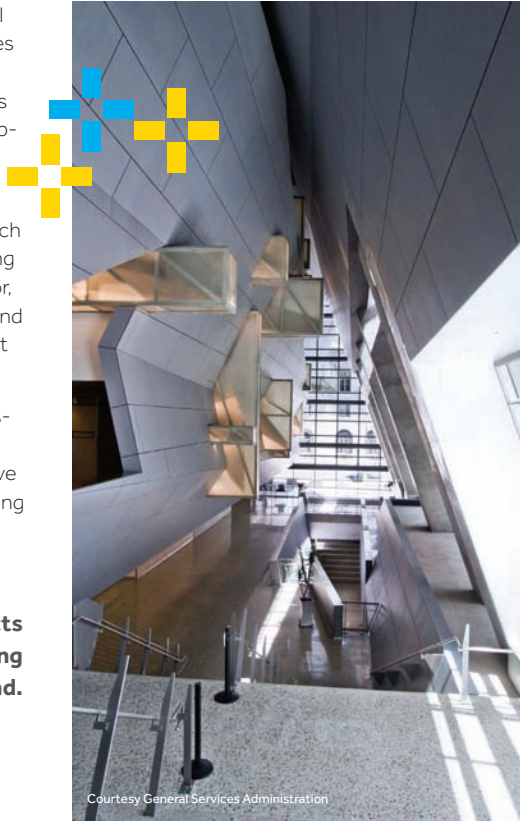
Federal Building embodies sustainable design (cont'd)

for ways to reduce our energy use and environmental impact. For instance, we just replaced the light fixtures in the interior stairwells so they have dimmers and motion control. Also, our existing recycling program is diverting 70% from the waste stream, and we're ramping up our composting program."

The building already incorporates a drip irrigation system and dual-flush valves on all toilet fixtures, which help save water and reduce costs. Though the building features a handicap elevator with access to each floor, workers are encouraged to walk to their work floors and meetings by taking express "skip-stop" elevators that only stop at every third floor.

The San Francisco Federal Building is serving as a sustainable model for other government buildings—and commercial properties as well—as it continues to save energy, reduce costs and keep occupants healthy along the way.

The Federal Building's concrete acts as a heat sink to help keep the building comfortable year-round.



Courtesy General Services Administration

San Francisco Federal Building

Site: Three acres

Gross square footage: 640,000

Tower height: 18 stories, 240 feet

Annex height: Four stories, 60 feet

Exterior finishes: Perforated stainless steel sunscreen panels, exposed concrete, galvanized steel, anodized aluminum and glass window wall

Construction began: March 2003

Building dedicated: July 2007

Amenities: Exterior plaza, conference room, auditorium, café, 11th floor open-air park, workout facility, day care center (open to both federal employees and local residents)

Dedicated to Communication and Community

Warren Sitterley had a closeup view of the San Francisco Federal Building's construction. That's because he worked right across the street as manager of the U.S. Court of Appeals Building.

But once the new Federal Building was completed, Sitterley got the call to put the new building into full operation. He jumped at the chance. "I've been with the General Services Administration for more than 30 years," says Sitterley, Deputy Property Manager for GSA's Sansome Street Field Office. "Yet I never tire of new challenges. I love the excitement of getting a new property humming on all the right notes and creating a sense of community in the new space. Admittedly you need to tolerate high levels of stress in these situations, but there is also a great sense of achievement."

Sitterley and several other GSA staff were assigned to the building to coordinate contractor work forces, oversee maintenance and construction projects, and establish building operating practices. Now that the building has moved through its commissioning phase, Sitterley has returned to the Sansome Field Office, and Laurie Murata has been named the new property manager. Murata most recently managed the National Archives and Records Center in San Bruno. Sitterley will continue to handle special Federal Building projects.

Although much of Sitterley's work at the building involved contractors and project management, he thoroughly enjoyed working with tenants. "Communication is probably the most vital part of a property manager's job description," says Sitterley. "To some degree, communication vehicles such as email and texting have made it easier. But they have also increased the amount of information you have to stay on top of on a day-to-day basis. Experience helps you keep it all in balance."

Sitterley is proud of the GSA's role in the Federal Building's sustainability success story. "As a Boy

Scout growing up in Flagstaff, Arizona, I did a lot of camping and I appreciate nature. So I value what GSA has been able to achieve in the Federal Building and elsewhere to help save our planet. It's the right thing to do."

GSA's Warren Sitterley (right) teamed with other key staff—(from left) Lily Yichoy, Angel Gonzalez, Melodie Vero and Anne Keicher—to get the San Francisco Federal Building up and running smoothly.



Courtesy General Services Administration

Energy Audits Highlight How Customers Can Save

Mike Eurkus
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Saving energy isn't just good for the environment: It makes good business sense. Using energy efficiently is one way building owners can optimize their bottom line. At NRG Energy Center San Francisco, we look for ways to make our customers' systems more efficient.

We recently teamed up with a consultant who is performing energy audits at customer sites to find energy savings opportunities. Audit reports show that the most common and least complicated way to improve your heating system efficiency is by adding subcoolers to existing heat exchangers.

The basic principle behind subcoolers is to recover the heat from condensate created by the steam already used—and then run it through a new heat exchanger to preheat water before it goes into the primary heat exchanger. The benefit is twofold: It raises the temperature of the system makeup water, thereby requiring less steam to bring it to design temperature. It also cools the condensate before it goes to the drain, eliminating the potential need to cool the water.

Installing subcoolers is an easy way to instantly improve your heating system efficiency. If you would like more information on subcoolers or would like to arrange a system audit for your building, please contact me at Mike.Eurkus@nrgenergy.com or **415.644.9668**. I'm always ready to help customers find ways to save energy!

From the General Manager: New Logo Reflects Innovation and Growth

Gordon Judd
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The district heating system that serves downtown San Francisco has been wholly owned and operated by NRG Energy Center San Francisco since 1999. As we near the end of 2011 and look ahead to 2012, it is an especially exciting time to be a part of the NRG family. With this issue of our newsletter, we are introducing NRG's new logo, a symbol of NRG's commitment to offer the most innovative energy solutions to our customers.

Over the past few years, NRG has become a very different kind of energy company. While electric power generation is the foundation of the company's business, it has added products and capabilities in clean energy technology, electric vehicle (EV) charging infrastructure and selling renewable power directly to customers.

Our unified brand identity reflects our customer focus at every level and highlights our leadership in changing how people think about and use energy. Here are answers to some questions people have asked about our new logo:

Q. What does the new logo mean? Why was it chosen?

A. The new logo is fresh, innovative and designed with our Company mission in mind. The colors are different but they were chosen for a specific purpose: cyan, magenta and yellow can be combined to make any color. The diversity of these colors speaks to the diversity of NRG and our assets and the strength that it brings.

Q. What is the new tagline and what does it mean?

A. Our new tagline is "The power to change life. The energy to make it happen." It emphasizes that we are leading the way in changing how people think about and use energy with things like combined heat and power (CHP) applications, eVgo, smart grid solutions, and new sustainable energy choices, which changes the way people live.

As reflected in our new logo, NRG is committed to delivering even more energy choices and cleaner energy solutions that enhance lives, improve businesses and communities, and build a sustainable future. NRG San Francisco does this by providing reliable, energy-efficient district heating and cooling service; serving as an avenue for you to access NRG's many energy-saving technologies; and giving back to the community it serves.

Ready for Winter

Winter is upon us, and NRG Energy Center San Francisco has spent most of the year preparing for it. Here are just a few of the steps we've taken to get ready for this heating season:

- Completed overhauls of all six boilers at our main plant on Jesse Street and the boiler at 1 Meacham Place. We have inspected all boiler equipment—inside and out—and reviewed all systems to ensure reliable operation through the winter.
- Tested and serviced our emergency backup generator and upgraded our steam turbine on boiler No. 6 to ensure our preparedness for an electrical outage. We are able to operate most of the plant on steam power without relying as heavily on electricity to stay in operation.

- Upgraded one of our largest boilers to run on fuel oil in addition to natural gas if natural gas supply is curtailed this winter. We now have dual-fuel capability on four of our six boilers at the main facility on Jesse Street.
- Installed new sendout valves and controls to better manage the steam that is distributed to customers.

If *The Old Farmer's Almanac* is right, we may be in for a colder winter than normal, but with these measures and others, NRG San Francisco will continue keeping our customer buildings warm and comfortable with greater reliability than ever.



Ted Vincent
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Mary Curran, Plant Operator, has worked at the plant since 1993, so she definitely knows the facility inside and out. She helps keep the plant running year-round.



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Combined Heat and Power: Another step toward savings



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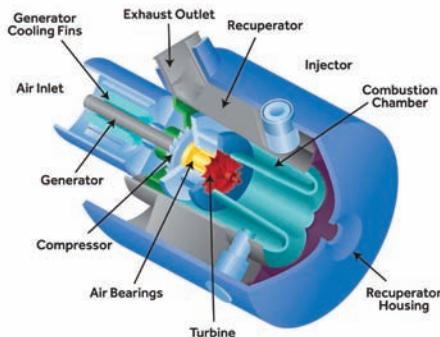
NRG Energy Center San Francisco is pioneering a program to help downtown properties reduce energy costs as well as lower their greenhouse gas emissions by up to 50 percent. How? By developing Combined Heat and Power (CHP) systems on individual properties.

Combined Heat and Power simultaneously and efficiently generates both electricity and heat from one fuel source. The heat can be used to produce steam, hot water, process heating, or cooling (using absorption chillers) for use in the building.

NRG San Francisco recommends a single-shaft microturbine, such as the one illustrated here, that operates at more than 40,000 revolutions per minute. Most microturbines comprise a compressor, combustor, turbine, alternator, recuperator (a device that captures waste heat to improve the efficiency of the compressor stage) and generator.

Who would benefit from on-site CHP? Energy-intensive facilities such as hospitals, hotels, data and backup centers, colleges and universities, multi-unit housing, research and manufacturing sites. Our team can provide initial energy audits and savings analysis to help you assess whether this technology—on-site CHP—is right for your organization.

How does NRG San Francisco make it work? Our CHP technology of choice is natural gas-fired microturbines, which are scalable in size from 20 kW to 1 MW of electrical power. (See below for microturbine advantages.)



Microturbine Advantages

- 99 percent availability*—translating to 25 more operating days per year than a reciprocating engine
- Ultra-low emissions (4-9 parts per million for nitrogen oxides, for example)
- Compact design
- Flexible connection methods
- Manufactured with innovative, reliable jet engine technology

- Advanced air-cooled microturbines require only minimal maintenance and downtime

NRG has extensive CHP experience: it develops, finances, owns and operates large-scale CHP facilities throughout the United States. Please contact me at **415.644.9666** or Dwain.Botelho@nrgenergy.com to learn more about on-site CHP opportunities right here in San Francisco.

* Source: National Association of Hotel & Lodging Engineers, *Lodging Engineer*, Spring 2011.

A Thank You and a Barbeque

Lisa Smethurst
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You may know him as our distribution manager, but on July 15 NRG San Francisco's Mike Eurkus became "barbeque chef extraordinaire." He personally prepped the rubs and marinades and manned the grill to serve customers during our first Customer Appreciation Day lunch at our plant.

It was great to see so many customers in attendance! In addition to lunch, the event offered plant tours to explain how steam is generated and distributed, and to highlight the company's many new efficiency measures designed to reduce fuel consumption while maintaining reliability.

Cliff Conte from NRG San Francisco's natural gas provider, Occidental Petroleum Corporation, also joined us as a presenter. Cliff provided a broad overview of the natural gas commodity market and how it relates to future steam service.

Customer Appreciation Day is a way for us to personally thank customers for their business. Thank you for your support. You won't want to miss next year's event—Mike's next barbeque feast!



And the winners are...

NRG San Francisco's Customer Appreciation Day included prize drawings. Representatives from Hotel Nikko and Philippine Management Center won flashlights and Terri Quile of

CitiWorks won the grand prize: a 64 GB Apple iPad2. Terri is shown here (left) with NRG San Francisco's Lisa Smethurst.

