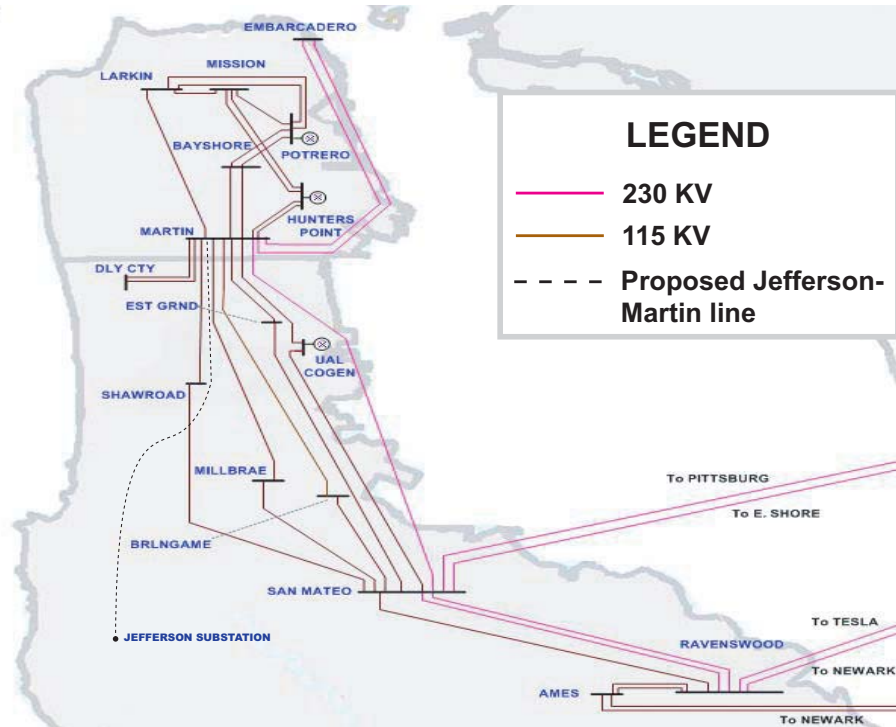


Transmission Schematic



Electricity Reliability Power Project

SAN FRANCISCO PUBLIC UTILITIES COMMISSION

FACT SHEET #2

AUGUST/SEPTEMBER 2003

In 2002, the Board of Supervisors and Mayor adopted a ten-year Electricity Resource Plan developed by the San Francisco Public Utilities Commission and the Department of the Environment (see www.sfgov.org/sfenvironment/aboutus/energy/policy.htm).

The Plan presented a strategy for closing the Hunters Point power plant, phasing out the Potrero power plant and putting San Francisco on the path to using energy resources in a sustainable manner. One of the key recommendations of the Plan was that the City should develop sufficient highly efficient and operationally flexible new generating resources to shut down Hunters Point Unit 4 and satisfy reliability requirements established by the California Independent System Operator (CA-ISO), which is in charge of balancing the electricity flow throughout the state.

The San Francisco Electricity Reliability Power Project carries forward that recommendation through the installation of four natural gas-fired electricity generators by the San Francisco Public Utilities Commission (SFPUC) in or near the City and County of San Francisco, and their operation under a contract with the California Department of Water

Resources (DWR). The project has three main objectives:

- Improving San Francisco's electric reliability,
- Facilitating the shutdown of Hunters Point Unit 4, and
- Reducing the local impacts of electric generation.

The electricity transmission system serving San Francisco is particularly vulnerable to disruptions. Because the system serving San Francisco is not looped (allowing electricity to flow to the City from different directions) San Francisco and the Peninsula depend upon power plants located in San Francisco for electric reliability.

San Francisco power plants, ranging in age from 27 to 45 years, are inefficient and emit large amounts of air pollution. The two largest plants, Hunters Point 4 and Potrero 3, do not meet the air pollutant standards mandated for 2005 and will need to be retrofitted with emissions controls or replaced. The four existing peaking power plants do not utilize any pollution control equipment. To assure the shutdown of Hunters Point 4 and to lessen dependence on power plants at Potrero the SFPUC has determined that four combustion turbines totaling 185 megawatts of generation need to be located on the 115 kV transmission system in the City.

The Role of the New Combustion Turbines

CA-ISO has indicated that, given the current transmission infrastructure, it will authorize the shutdown of Hunters Point 4 only if replacement generation is interconnected at a similar point in the network. This means that the replacement generation must be interconnected on the 115 kV transmission network in the City and north of the Martin substation. The addition of the proposed Hunters Point-Potrero 115 kV cable enables replacement generation to be located at places other than the Hunters Point substation.

The new combustion turbines also offer increased operating flexibility and improved system reliability through smaller, 48 MW capacity units and rapid 10-minute start-up (in contrast to the 24-hour start times of Potrero 3 and Hunters Point 4).

The Siting Process

The SFPUC has developed several criteria for power plant siting, and it has expeditiously screened the available sites. Those criteria (in addition to facilitating the shutdown of Hunters Point) are the following:

Improves San Francisco's Air Quality

The new generators, with their state-of-the-art natural gas turbine technology, will greatly improve San Francisco's air quality. They are 20 to 30% more efficient than Potrero 3 and Hunters Point 4, and 40% more efficient than the current peaking gas turbines. Additionally, their state-of-the-art emissions control systems will lower emissions of nitrogen oxide (NOx)-a major cause of smog-to 2.0-2.5 ppm, approximately a 60% decrease from current levels.

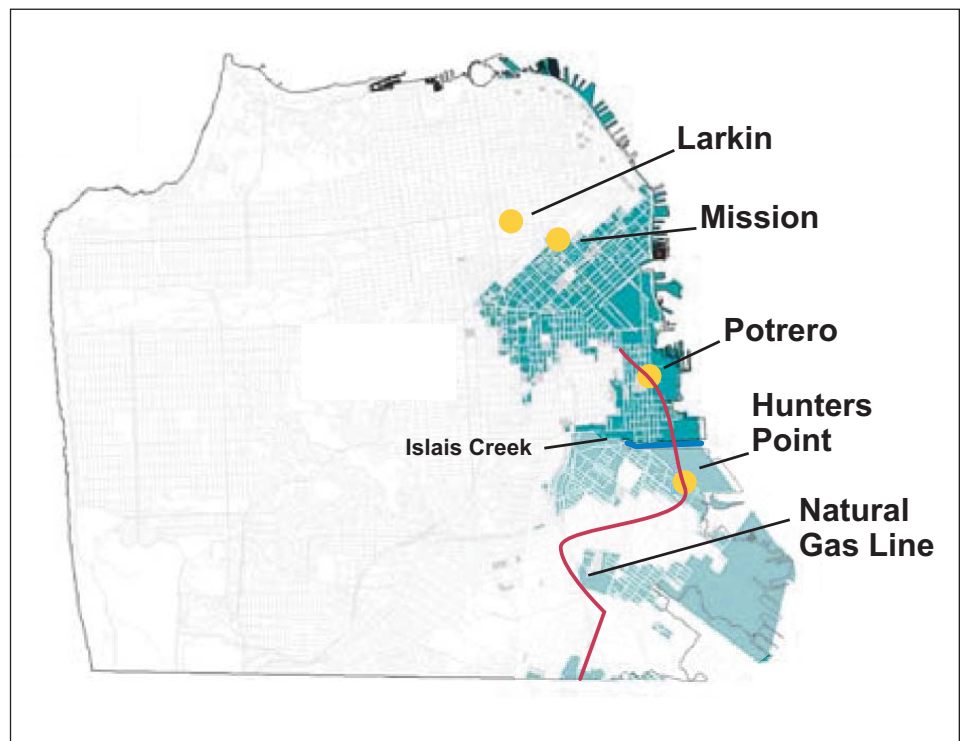
Supports the Siting of Solar and Other Clean Power Technologies

Operationally, the transmission network needs generation that is both dispatchable and situated in locations that benefit the network. While some clean power technologies, such as solar, can be specifically located to benefit the transmission system, others, such as wind, cannot. Most clean-power technologies cannot be dispatched. Combustion turbines, due to their modular sizes and quick start capability, meet the operational requirements of the transmission network, and are supportive of the development of intermittent technologies.

Consistent with City Zoning and Planning

The combustion turbines must be located in areas that are either currently zoned industrial or can be rezoned

Industrially Zoned land, 115 kV Substations, Natural Gas Supply Lines



As illustrated, siting close to the Potrero substation offers the greatest potential for obtaining industrially zoned land with low interconnection costs.

industrial. Based on a 1998 survey, only 14% of the land in the city is zoned industrial.

Minimizes Noise and Visual Impacts

The combustion turbines will produce some noise and, due to the height of the exhaust stacks, will have some visual impacts on the communities in which they are located. Visual impacts can be minimized by: using geographic features to screen the combustion turbines, locating the turbines adjacent to similar structures, or making use of

buildings or facades to mask the turbines. Likewise, sound insulation and/or sound walls can be used to control noise.

Time Frame for Power Plant Development

The Hunters Point Unit 4 power plant is 44 years old. By 2005 it will be out of compliance with Bay Area air quality standards. PG&E and community groups have agreed that the plant can be operated through 2005 using air pollution credits. After that date continued operation would most likely

require that the plant be retrofitted with better pollution control technology. Such an investment would be inefficient and would prolong the use of this unreliable power plant. To allow the plant to be permanently closed the new combustion turbine power plants need to be operational in 2005. To meet that deadline the SFPUC needs to submit a complete application to the California Energy Commission by the end of this year.

Operation of the Power Plant under the Department of Water Resources Power Purchase Agreement

Last December the Board of Supervisors approved an agreement with the California Department of Water Resources (DWR) that allows the City and County of San Francisco to finance and develop the combustion turbine power plants at very low risk. That agreement assures that the cost of building the facilities to house the power plants and to hook them up to the grid will be recovered by the city over 10 years regardless of how many hours the plants actually operate. The power purchase agreement permits DWR to terminate the agreement if

costs of building the combustion turbine installations are too expensive. The most effective means of controlling costs is to minimize the number of sites, to avoid expensive electric and natural gas interconnections, and to minimize construction of non-essential structures. The combustion turbines are large enough that they must be interconnected directly to a 115 kV substation.

The most cost-effective substation interconnections are at outdoor substations like Potrero and Hunters Point that can easily be expanded. Enclosed substations, such as Mission and Larkin, are not easily expanded and can increase interconnection costs by \$5 million or more. Installing underground conduits and cabling between the combustion turbines and the substation will cost approximately \$2 million per mile. Likewise, the cost of installing natural gas pipelines between the natural gas supply line and the combustion turbine will also cost \$2 million per mile or more, depending upon the obstacles encountered in the line routing.

Site Selection Matrix

The table provides a matrix evaluation of five multiple-unit sites located near the Potrero substation that meet the siting criteria. They are: the Western Pacific site on Port of San Francisco property, the existing Potrero power plant site, currently owned by Mirant Corporation, Pier 70 at the foot of 22nd Street, a site on Illinois street, and a site on Cesar Chavez. All of these sites meet the criteria for: Shutting Down Hunters Point, Improving Air Quality, Mitigation of Impacts, Supporting Siting of Clean Technologies and City Zoning and Planning. The sites differ, however, in noise and visual impacts, land control and reasonable capital costs. Five single-unit sites were also evaluated. These sites are estimated to cost at least \$25 million more per combustion turbine than a similar installation on a multiple-unit site due to high gas and electrical interconnection costs and the cost of visual and noise treatments in a dense urban environment. These higher installation costs make the siting of a single-unit simple-cycle turbine-generator that will have low hours of

Evaluation Matrix, Multiple Unit Sites Near Potrero Substation

Criteria/Sites	Western Pacific	Potrero Power Plant	Pier 70	C. Chavez	Illinois
Facilitates shutdown of the Hunters Point	Yes	Yes	Yes	Yes	Yes
Improves air quality	Yes	Yes	Yes	Yes	Yes
Mitigation of impacts	Yes	Yes	Yes	Yes	Yes
Support siting of clean power technologies	Yes	Yes	Yes	Yes	Yes
City zoning and planning	Yes	Yes	Yes	Yes	Yes
Minimal noise and visual impacts	5	4	5	5	3
Impact on historical and cultural resources	5	4	2	5	3
- Land Control	3	2	3	3	3
- Reasonable Capital Costs	4	5	2	4	4
Total	17	15	12	17	13

"Yes" indicates that the criterion was satisfied, and that there was no differentiation in meeting the criteria by all listed sites. Differentiation in how the sites met the criterion is indicated by a 5-to-1 rating system: 5 - very favorable, 4- favorable, 3- neutral, 2- unfavorable, 1- very unfavorable. The ratings are totaled at the bottom of table.

operation very expensive. Since the Department of Water Resources has the right to terminate the project prior to financing, the additional costs of siting at multiple locations could put the entire project at risk.

Locating all four combustion turbines at one common site will provide the lowest capital costs. If a single-unit site is selected, the NRG Thermal site located at 5th and Jessie Street is the most promising due to:

- 1) the opportunity for cogeneration to improve plant efficiency
- 2) the industrial location associated

with the existing boiler site

- 3) the ability to offset emissions by reducing the operation of existing boilers
- 4) the opportunity to obtain additional revenues from steam sales.

A decision to use the NRG Thermal site is dependent upon the CA-ISO's need for continuous generation in the City.

PG&E recently re-evaluated the load-serving capacity of the in-City transmission system. They concluded that, by re-rating how much power existing

cables can carry, the completion of Jefferson-Martin could enable the closure of the Hunters Point power plant. However, the CA-ISO continues to insist that new generation is required to shut down Hunters Point Unit 4. The SFPUC believes that the impact of PG&E's proposed re-rating of the transmission system on electric reliability needs to be independently evaluated. If that re-rating is determined to be appropriate it creates an opportunity to use the new combustion turbines and also to shut down some power generation at Potrero.

FOR MORE INFORMATION

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UPCOMING MEETINGS

Thurs. Aug. 28 7 p.m.
Potrero Neighborhood House
953 De Haro St. @ 22nd St.

Thurs. Sept. 4 12:00 p.m.
SF Public Health Dept. Auditorium
101 Grove @ Polk St.

Tues. Sept. 9 6:30 p.m.
Southeast Community Center
1800 Oakdale @ Phelps St.

Sat. Sept. 20 10:00 a.m.
California College of Arts & Crafts
1111 Eighth St. @ Hooper St.