

CCA PROGRAM REPORT ATTACHMENTS

Attachment A1 – Golden Gate Tidal: Resource Maps

Attachment A2 – Golden Gate Tidal: Cost Tables

Attachment A3 – Golden Gate Tidal: Planning Matrix

Attachment B – NRG Steam Loop

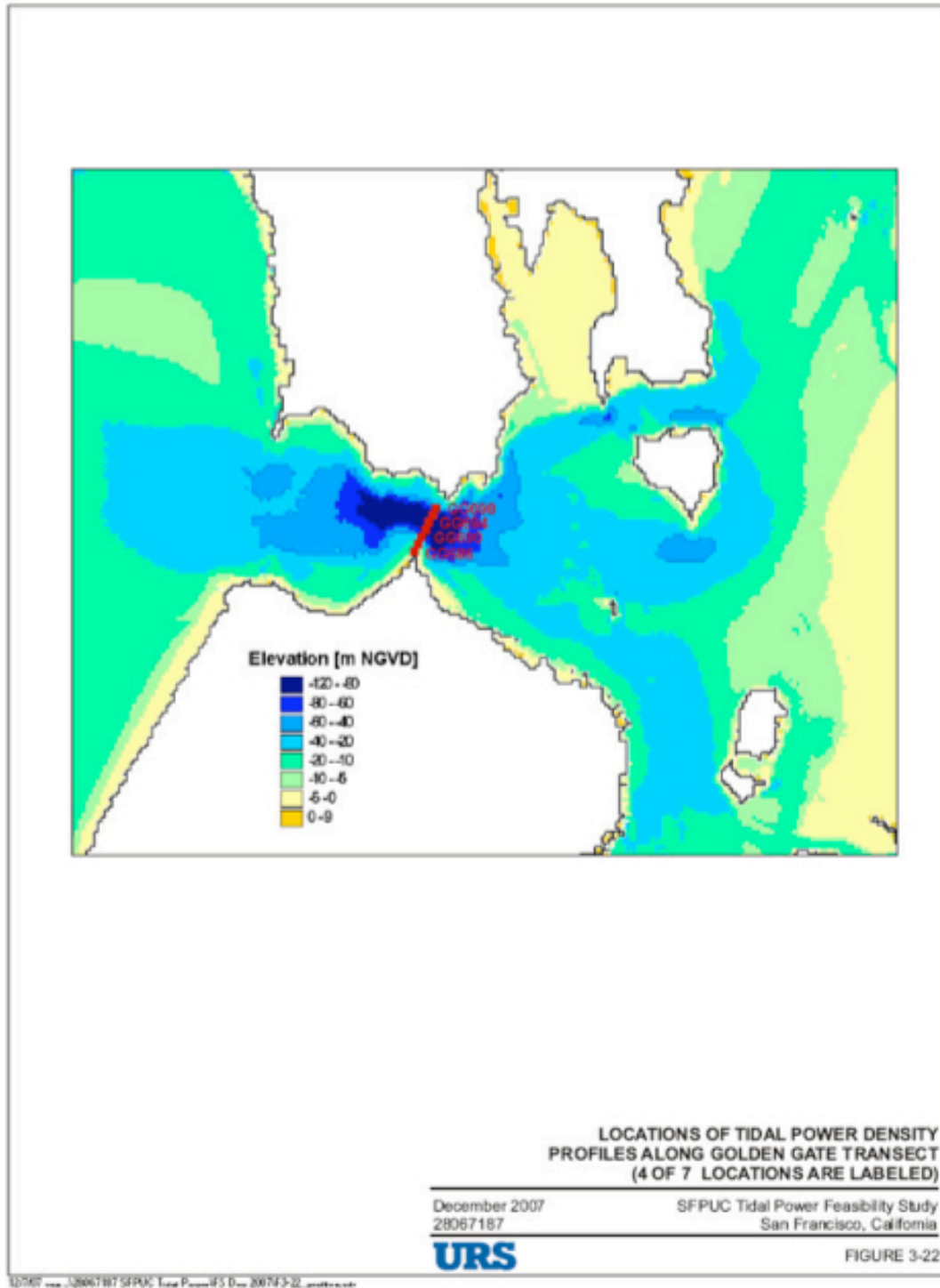
Attachment C – Energy Efficiency in San Francisco

Attachment D – CSI Rebate Schedule

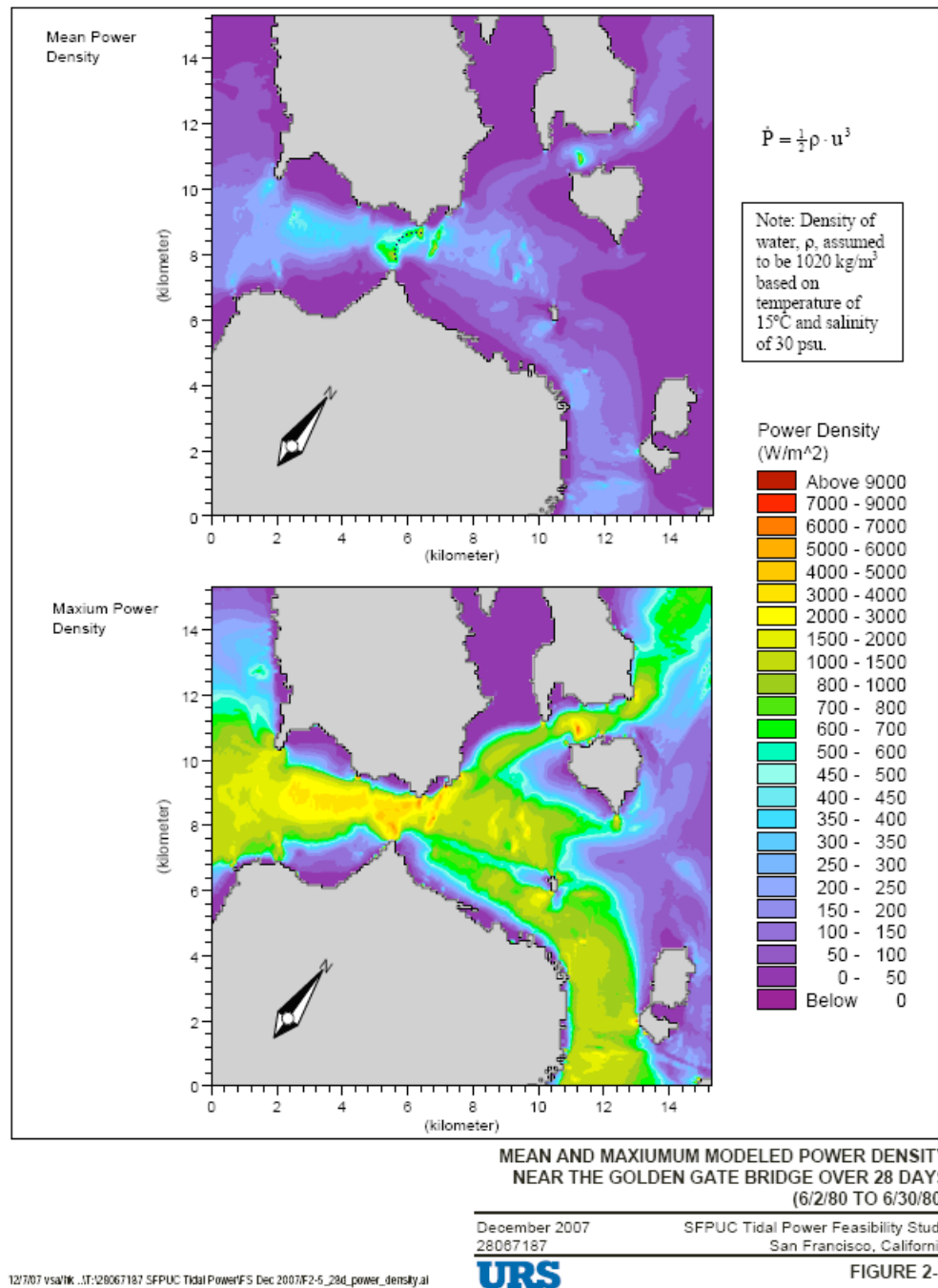
Attachment E – PaloAltoGreen

Attachment F – List of LPI Questions to SFPUC

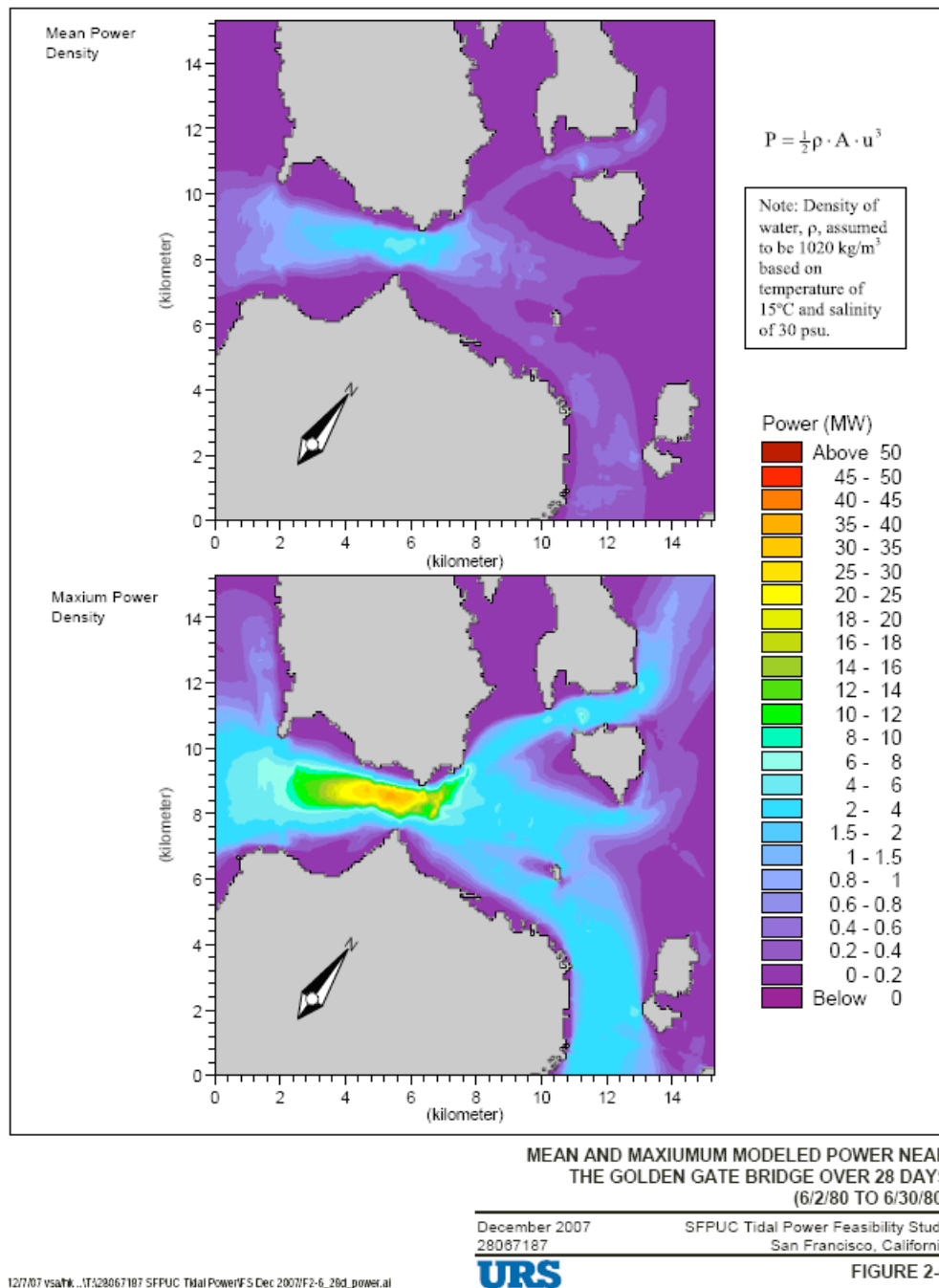
Attachment A1 – Golden Gate Tidal: Resource Maps



Transect line used by URS to evaluate power resource of the Golden Gate runs between land points in Marin and San Francisco.



The linear transect used by URS to evaluate the mean power resource at the Gate does not conform to the curved arc of where the best power levels are shown in the top map. The sill resource to the east, on the other hand, is linear in form.



The URS report states (p. 15) “The tidal power density maps indicate that the largest tidal power densities are predicted several hundred meters seaward (west) of the Golden Gate transect...” That is why evaluating the resource at the transect URS chose may underestimate the real resource.

Attachment A2 – Golden Gate Tidal: Cost Tables

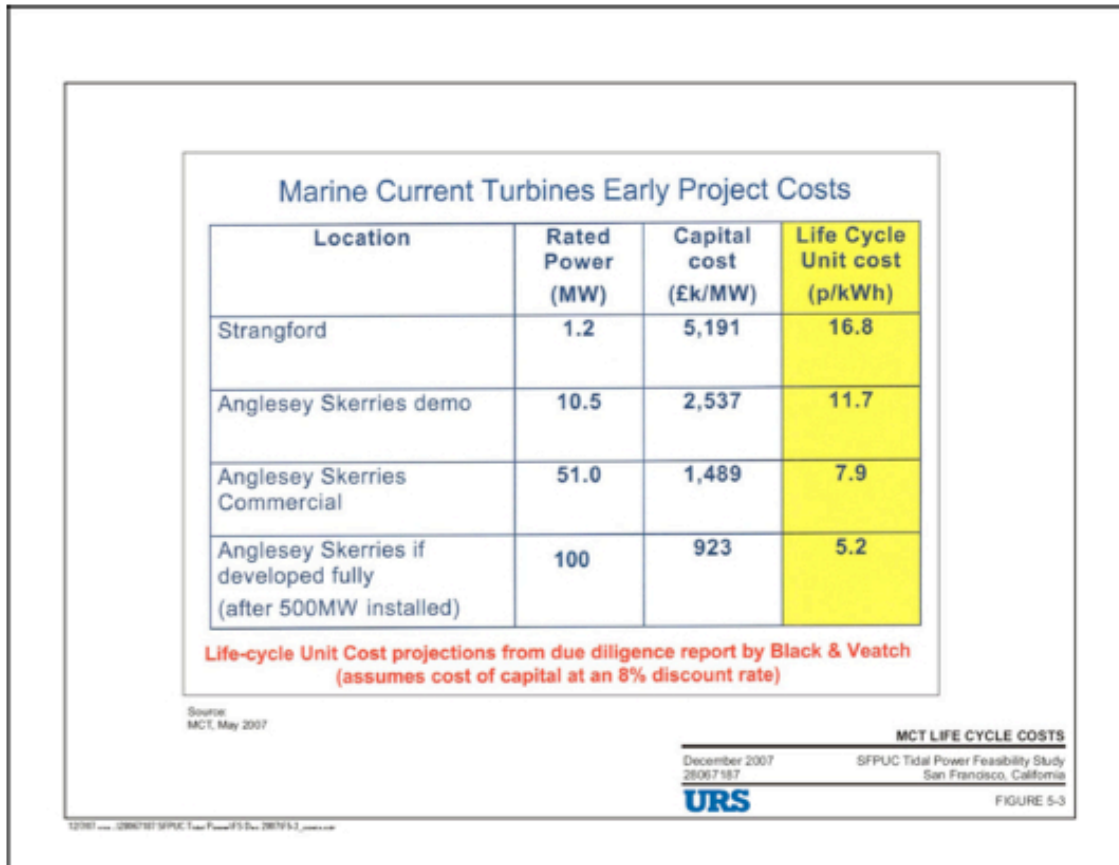


Table in URS report on Golden Gate Tidal resource shows that scaling up plant from 1.2 megawatts to 10.5 megawatts decreases capacity unit cost (shown in thousand British Pounds per megawatt) by half.

Energy costs, given in pence per kilowatt-hour, would also be roughly half at the larger scale if the energy resources at the two sites were similar. A 10.5 megawatt plant, of the size proposed by Local Power, is shown to generate electricity at 11.7 pence—roughly 23 cents—per kilowatt-hour. While the resource at the Gate may be less than at Anglesey Skerries, a CCA could offset this by a much lower cost of capital.

Attachment A3 – Golden Gate Tidal: Planning Matrix

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CTAC Tidal and Wave Generation Committee Permitting Matrix January 2007

AGENCY	STATUTE/REGULATION	PRODUCT/ACTION	NOTES
FEDERAL AGENCIES			
FERC (NEPA lead)	Federal Power Act (§4(f))	Power plant license	<ul style="list-style-type: none"> FPA prohibits hydropower projects in National Parks without specific authority from Congress (16 USC 796(2), 797a) FPA prohibits FERC from issuing an original license for any new hydro electric power project located within the boundaries of a National Park that would have a direct effect on Federal lands (16 USC 797c) A non-federal hydroelectric project must be licensed if it (a) is located on a navigable water of the US, (b) occupies lands of the U.S., (c) utilizes surplus water or water power from a government dam; or (d) is located on a body of water of which Congress has Commerce Clause jurisdiction, was under construction after 1935, and affects interstate/foreign commerce interests (16 USC 817(1))
	National Environmental Policy Act	EIS (EA/FONSI unlikely)	Note: FERC must complete an EFH consultation if the action may adversely affect EFH.
USACE	Rivers and Harbors Act	Section 10 permit	
	Clean Water Act	Section 404 permit	

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AGENCY	STATUTE/REGULATION	PRODUCT/ACTION	NOTES
USCG	14 USC 2, 14 USC 83, Code of Fed. Reg., Title 33, Chap. 1, Part 66) No private aid to navigation may be authorized unless a completed application form has been received (14 U.S.C. 83; 33 C.F.R. 66.01-5).	Permit for privately maintained aid to navigation	Sample application and copy of regs available at http://www.uscg.mil/d13/oan/paton/cg-2554.pdf
USFWS	Endangered Species Act	Section 7 consultation	
	Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. 1855(b))	Essential Fish Habitat Consultation	Although NOAA Fisheries is the lead on EFH Consultation, USFWS has some involvement via the Fish and Wildlife Coordination Act (see below).
	Fish and Wildlife Coordination Act (16 U.S.C. 661-666c) The FWCA requires that wildlife, including fish, receive equal consideration and be coordinated with other aspects of water resource development.	Consultation Consultation is required between USFWS, NOAA Fisheries, and appropriate state agencies whenever any body of water is proposed to be modified in any way and a Federal permit or license is required. These agencies determine the possible harm to fish and wildlife resources, the measures needed to both prevent the damage to and loss of these resources, and the measures needed to develop and improve the resources, in connection with water resource development. NOAA Fisheries submits comments to Federal licensing and permitting agencies on the potential harm to living marine resources caused by the proposed water development project, and recommendations to prevent harm.	Comments submitted under the authority of the FWCA may be integrated with the EFH consultation process. When both EFH Conservation Recommendations and FWCA comments are provided in the same document, specific headings titled "EFH Conservation Recommendations" and "Fish and Wildlife Coordination Act Comments" should be used to avoid confusing the Federal action agency.

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AGENCY	STATUTE/REGULATION	PRODUCT/ACTION	NOTES
NOAA Fisheries / NMFS	Endangered Species Act	Section 7 consultation	
	Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. 1855(b))	Essential Fish Habitat Consultation (in coordination with Pacific Fishery Management Council)	The project will be located within an area designated as EFH by the Pacific Groundfish Fishery Management Plan (FMP), the Pacific Salmon FMP, and the Coastal Pelagic FMP
	Marine Mammal Protection Act	Incidental Take Permit	
	Federal Power Act	Section 18 Fishway Prescriptions - The FPA authorizes NOAA Fisheries (via delegation from Commerce) to provide mandatory fishway prescriptions (under FPA section 18), and recommendations under sections 2.910(j) and 10(a), when non-federal hydropower projects receive a new license from FERC.	Projects receive 30-50 year licenses, and the licensing process takes several years to complete. Generally, FERC and the applicant coordinate the process, with extensive consultation among federal and state agencies, Indian tribes, and other stakeholders. FERC has the responsibility to generate balanced license conditions, and can reject many recommendations that are supplied by stakeholders, including federal agencies. However, <i>section 18 fishway prescriptions are mandatory under the FPA</i> , and must be incorporated into the license terms, as long as the administrative record supports them. The federal action is considered to be FERC's (because FERC issues the license), although NOAA Fisheries (and the U.S. Fish and Wildlife Service) develop and submit section 18 prescriptions.

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AGENCY	STATUTE/REGULATION	PRODUCT/ACTION	NOTES
	Fish and Wildlife Coordination Act	Commenting: Many of NMFS's concerns with respect to fish habitat are currently addressed through commenting, pursuant to the Fish and Wildlife Coordination Act, on Clean Water Act (CWA) section 404 / Rivers and Harbors Act (RHA) section 10 permits issued by the Army Corps of Engineers(2) (ACOE). Although this process includes most of the essential elements of EFH consultation, the ACOE public notices generally contain little or no information on the impacts of the proposed activity because ACOE staff rely on agency input and public comment to develop that information.	To use the existing FWCA/CWA/RHA process for EFH consultation, NMFS staff must meet with ACOE staff to discuss the information needs of EFH consultation. <i>See also FWCA in USFWS section above.</i>
National Park Service – Golden Gate National Recreation Area		Applicant should likely adjust the boundaries of the project so that it will not lie within the National Park System	Based on the FPA (see FERC Notes column, above), the project must either be located outside the GGNRA's boundaries, or the applicant must demonstrate to FERC and the NPS that there will be no direct adverse effects on Federal lands within the GGNRA boundaries. Generally, GGNRA's boundaries only extend about a quarter mile offshore; for specific boundaries, see "Revised Boundary Map, Golden Gate National Recreation Area", numbered NRA-GG-80,003-K and dated October 1978, plus those areas depicted on the map entitled "Point Reyes and GGNRA Amendments and dated October 25, 1979".

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AGENCY	STATUTE/REGULATION	PRODUCT/ACTION	NOTES
Advisory Council on Historic Preservation	National Historic Preservation Act	<p>Section 106 review process</p> <ul style="list-style-type: none"> Section 106 applies when two thresholds are met: 1) there is a Federal or federally licensed action, including grants, licenses, and permits, and 2) that action has the potential to affect properties listed in or eligible for listing in the National Register of Historic Places. Section 106 requires each Federal agency to identify and assess the effects of its actions on historic resources. The responsible Federal agency must consult with appropriate State and local officials, Indian tribes, applicants for Federal assistance, and members of the public and consider their views and concerns about historic preservation issues when making final project decisions. 	The Golden Gate Bridge is not listed on the National Register of Historic Places; however, it was deemed eligible for listing in 1980, and is being considered for landmark status currently. Further, Alcatraz is listed in the Register, as are the Bay Bridge, the Port and the Presidio. Therefore, historic preservation issues will come into play.
Bureau of Indian Affairs	National Historic Preservation Act Other Possible Statutes	Consultation	Federal agencies, in carrying out their responsibilities under Section 106 of the NHPA, must consult with Native American Indian tribes regarding the identification and treatment of Traditional Cultural Properties

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ATTORNEY-CLIENT PRIVILEGED COMMUNICATION / ATTORNEY-CLIENT WORK PRODUCT

AGENCY	STATUTE/REGULATION	PRODUCT/ACTION	NOTES
STATE AGENCIES			
California Coastal Commission	Coastal Zone Management Act	None	<p>NOTE - the Coastal Commission's jurisdiction does not extend into the San Francisco Bay; therefore, BCDC will be the lead agency.</p> <ul style="list-style-type: none"> Once the federal government approves a state's Coastal Management Program (CMP), that state gains federal consistency review authority. California's CMP was federally approved in 1977 and contains two designated coastal zone management agencies that implement the federal consistency provisions: (1) the California Coastal Commission (CCC) for all coastal areas outside San Francisco Bay; and (2) the San Francisco Bay Conservation and Development Commission (BCDC) for the coastal areas in San Francisco Bay. CCC cannot choose to assert jurisdiction in the SF Bay, nor does it have appellate review authority over BCDC (even with respect to tidal / public trust lands)

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ATTORNEY-CLIENT PRIVILEGED COMMUNICATION / ATTORNEY-CLIENT WORK PRODUCT

AGENCY	STATUTE/REGULATION	PRODUCT/ACTION	NOTES
<p>San Francisco Bay Conservation and Development Commission (BCDC)</p> <p>Contacts:</p> <ul style="list-style-type: none"> Jonathan Smith (Senior/ Chief Counsel) - 415.352.3655, jons@bcdcc.ca.gov Jen Feinberg (Permit Analyst - backup contact) - 415.352.3622, jenniferf@bcdcc.ca.gov 	Coastal Zone Management Act	<p>Coastal Development Permit</p> <ul style="list-style-type: none"> BCDC is the coastal zone management agency for the San Francisco Bay segment of the California Coastal Zone <p>Concurrence w/consistency certification</p> <ul style="list-style-type: none"> The permit application to FERC will be subject to federal license and permit activity consistency review by BCDC; FERC cannot issue the permit until BCDC has agreed with the consistency certification <p>Note: The Permit is BCDC's primary mechanism for control; the consistency determination will be included as a finding supporting the permit; therefore, the permit, and the consistency determination, can be issued "conditionally," such that certain mitigation measures will apply as conditions of approval</p>	<ul style="list-style-type: none"> BCDC issues permits for activities in and along the shoreline of San Francisco bay. BCDC would be the lead umbrella agency for the project approvals Under the CZMA, BCDC reviews federal projects/ projects that require federal approval BCDC carries out its "federal consistency" responsibilities by reviewing federal projects much like it does permit applications. However, the Commission cannot require federal agencies to submit permit applications and cannot impose conditions in its federal consistency decisions. Nevertheless, federal agencies and applicants for federal approvals must provide the project details, data and other material required by the form to assure that the Commission has the information it needs to evaluate federal projects.

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AGENCY	STATUTE/REGULATION	PRODUCT/ACTION	NOTES
	McAteer-Petris Act	<p>Permits are required from BCDC for:</p> <ul style="list-style-type: none"> Filling - Placing solid material, building pile-supported or cantilevered structures, disposing of material or permanently mooring vessels in the Bay or in certain tributaries of the Bay. Dredging - Extracting material from the Bay bottom. Shoreline Projects - Nearly all work, including grading, on the land within 100 feet of the Bay shoreline. Other Projects - Any filling, new construction, major remodeling, substantial change in use, and many land subdivisions in the Bay, along the shoreline, in salt ponds, duck hunting preserves or other managed wetlands adjacent to the Bay. 	<ul style="list-style-type: none"> Work on a project needing Commission authorization cannot begin until the necessary approval has been secured A proposed project should be approved by BCDC if it is consistent with: (1) the McAteer-Petris Act; (2) the provisions of the San Francisco Bay Plan then in effect; and (3) the provisions of the Special Area Plan then in effect (i.e. SF Waterfront Special Area Plan).
	Warren-Alquist Energy Act (Cal Pub. Res. Code § 25000 <i>et seq.</i>)	<p>Energy Generation Siting Designation / Non-Siting Study</p> <ul style="list-style-type: none"> Note, this designation power is typically applicable with respect to thermal power plants, and may not be as relevant for a tidal energy project 	BCDC has specific authority under the Energy Act to designate sites in and around San Francisco Bay that are inappropriate for the siting of energy generating facilities

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ATTORNEY-CLIENT PRIVILEGED COMMUNICATION / ATTORNEY-CLIENT WORK PRODUCT

AGENCY	STATUTE/REGULATION	PRODUCT/ACTION	NOTES
CEC	Warren-Alquist Energy Act (Cal Pub. Res. Code § 25000 <i>et seq.</i>)	CEC licenses thermal power plans 50 megawatts or larger Exemption Application - if the project will be generate less than 50 megawatts of electricity, it might be able to obtain an exemption [[we will check with CEC/BCDC]]	<ul style="list-style-type: none"> The CEC must consult with BCDC when considering applications for power plants within BCDC's jurisdiction <ul style="list-style-type: none"> PRC 25508: "The commission shall cooperate with, and render advice to [BCDC] in studying applications for any site and related facility proposed to be located, in whole or in part, within the coastal zone, the Suisun Marsh, or the jurisdiction of [BCDC]. . . [BCDC] may participate in public hearings on the notice and on the application for site and related facility certification as an interested party in such proceedings. The CEC siting process is a systematic examination of the proposed project in 24 specific topic areas; the standard licensing process is normally conducted within 12 months. In order for CEC to approve the application, the Commission must make a legal finding of no significant environmental impact and find that the project would be in compliance with all local ordinances and regulations when built.

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AGENCY	STATUTE/REGULATION	PRODUCT/ACTION	NOTES
State Lands Commission	The State Lands Commission administers California's sovereign lands	Land Lease/Permit <ul style="list-style-type: none"> Commission grants leases or permits on State lands for marinas, industrial wharves, tanker anchorages, harvesting of timber, dredging, grazing, mining, oil and gas, and geothermal development. For work in harbors and waterways, dredging permits are issued by the Commission. If the dredged material is to be used for a commercial purpose, a royalty is charged by the Commission. Applications must include an outline of the proposed project, supporting environmental data, and payment of appropriate fees. 	<p>Note: A lease will only be granted for uses consistent with Public Trust Doctrine:</p> <ul style="list-style-type: none"> Sovereign Lands held in Public Trust can only be used for public purposes consistent with provisions of the Public Trust such as fishing, water dependent commerce and navigation, ecological preservation and scientific study. The San Francisco Bay is public trust land <p>Interaction with BCDC</p> <ul style="list-style-type: none"> A representative of the State Lands Commission serves as a BCDC member BCDC requires written approval from State Lands before it will issue a permit for the project
Department of Fish and Game	California Endangered Species Act	Incidental Take Permit or Consistency Determination based on federal ESA section 7 Biological Opinion (Incidental Take Statement)	
San Francisco Bay Regional Water Quality Control Board	Federal Clean Water Act	Clean Water Action section 401 water quality certification	Under the federal Clean Water Act either dredging or wetland fill activities require permits from the Army Corps of Engineers. The Regional Board needs to certify that these federal permits meet State water quality standards. Thus, dredging and fill projects need to be reviewed and approved by the Board. The Board's concerns are that the projects minimize their impacts on water quality

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AGENCY	STATUTE/REGULATION	PRODUCT/ACTION	NOTES
	Porter-Cologne Water Quality Control Act (Porter-Cologne)	<p>Waste Discharge Requirements</p> <ul style="list-style-type: none"> If the project will entail discharge of waste that could affect waters of the state, project sponsor must file a report of waste discharge with the regional board. The regional board will then respond to the report of waste discharge by issuing waste discharge requirements (WDRs) in a public hearing, or by waiving WDRs (with or without conditions) for that proposed discharge. Discharges of waste include fill, any material resulting from human activity, or any other "discharge" that may directly or indirectly impact "waters of the state". 	<ul style="list-style-type: none"> Note: While Section 404 permits and 401 certifications are required when the activity results in fill or discharge directly below the ordinary high water line of waters of the United States, any activity that results or may result in a discharge that directly or indirectly impacts waters of the state or the beneficial uses of those waters are subject to WDRs. Most regional boards (including the SF Bay Regional Board) rely on applications for 401 certification to determine whether WDRs need also be issued for a proposed project.
	CEQA	Water quality review	The Regional Board must review a final CEQA document prior to taking an action on an application for water quality certification and/or WDRs
Office of Historic Preservation / State Historical Resources Commission	National Historic Preservation Act	Section 106 Consultation	Section 106 of the NHPA requires federal agencies to consider the effects of proposed federal undertakings on historic properties. NHPA's implementing regulations (36 CFR Part 800) require federal agencies (and their designees, permittees, licensees, or grantees) to initiate consultation with the State Historic Preservation Officer (SHPO) as part of the Section 106 review process.

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ATTORNEY-CLIENT PRIVILEGED COMMUNICATION / ATTORNEY-CLIENT WORK PRODUCT

AGENCY	STATUTE/REGULATION	PRODUCT/ACTION	NOTES
	State Historic Preservation Law (Pub. Res. Code § 5024 <i>et seq.</i>)	<p>Project Review:</p> <ul style="list-style-type: none"> State programs and projects are reviewed pursuant to the State Historic Preservation law. <p>Consultation with OHP:</p> <ul style="list-style-type: none"> Section 5024 requires consultation with OHP when a project may impact historical resources located on State-owned land. 	Both the Golden Gate Bridge (No. 974) and the Presidio (No. 79) are listed as California Historical Landmarks
	CEQA	Historical resources review	Historical resources are considered part of the environment and a project that may cause a substantial adverse effect on the significance of a historical resource is a project that may have a significant effect on the environment.
LOCAL AGENCIES			
City and County of San Francisco (CEQA lead)	CEQA	EIR (Mitigated Negative Declaration / Negative Declaration / Categorical Exemption are very unlikely for a project of this size and intensity)	<ul style="list-style-type: none"> BCDC typically defers to the City to control the CEQA process for a project; therefore, the City will likely be the lead CEQA agency, though BCDC will have the ability to oversee / comment on the CEQA documents and process Environmental review under CEQA is administered for all departments and agencies of the City and County of San Francisco by the Major Environmental Analysis (MEA) division of the Planning Department No action to issue permits, allocate funds, or otherwise implement a discretionary project may be taken until environmental review is complete

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ATTORNEY-CLIENT PRIVILEGED COMMUNICATION / ATTORNEY-CLIENT WORK PRODUCT

AGENCY	STATUTE/REGULATION	PRODUCT/ACTION	NOTES
	Local Discretionary Permits	Additional research will be required to determine whether the project will require any variances, zoning changes, excavation or fill permits, design review, planned unit development, tentative subdivision map approvals, etc.	BCDC cannot file an application as complete until project sponsor received all discretionary local permits
San Francisco City and County Local Coastal Program	If a local government has developed a local coastal program (LCP) that has been approved by the California Coastal Commission, then coastal permitting authority over most new development is transferred to the local government. The City and County of San Francisco has a certified LCP	San Francisco's LCP is not relevant to the proposed project because BCDC (instead of the CCC) has jurisdiction in the San Francisco Bay, and LCP's are only relevant when the Coastal Commission has jurisdiction. [[We will conduct additional research on this point]].	<ul style="list-style-type: none"> Each LCP includes a land use plan that prescribes land use classifications, types and densities of allowable development, and goals and policies concerning development; and zoning and other ordinances and administrative procedures needed to implement the plan. Local governments prepare LCPs and submit them to the Commission for approval. After an LCP is approved, the CCC's permitting authority is delegated to the local government. The CCC retains appeal authority over certain local government permit decisions, as well as <i>original permit jurisdiction over development on tidelands, submerged lands, and public trust lands</i>. However, this is not true where BCDC has jurisdiction in the first instance, as here.
San Francisco Port Commission	Most the land under the jurisdiction of the Port Commission is public trust land and is subject to use limitations as provided in California Statutes of 1968, Chapter 1333, as amended (the "Burton Act") and the San Francisco Charter. In the event of a conflict between the provisions of the Burton Act and the San Francisco Planning Code, the State legislation prevails	Possible Design Review	Note: the Port Commission's jurisdiction does not extend north/east of the Hyde Street Pier; therefore, it will not likely have jurisdiction or control over the project.

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ATTORNEY-CLIENT PRIVILEGED COMMUNICATION / ATTORNEY-CLIENT WORK PRODUCT

AGENCY	STATUTE/REGULATION	PRODUCT/ACTION	NOTES
Marin County	CEQA	Commenting	Because the bridge (and the bay) are located between San Francisco and Marin Counties, project sponsor should discuss with Marin County its role in the CEQA process if San Francisco is selected as the lead agency.
	<p>Local Code Requirements</p> <p>Possibly: Marin County Municipal Code section 22.14.060 (Bayfront Conservation Combining District)</p> <p>The Bayfront Conservation Combining District consists of three subzones. The Tidelands Subzone includes all areas subject to tidal action including salt marshes, beaches, rocky shorelines, and mudflats, <i>and all open water areas</i>. This subzone also includes all the contiguous and adjacent land up to the line of highest tidal action (as applied by the Bay Conservation and Development Commission (BCDC) in compliance with the McAteer-Petris Act)</p> <p>However, the combining zone is an overlay zone, and is only applicable in certain underlying zoning districts; it is unclear whether the Bay is within one of these zoning districts [[we will conduct additional research on these points]].</p>	<p>Environmental Assessment pursuant to Marin County Municipal Code section 22.14.060 (Bayfront Conservation Combining District)</p> <p>The Bayfront Conservation combining district is intended to regulate land and water uses, to: Prevent destruction or deterioration of habitat and environmental quality; . . . Ensure that potential hazards associated with development do not endanger public health and safety; and Maintain options for further restoration of former tidal marshlands.</p>	<p>Before the filing of a development application for undeveloped, agricultural or redevelopment lands within the -BFC combining district, an environmental assessment shall be prepared in consultation with the County to determine the development capability and physical and policy constraints of land and water areas.</p> <p>The use of an environmental assessment is intended to provide the highest degree of environmental protection while permitting reasonable development of sensitive land and water areas consistent with the goals, objectives and policies contained within the Marin Countywide Plan.</p> <ul style="list-style-type: none"> Note: Marin Municipal Code section 22.14.060(F)(6): The County shall prohibit diking, filling or dredging in areas subject to tidal action (Tidelands subzone) unless the area is already developed and currently being dredged. Current dredging operations for maintenance purposes may continue subject to environmental review, if necessary. In some cases, exceptions to the prohibition of diking, filling, and dredging may be made for areas that are isolated, or limited in productivity. In tidal areas, only land uses which are water-dependent shall be permitted, consistent with Regional, State, and Federal policy. These include ports, water-related industry and utilities, essential water conveyance, wildlife refuge, and

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AGENCY	STATUTE/REGULATION	PRODUCT/ACTION	NOTES
			water-oriented recreation. . . . Removal of vegetation shall be discouraged. Alteration of hydrology should only be allowed when it can be demonstrated that the impact will be beneficial or non-existent.

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Attachment B – NRG Steam Loop

The NRG San Francisco Energy Center

Background

Since the mid 1890s, a little-noticed facility on Jesse Street has generated steam and delivered it through underground pipes to buildings in a two square-mile area. Today, 180 buildings in the downtown and Civic Center areas receive steam from the NRG Energy Center. They include the City Hall, Yerba Buena Center for the Arts, the Bank of America building and numerous other office buildings and all the major hotels. These buildings use the steam for heating, hot water and air conditioning. Using a centralized steam plant is far more energy efficient and cleaner than installing individual boilers and furnaces in each of these buildings.



Environmental Improvements

In the last few years NRG has worked to upgrade its facilities and make them more energy efficient. In 2006 hot air that had been sent up a chimney as exhaust has been recovered and used to help heat water to make more steam. This increased the energy efficiency of the steam generation process by six-to-eight percent, saving that much natural gas.

In the summer of 2008, a return line to bring steam that has cooled and condensed to hot water back to the plant from buildings in the Civic Center area for recycling as steam became fully operational. It conserves water and heat, making the system more energy efficient. In the next few months, the low fire on standby steam boilers that is similar to keeping a pot on simmer on your stove will be replaced by hot "blow down" water that had been discharged. This will save additional energy.

Rates for steam customers are regulated by the California Public Utilities Commission. Originally owned by Great Western Power Company, the system was purchased by NRG Energy in 1999.

NRG Energy Center San Francisco, 54 Mint Street, Suite 200, San Francisco, CA 94103

A Proposal for a New Cogeneration Plant to Produce Steam and Electricity

In recent years, the number of hotels, office buildings and residential towers downtown has grown. To meet this increased demand and to increase energy efficiency, NRG Energy Center, the owner of the steam plant that serves these buildings, plans to upgrade its facility by building a cogeneration plant. The plant will provide additional electric energy for San Francisco and add steam generation capacity, enabling older, less efficient steam boilers to be placed on standby.

The Project

NRG will install a clean-running, natural gas-fueled combustion turbine within the existing site on Jessie Street near Fifth and Mission streets in downtown San Francisco. The natural gas-fueled combustion turbine and its associated steam turbine will power individual generators, producing more than 50 megawatts of electricity to help meet the growing energy needs in downtown San Francisco. Additionally, the hot exhaust from the turbine will not be wasted but will be sent to a boiler as the primary heat source to make almost 40 more megawatts of equivalent thermal energy for NRG's customers.



Using cogeneration technology to produce electricity and steam is extremely energy efficient. For every 100 units of input energy, a typical power plant will produce 30 to 35 units of electricity and the rest is lost. A cogeneration plant will make 30 units of electricity and 45 units of steam from the same 100 units of input energy.

Old oil-fueled plants use 12,000 to 14,000 British Thermal Units (BTUs) to generate a kilowatt of electricity. Traditional gas-fueled plants use 10,000 to 11,000 BTUs. Using waste heat makes

plants even more efficient. This one will use only 7,000 to 8,000 BTUs. The new unit will be 30 percent more efficient than a gas-fueled plant and 40 percent more efficient than an old oil-fueled plant.

In addition to adding needed electricity to the grid, this cleaner technology will reduce the cost of steam, which helps to lower the cost to our steam customers. Older, less energy-efficient steam boilers at the site will be put in reserve and used only at peak periods, such as early mornings in winter, when heat is most needed and when hotel guests want hot showers. At peak times as much as 300,000 pounds of steam per hour are needed compared with low periods when 35,000 to 40,000 pounds per hour are sufficient.

Once the combustion turbine is built and operating, one of the older boilers will be dismantled to make room for a steam turbine generator that will create an additional eight megawatts of electricity to be fed into the local electric grid. An air-cooled condenser will accompany the steam turbine. It will take water and cooled steam from the turbine and return pure water to the heat recovery steam generator to be converted back into steam.

Features of the Project:

- Provides up to 140,000 pounds per hour of additional energy-efficient steam to meet growing demand downtown.
- Provides approximately 53 megawatts of new electricity going straight into the San Francisco grid at Pacific Gas and Electric's Mission Substation where it is needed.
- Provides approximately 39 megawatts of energy-efficient steam.
- Utilizes state-of-the-art cogeneration technology and equipment that are cleaner and more efficient than similar turbines, which have been proposed in other parts of the city.
- Reduces most emissions, including nitrogen oxide, particulate matter and carbon monoxide, from the NRG Energy Center compared with present operations.
- Produces 45 fewer tons of CO₂ emissions per year than separate steam and power plants would produce without cogeneration technology.
- Noise suppression will ensure noise does not exceed current levels.
- Uses an existing stack -- no new structures taller than the existing ones.
- Supports San Francisco's visitor-friendly economy.
- Creates energy for San Francisco at an existing downtown plant site instead of locating near residential neighborhoods.

NRG Energy Center San Francisco, 54 Mint Street, Suite 200, San Francisco, CA 94103

Attachment C - Energy Efficiency in San Francisco

City capabilities and ongoing programs

The key issue is to ensure a seamless transition for the SFDOE energy efficiency programs from the Partnership to management of the CCA Energy Efficiency program. This means terminating the Partnership in a manner that the CCA implementation of energy efficiency measures would physically start on the date that revenue from the PG&E Partnership would begin; or that supplemental funding would ensure continuity so that critical personnel time is not wasted.

The City has built the capacity to implement energy efficiency programs over the years. It has a staff of eight energy specialist employees for municipal buildings and facilities. As a result, the City has a seasoned staff and a large database to draw upon to design and implement effective programs.

The City currently provides energy efficiency lighting and refrigeration retrofits to small businesses through its contractor, Ecology Action. The commercial and multi-family PLUS program offers technical services and a wide range of measures, including lighting, refrigeration, food service equipment, controls, HVAC, motors, and hot water, to multifamily and commercial property owners and individual businesses. This program is structured to capture lost opportunities by allowing customers to do both standard retrofits and many redesign and customized retrofits that are not eligible in PG&E's rebate programs.

Innovative City proposals for 2009-2011

The City's Department of Environment has also formed a local government partnership with PG&E, known as San Francisco Energy Watch (SFEW) to implement more comprehensive energy efficiency in San Francisco. The stated objectives of the "innovative programs" component of this effort are to improve near-term energy efficiency and set the framework for more aggressive actions over the longer-term. Specific elements include:

Planning: SFEW has adopted a matrix approach to energy efficiency program planning. The matrix identifies market sectors to be targeted for transformation. An example has been in the area of commercial fluorescent lighting. High efficiency lighting had already been piloted and had achieved mass market levels particularly in the large commercial building sector. City incentive programs have installed over a half million high efficiency lamps. The new Commercial Lighting Ordinance (introduced January 15, 2008) will require lighting upgrades at the time of electrical permit inspection and will go into effect during the 2009-2011 cycle.

Codes & Standards (C&S) Credit: Local governments are charged with compliance and enforcement of the state C&S in addition to local C&S. Savings garnered as a result of energy legislation are real and arguably the most cost-effective, particularly when compared to incentives. This effort is intended to develop a new methodology that takes

into consideration verified savings from statewide C&S within the local jurisdiction as a factor in determining attribution of credit.

Tax Increment Financing (TIF): In collaboration with the City of Berkeley, San Francisco is now developing its own TIF for solar and energy efficiency. The financing program will allow residential and commercial building owners to pay for improvements through their property tax. TIF attaches the improvements to the property, rather than the property owner, meaning that if the building is sold after only a few years, the current owner does not have to pay off the financing before having enjoyed all of the savings benefits. The future owner will pay for the value added to the building through the property tax.

Boiler Early Retirement: Because San Francisco is one of the oldest cities in California, it has old buildings, mid and small sized commercial buildings along with a predominance of older multi-family buildings. SFEW will pilot test a Commercial and Multifamily Steam Boiler Retirement Pilot Program. Boilers that have been in service for more than their expected useful lifetime, typically 30 years, will be targeted for early replacement. Older steam boilers will be replaced with modern energy efficient units that exceed Title 24 minimum standards and meet new BAAQMD air quality standards, as well as waste heat recovery to generate electricity on-site.

Small Commercial Equipment: leased and second-hand equipment in small food service businesses, particularly refrigeration equipment and novelty coolers, will be addressed in this program.

Energy Benchmarking: AB1103 requires commercial buildings to be energy benchmarked with Energy Star Portfolio Manager for sale or lease after 2009. SFEW intends to assist building owners to benchmark their buildings. SFEW will provide technical assistance to building owners choosing to upgrade their building to attain a higher rating and will provide incentives or refer commercial building owners to other incentive programs as appropriate.

Proposed longer-term energy efficiency programs

Energy efficiency and greenhouse gas reductions goals: The City proposes to reduce peak load by 105 MW by 2012 through efficiency and demand response. The Climate Action Plan (2004) proposes to reduce greenhouse gases to 20 percent below 1990 levels by 2012 and reach carbon neutrality by 2030. These policies will be updated to include zero net energy for future residential and commercial buildings.

Lead by example: The mayor has conceived *SF Forward*, a document that assembles all the commitments made in previous plans and calls for additional innovation and leadership in energy efficiency and demand response.

Adopt stricter local building codes: The City has passed a new Green Building Ordinance to require LEED Gold for all commercial buildings by 2012.

Require higher energy standards for affordable housing projects: Treasure Island will be built to a LEED Platinum standard with ultra-high efficiency buildings and on-site generation. The same approach will be used for the Hunters Point Shipyard redevelopment.

Require efficient lighting equipment for municipal facilities: The Commercial Lighting Ordinance on T-12 lamps (introduced January 15, 2008) applies to municipal facilities.

Promote green technology-oriented economic development: The Clean Tech Payroll Tax Waiver is in its second year. The City is now in the process of greening the Workforce Development program, a \$70 million job training program, which will add energy efficiency to each component of their training programs.

Attachment D – CSI Rebate Schedule

California Solar Initiative Statewide Trigger Point Tracker ¹



*Pacific Gas and
Electric Company®*



Center for
Sustainable Energy
CALIFORNIA

Last updated 10/15/2008

Administrator	Customer Class *	Current Step	Initial MW in Step	Unused MW from Previous Steps	Revised Total MW in Step	Issued Conditional Reservation Letters (MW)	MW Remaining	MW Under Review
PGE	Residential	4	18.70	0.73	19.43	12.47	6.96	1.71
	Non-Residential	5	46.80	17.53	64.33	30.77	33.56	5.67
SCE	Residential	3	15.20	0.12	15.32	5.74	9.59	2.05
	Non-Residential	5	49.30	12.79	62.09	9.29	52.81	3.10
CCSE	Residential	4	4.40	0.00	4.40	0.14	4.26	0.07
	Non-Residential	4	9.00	1.90	10.90	10.62	0.29	0.86

Step	Statewide MW in Step	EPBB Payments (per Watt)			PBI Payments (per kWh)		
		Residential	Non-Residential		Residential	Non-Residential	
			Commercial	Government/ Non-Profit		Commercial	Government/ Non-Profit
1	50	n/a	n/a	n/a	n/a	n/a	n/a
2	70	\$2.50	\$2.50	\$3.25	\$0.39	\$0.39	\$0.50
3	100	\$2.20	\$2.20	\$2.95	\$0.34	\$0.34	\$0.46
4	130	\$1.90	\$1.90	\$2.65	\$0.26	\$0.26	\$0.37
5	160	\$1.55	\$1.55	\$2.30	\$0.22	\$0.22	\$0.32
6	190	\$1.10	\$1.10	\$1.85	\$0.15	\$0.15	\$0.26
7	215	\$0.65	\$0.65	\$1.40	\$0.09	\$0.09	\$0.19
8	250	\$0.35	\$0.35	\$1.10	\$0.05	\$0.05	\$0.15
9	285	\$0.25	\$0.25	\$0.90	\$0.03	\$0.03	\$0.12
10	350	\$0.20	\$0.20	\$0.70	\$0.03	\$0.03	\$0.10

* The non-residential customer class includes commercial, private, government, and non-profit participants.

¹ source: <http://www.sqip-ca.com/>

Attachment E - PaloAltoGreen Program

Choose 100% Renewable Energy and Join a Winning Team

If you reside in Palo Alto, then you can sign up for the nation's top-ranked renewable energy program, PaloAltoGreen. Join over 20% of Palo Altans by choosing 100% wind and solar energy, renewable energy from some of the cleanest sources. To learn about business participation, visit our [business page](#).

Make a Difference

For the average Palo Alto household, participation in PaloAltoGreen reduces CO2 emissions by 11,006 lbs. a year. That's easier than not driving your car for 11 months, but with the same environmental impact. In 2007, members of PaloAltoGreen reduced CO2 emissions by 39,678,150 pounds, equivalent to taking 3,896 cars off the road for a year. With PaloAltoGreen, it's easy to [make a difference](#).

Buy Green Energy, Build Green Energy

Your participation makes the air cleaner by reducing greenhouse gas emissions and supports the growth of the clean tech jobs and renewable energy facilities - wind energy is the fastest growing sector of the energy economy. To ensure you're your enrollment contributes to this growth, we purchase exclusively from new renewable energy projects. 97.5% comes from a wind farm in Oregon and 2.5% from three large solar installations around the Bay Area. See below for more information on the facilities you support.

Easy on the Pocket

PaloAltoGreen is only 1.5 cents extra per kWh. For the average home, this would add \$9.75 to the monthly utility bill. PaloAltoGreen is available to all CPAU electricity customers. Small businesses and residents pay the same rate of 1.5 cents per kWh. Larger businesses can choose to participate in increments of \$15 per month for each 1,000 kWh block. For more information on large business (E4 & E7 rate class) participation in PaloAltoGreen, visit our [business page](#).

Save Money

In addition to helping the environment, your enrollment helps you save money. All residential customers are a part of the [PaloAltoGreen Team](#), a discount program for Palo Alto businesses and residents participating in PaloAltoGreen. The PaloAltoGreen Team promotes local businesses that choose renewable energy and rewards residents that choose it as well. Just show a [participating business](#) the Team Card you receive in your welcome kit and get a discount. Is your business interested in becoming a PaloAltoGreen Team member? Sign up [here](#), call 650-329-2241, or email paloaltogreen@cityofpaloalto.org.

Simple to Enroll

Enrolling is simple, voluntary, and you can cancel at any time. Just fill out the [enrollment form](#) or call 650-329-2161. If you're a large businesses (E4 & E7 rate classes), visit our [business page](#) to learn more.

Have Questions?

Email us at paloaltogreen@cityofpaloalto.org, call 650-329-2161, or stop by 2nd floor Customer Service Center at City Hall.

[Power Content Label for CPAU and PaloAltoGreen](#)

Renewable Energy Generation Facilities

Through PaloAltoGreen, you support these wildlife-friendly wind and solar facilities in Oregon and around the Bay Area. Thanks for helping create a stable and clean energy future!

- Palo Alto Municipal Service Center (MSC)
Located at the MSC on East Bayshore Road off Highway 101, this 75 kW project is notable because of its solar trackers, which follow the sun. This results in almost a 50% greater ability to capture solar energy than non-tracking projects nearby.
- Cubberley Community Center
Located at 4000 Middlefield Road, Cubberley Community Center hosts the largest of the three city-funded solar projects. The 117 kW rooftop PV system and photovoltaic canopy is installed on buildings G and N. The canopy will generate electricity as well as protect the classrooms from sun and rain.
- Lucy Evans Baylands Nature Interpretive Center
Located at the East end of Embarcadero Road, the Baylands Interpretive Center has the smallest of the three solar facilities at 15 kW, but it's no less interesting. Along with amazing bird watching, visitors can view the Center's rooftop solar panels using a submarine periscope.
- Leaning Juniper Wind Project in Gilliam County, Oregon
Leaning Juniper is located near the Columbia River, about three miles southwest of the City of Arlington, Oregon. Beginning in September of 2006, this wind farm started producing electricity from its 67, 1.5-megawatt turbines. In total, the turbines of Leaning Juniper - with rotors that could cover a circle over 150 feet in diameter - have the total capacity to generate 100.5 megawatts of electricity, enough to power over 30,000 homes.

In addition to environmental protection, the program offers these benefits as well:

- Energy Diversification: Helps build America's long-term sustainable energy infrastructure, reduces our dependence on fossil fuels, and furthers our national energy independence.
- Farming: Wind farms are located on land primarily used for dry land wheat farming and cattle grazing. Agricultural activities take place adjacent to the wind turbines and farmers who host wind energy facilities generate annual land leases of approximately \$3,000 to \$4,000 per turbine. Farmers call wind farming "a new cash crop."
- Jobs: Stimulates the creation of jobs supporting wind and solar energy construction and operation.

<http://www.cityofpaloalto.org/forms/pagreen/index.html>

Attachment F – List of LPI Questions to SFPUC

Local Power.

To: Sandra Rovetti, SFPUC
Fr: Paul Fenn, CEO
Re: **CORRECTED** SFLAFCO CCA Program Review Report Clarifications
of First Round of Questions for SFPUC staff
Dt: September 17, 2008

Dear Sandra,

Thanks for sending along the document links and information in response to our first round of questions, and for asking us to refine some of our more ambiguous questions. To reduce the burden, we have gone through the questions and deleted those you have already answered with links of answers, then rephrased the initial questions, which retain their original numbering below.

I apologize for sending you a corrected version; the last omitted the natural gas customer question, C21, which I added upon our discovery that the SFPUC's gas boiler program is a significant resource for the CCA renewable energy and efficiency programs.

Thanks for your help. If you have any questions, please do not hesitate to call me at (415) 728-8443.



Paul

A. Energy Infrastructure, Supply & Programs

4. data on in-city clean energy projects other than solar, such as wind, as well as solar and wind monitoring station data, such as wind speed and direction, and insolation levels. I believe there are ten of them in the city since 2001. Also, do you have information on wind turbines, such as plans or policy statements for future renewable distributed generation
6. Information on SFPUC transmission and distribution system, map of all city-owned or controlled rights-of-way, and any PG&E transmission or distribution agreements with the City or SFPUC other than the PG&E Interconnect Agreement
7. information regarding operation and handling of power from the Hetch-Hetchy hydro plants, including capacity scheduling, energy production, and specifically the functional ability to control the output of the Hetch Hetchy generators and also SFPUC's database on the schedule of power sales to the Modesto/Turlock Irrigation District, as well as total generation capacity scheduling, over the past five years
8. information regarding operations of the SFPUC water storage (reservoir) systems, such as the electrical load per pump, water flow volumes and elevation at reservoirs on the Peninsula, as well as a map of the pipeline system facilities

9. information on properties and conventional electric generation infrastructure owned or operated by SFPUC, such as any physical properties that the City Owns, with data such as capacity, fuel, and operational status, as well as maps
10. power purchase and sales agreements between SFPUC & wholesale power entities over the past five years
11. list of SFPUC power customers with information, including rates, customer energy usage, and SFPUC customer efficiency programs
12. documents, consultant reports, and up to date information regarding SFPUC clean energy planning
15. Locations and owners of six installed wind turbines, as well as any additional turbines permitted or planned
17. URS Consultant Contacts and permission to interview them
18. SFPUC staff org chart

B. Documents

1. Port power documentation, specifically installed or proposed solar photovoltaic installations on port properties
10. ISO transmission rates paid by SFPUC for generation access
12. diagram and specifications of installed equipment of Switch Gear to Isolate PUC system from PG&E
14. Documentation of the new cable from Davis Substation/Port of Oakland to Treasure Island on the Easter Span of the Bay Bridge, and any plans for the new Eastern span replacement
16. Information on electric generation at the 2MW Oceanside plant, 2MW Southeast and Zoo Property, including load factor problems but as generating capacity, capacity schedule, levelized cost of energy, potential to add capacity there, project financing mechanism(s) if any, onsite gross and net load curve, and gross energy usage onsite, as well as data from served meters.
23. Solar PPA Program documentation that Barbara mentioned
27. Lennar Project
 - copy of City spending authority
 - new distribution system plan map with impedances
 - "solar ready" homes policy document
29. Information on SFPUC Renewable Direct Investment in renewable energy, including plans to use bond financing
30. SFPUC Pipe and Fiber trenching plans/schedules/maps

C. SFPUC or PG&E/Other Data Questions - How best to access?

2. specific information on all currently operational generation assets under city control/ownership. We have not received this yet, but believe Barbara had no problems with it.

3. specific information on peak, average, and minimum load within city limits over last five calendar years. Please provide the whole historical database going back five years for all SFPUC loads. Provide load-duration curves for each of the past five calendar years; load curve data for SFPUC at least, and for all SF as well if available.
4. For SFPUC/City-owned facilities or power sources, specific information on amount of power supplied, in the form of GWh-yr, from each generation providing power to the city over the last 5 years. Identify which generation sources provide: 1) baseload, 2) load following, and 3) peaking power. Yet Unanswered, we expect this eventually.
5. Identify weather conditions prevalent during the highest 100 hours of demand during the past five years. Alternatively, identify whether any of the 100 hours of peak demand during any of the previous five years occurred when the city was partially or completely overcast.
8. For City facilities and/or customers of SFPUC, or City-wide data if available, current level of energy efficiency (if known) at each City-owned property relative to Title 24 new building standard if known.
9. For City facilities and/or customers of SFPUC, or City-wide data if available, current SEER rating of central air conditioning system or kW/ton of cooling (chiller plants) at each property identified in (c) if known.
10. For City facilities and/or customers of SFPUC, or City-wide data if available, degree of penetration of compact fluorescent lighting in city buildings and residences and estimate potential GWh savings by phase-out of incandescent bulbs within city limits.
11. any studies that have been done of the potential savings associated with upgrading in-use commercial fluorescent lighting to high efficiency commercial fluorescent lighting. (could be for muni load, or other data if available)
12. For City facilities and/or customers of SFPUC, or City-wide data if available, any studies on the current level of weatherization of commercial and residential structures within city limits and the expected energy savings benefits of realizing the cost-effective weatherization potential of these structures.
16. any studies of PV potential on commercial buildings, commercial parking lots/parking structures, and residences within city limits. Of primary importance are studies that provide details on available PV square footage for specific commercial properties.
17. updated list of SFPUC installed and planned PV installations, updating cost and performance information for report online.
20. transmission & distribution (T&D) maps, including PG&E maps or maps of City-owned T&D infrastructure, for city down to 12 kV (or 4 kV if 4 kV distribution substations used) showing location of all substations and all wire impedances, as well as SFPUC conduits pipes, and rights-of-way.
21. break-out of natural gas consumption and stationary liquid fuel consumption by industrial, commercial, and residential sectors within city. Identify top 100 industrial and top 100 commercial consumers of natural gas within city limits. Identify existing onsite power generation capacity and steam generation capacity at each of these sites. This question has been re-inserted because we discovered that SFPUC has a new natural gas-related project that is a major ongoing City Program that is relevant to the scope of work. The SFPUC has a new program to identify and retrofit natural gas boilers in the City. This program offers the opportunity to identify locations where highly efficient electric

cogeneration facilities could be located. Cogeneration is a local resource for a CCA that can supply base-load power to balance out the variable renewable energy with reliable and affordable power, and is a way to lower the carbon footprint and fuel consumption of the City's energy system, so it is important that we have the information on natural gas customers that we have requested.