

**BEFORE THE UNITED STATES  
FEDERAL ENERGY REGULATORY COMMISSION**

**APPLICATION FOR PRELIMINARY PERMIT**

San Francisco Oceanside Wave Energy Project

**Applicant:**

City and County of San Francisco

February 2009

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**VERIFICATION STATEMENT**

This application for a preliminary permit is executed in the:


State of: California  
County of: San Francisco  
By: Barbara Hale  
Title: Assistant General Manager for Power  
Address: San Francisco Public Utilities Commission  
1155 Market Street, 4<sup>th</sup> Floor  
San Francisco, CA 94103

Being duly sworn deposes and says that the contents of this application for a preliminary permit are true to the best of her knowledge or belief. The undersigned has signed this application for a preliminary permit on this 24 day of February 2009.

Applicant: City & County of San Francisco, California

By: 

Subscribed and sworn to before me, a Notary Public in the State of California, on this 24 day of February 2009, proved to me on the basis of satisfactory evidence to be the person(s) who appeared before me.

Notary: 



**PRELIMINARY PERMIT APPLICATION  
FOR  
SAN FRANCISCO OCEANSIDE WAVE ENERGY PROJECT**

**INITIAL STATEMENT**

**1. Statement of Application**

The City and County of San Francisco (San Francisco or Applicant) applies to the Federal Energy Regulatory Commission (Commission) for a preliminary permit for the proposed San Francisco Oceanside Wave Project, as described in the attached exhibits (Application). The Application is made in order that the Applicant may secure and maintain priority of application for a license for the project under Part I of the Federal Power Act while obtaining the data and performing the acts required to determine the feasibility of the project and to support an application for a license. The Applicant requests that the Commission consider this Application as a competing application with that of Grays Harbor Project P-13308-000. The Applicant submits that this Application is a competing application based on the details herein and attested to in the affidavit attached as Appendix B.

San Francisco is acting through the San Francisco Public Utilities Commission (SFPUC), the San Francisco Department of the Environment (SFDOE), and the Office of the City Attorney.

The project is described in detail in the attached exhibits. The project aims to demonstrate the feasibility of generating electric power from waves approximately 8 miles off the west coast of San Francisco. The Applicant has performed initial work on the project including technology assessment, resource evaluation and public outreach, as detailed herein. During the preliminary permit period, the Applicant will continue the work already started and will obtain additional data, perform site-specific studies, and continue outreach to stakeholders in order to determine the feasibility of a large scale wave energy project, with a targeted capacity range of 10 to 30 MW (and the potential for up to a 100 MW peak of installed capacity), and to support an application for a license for such a project.

## 2. Project Location

The location of the proposed project is:

State:	California
Counties:	San Francisco and San Mateo
Nearby town(s):	San Francisco, Pacifica and Daly City
Stream or other body of water:	Pacific Ocean

The project will be located in the Pacific Ocean approximately 8 miles west of San Francisco within an exclusion zone in the Monterey Bay National Marine Sanctuary (see Figure 1). The exclusion zone provides an approximately 10.5 mile by 8 mile buffer zone around the 4.5 mile long Southwest Ocean Outfall from the Applicant's Oceanside Wastewater Treatment Plant. The category of wave energy conversion (WEC) devices under consideration will require operations in water depths of up to 110 feet, the depth of water at the outer edge of the exclusion zone. The application covers a study area that extends approximately 5.5 nautical miles (10.2 km) in the alongshore direction (north-south) and 3.5 nautical miles (6.5 km) in the offshore direction (east-west) resulting in a study area of 25 square miles (66 km<sup>2</sup>). The study area, shown in Figure 1, has the following coordinates:

Point	Latitude	Longitude
1	37° 36.85'N	122° 32.7'W
2	37° 36.85'N	122° 37.2'W
3	37° 42.35'N	122° 38.4'W
4	37° 42.35'N	122° 33.9'W

A submarine transmission cable will carry power from the project area to shore (see Figure 1 and Exhibit 3 - Project Map for proposed locations) for connection to the grid in San Francisco. To minimize the area of the disturbed sea bottom, the cable alignment will follow the alignment of the existing Southwest Ocean Outfall pipeline from the existing Oceanside Wastewater Treatment Plant.

The project location and cable alignment were developed as part of the Applicant's ongoing wave energy feasibility studies evaluating WEC technologies and associated potential environmental impacts, collecting measurements of the wave resource offshore, and initiating outreach and permitting. The feasibility studies quickly identified that development would be prohibited in the two Marine Sanctuaries located west of San Francisco as they provide habitat for protected species. However, the exclusion zone in those Sanctuaries surrounding the Southwest Ocean Outfall pipeline

provides a location that offers both close proximity to San Francisco and a logical transmission alignment to the shore.

Both long-term wave buoy data and recent site-specific wave data studies by the Applicant and others indicate that the wave resource in the San Francisco offshore area is suitable for wave energy extraction. In May 2007, the California Energy Commission released the California Ocean Wave Energy Assessment which showed a wave power density of 30.3 kW/m along a 104 km section of coast centered on San Francisco. Wave densities along the central and northern California coast were indicated to range from 25 to 35 kW/m (kilowatt per meter). As part of its site-specific tidal and wave power feasibility studies initiated in 2006, the Applicant has evaluated long-term wave data records from two buoys west of San Francisco. The National Buoy Data Center (NBDC) buoy at station 46026, located approximately 20 miles west of the Golden Gate, contains hourly wave height and period data from 1982 to 2006. The Coastal Data Information Program (CDIP) buoy number 0029, located approximately 21 miles offshore of Point Reyes, provides archived and recent swell height, period, and direction data from 1986 to January 2009. The historical data show average annual significant wave height is in the range of 2 to 3 m (6.5 to 10 feet) and the average wave energy density is approximately 25 kW/m. The monthly average wave heights are higher during winter months.

To confirm the wave energy profile at the project site, the Applicant has deployed an Acoustic Doppler Current Profiler (ADCP) wave meter at the outer edge of the study area, approximately 8 miles offshore and in a water depth of 110 feet. Data collected during an initial deployment in September-October 2008 recorded significant wave heights ranging from 1.5 to 4 m, with corresponding hourly wave energy densities ranging from 13 kW/m to over 140 kW/m. The ADCP has been redeployed to collect site-specific wave data from mid-November 2008 through mid-February 2009.

**3. Name, Business Address, and Telephone Number of Applicant**

The exact name, business address, and telephone number of the Applicant is:

City and County of San Francisco  
City Hall  
1 Dr. Carlton B. Goodlett Place  
San Francisco, CA 94012-4682

The exact names and business addresses of persons authorized to act as agent for the Applicant in this application are:

Ms. Barbara Hale  
Assistant General Manager, Power Enterprise  
San Francisco Public Utilities Commission  
City and County of San Francisco  
1155 Market Street, 4th Floor  
San Francisco, CA 94013  
Tel: 415-554-2483  
(bhale@sfgov.org)

Mr. David Assmann  
Acting Director  
Department of the Environment  
City and County of San Francisco  
11 Grove Street  
San Francisco, CA 940123  
Tel: 415-355-3701  
(david.assmann@sfgov.org)

Mr. Stephen Morrison  
Deputy City Attorney  
Office of the City Attorney  
City Hall, Room 234  
San Francisco, CA 94012-4682  
Tel: 415-554-4637  
(stephen.morrison@sfgov.org)

**4. Preference under Section 7(a) of the Federal Power Act**

The Applicant is a municipality and is claiming preference under section 7(a) of the Federal Power Act. The City and County of San Francisco is municipal entity established as a Charter City under the laws of the State of California, specifically Article XI Section 3.(a) of the California Constitution. The San Francisco Charter, at Article VIII B, establishes a Public Utilities Commission (the SFPUC) with exclusive management jurisdiction and control over energy supplies and utilities of

the City. The SFPUC has operated water and power utilities for San Francisco for over one hundred years. The San Francisco Environment Code, Chapter 9: Sec. 907, promotes generating electricity locally through renewable generation.

Sections of the California Constitution are attached as Appendix A.

The City Charter can be accessed via the following link:  
<http://www.municode.com/Resources/gateway.asp?pid=14130&sid=5>

The Environment Code can be accessed via the following link:  
<http://www.municode.com/Resources/gateway.asp?pid=14134&sid=5>

**5. Proposed term of the requested permit**

The proposed term of the requested permit is 36 months.

**6. Existing Dams or Other Project Facilities**

No existing dam or other project facility is part of the proposed project.



**EXHIBIT 1**  
**DESCRIPTION OF PROPOSED PROJECT**

**1. Project Structures**

The project is located approximately 8 miles west of the California shoreline in the Pacific Ocean. The project will be located in California state waters and U.S. territorial waters adjacent to the County of San Francisco and the County of San Mateo. The project will use a yet-to-be determined number of WEC devices to transform the energy of ocean waves into a clean, renewable, source of electricity. The use of technology which delivers high pressure water to the shoreline to drive turbines, such as CETO, would require a powerhouse near the landfall location. With the exception of the possible use of such high pressure water type technology, there will be no proposed structures such as dams, spillways, penstocks, powerhouses or tailraces associated with the proposed project.

**2. Reservoirs**

There are no reservoirs associated with the proposed project.

**3. Transmission Lines**

If a non CETO-type technology is selected, a standard three-phase AC armored submarine cable with voltage between 6 and 12 kilovolts would be used to transmit power from the project site to the landside interconnect with the grid in San Francisco. To minimize sea bottom impacts, any such submarine cable, or high-pressure water conduit, will follow the alignment of the existing Southwest Ocean Outfall shown on Figure 1. Any transmission line or conduit would be buried beneath the seafloor sediment using a hydroplow or similar device. A hydroplow is suitable for cable/conduit burial in the sandy sediments found from the project area to the shoreline. Deeper burial may be required at the shoreline crossing. The cable or conduit will make landfall near the Oceanside Wastewater Treatment plant which is owned and operated by the Applicant. Transmission from this point would be via a transmission line interconnected with the electric substation at the Martin or Daly substation in southern San Francisco or northern San Mateo County, at a distance of approximately 5 and 0.5 miles, respectively, from the Oceanside plant. The exact details of any submarine

transmission cable, including capacity and connection details, will be determined during the feasibility study for the proposed project. The proposed project will comply with the applicable interconnection and scheduling requirements of Pacific Gas and Electric (PG&E), the California Independent System Operator (CAISO) and the Commission.

#### **4. Estimated Annual Energy Production**

The Applicant will initially deploy and test WEC devices from two or more different manufacturers, and up to an installed capacity of 3 MW. The Applicant plans to incrementally expand the project to a rated capacity of between 10 and 30 MW. While there exists the potential for up to 100 MW peak of installed capacity, in the foreseeable future the Applicant estimates the annual energy output of the 30 MW power system to be 80,000 MWh/year. These estimates will be subject to revision depending on the selected technologies. Any devices selected for inclusion in the project will be in new condition. Hydraulic head is not relevant to the estimate of capacity and energy output of this project.

#### **5. Lands of U.S.**

All lands within the proposed project boundary are identified in Figure 2, Exhibit 3. The aquatic portion of the project would be located on state submerged lands as well as federal waters, but not on “lands of the United States” as defined in the Federal Power Act.

#### **6. The Proposed Project Would Develop, Conserve, and Utilize in the Public Interest the Water Resources of the Region**

The project will develop a new source of renewable electricity, which: (i) generates clean and renewable energy with, given proper care in siting, installation, and operation, minimal effects on the environment; (ii) provides much needed reliable and cost-effective power generation along the California coast; (iii) diversifies power generation sources; and (iv) creates new local jobs and promotes economic development from the construction, operation, and maintenance of the project.

The project will create a reliable and sustainable source of energy in a manner which will minimize environmental impacts because the source of energy originates from ocean movements and does not rely on consumption of non-renewable fossil fuels. The project also increases domestic energy security.

The Energy Policy Act of 2005 encouraged the development of renewable energy resources, including ocean energy. California established its Renewable Portfolio Standard Program in 2002 with the goal of increasing the percentage of renewable energy in the state's electricity mix to 20 percent by 2017. The California Energy Commission in its 2004 Energy Report Update recommended a target of 33 percent renewable energy by 2020. In 2006 under Senate Bill 107, the California Renewables Portfolio Standard codified the 20 percent goal by 2020. On November 17, 2008, California Governor Arnold Schwarzenegger signed Executive Order S-14-08 which requires California utilities to reach a 33 percent renewables standard by 2020.

Wave energy projects are potentially one of the more environmentally benign forms of renewable energy, provided proper care is taken in siting, installation and operation of facilities. The WEC devices that the Applicant is considering for this project do not involve the construction of dams or reservoirs and will not affect water quality. Moreover, because the devices will be fully submerged, they would not be visible from the shore, thus negating aesthetic concerns. The moorings for the devices being considered are single-point structural foundations (no mooring lines) which will minimize impacts to marine life.

San Francisco has policy objectives to develop a considerable proportion of its energy needs from renewable sources. This project could significantly contribute towards those renewable energy objectives. The Applicant has, therefore, been evaluating the feasibility of renewable tidal and wave power opportunities for San Francisco for several years, including the evaluation of specific WEC technologies and their potential environmental impacts, evaluation and measurement of offshore wave resources, pursuing permitting issues and conducting outreach. In order to screen existing and proposed WEC technologies being pursued by independent device manufacturers, the Applicant has

developed a set of criteria to evaluate the suitability of various devices for deployment off San Francisco's coast, considering a range of physical and environmental factors.

Key WEC device screening criteria include:

- Potential impacts to protected marine mammals from mooring systems
- Visual impacts given proximity to San Francisco
- Stage of development (i.e. whether the devices are ready for a 2012 pilot deployment)
- Capability of operating in 25 to 30 m depth of water
- Rated power given 2 to 10 m wave height, 6 to 20 second wave period regime
- Number of devices needed for 10 MW and 30 MW systems
- Survivability of the equipment
- Operation and maintenance requirements

Considerable attention has also been given to siting the project area. Siting factors include:

- Gulf of Farallones and Monterey Bay Marine National Marine Sanctuary habitat and protected species
- Opportunities to minimize impacts by co-locating along the Southwest Ocean Outfall alignment
- Commercial vessel traffic lanes entering and exiting San Francisco Bay
- Dredging operation supporting Ocean Beach restoration and littoral sediment transport mechanisms
- Commercial fishing activities, particularly crab pots
- Recreational flat fish and salmon sport fishing
- Surfing and other recreational activities

Studies and outreach to date have identified minimizing impacts to migrating gray whales and other marine life and, given the importance of tourism in the Golden Gate area, minimizing adverse aesthetic impacts to the San Francisco marine environment, as particularly important environmental considerations. In light of these findings, the Applicant is focusing on fully submerged devices to eliminate aesthetic impacts, and devices that have single point fixed connections to the sea bottom to minimize the potential for entangling whales.

Development of a wide variety of different WEC devices is being pursued by device manufacturers and there is currently no consensus on the optimum technology. Of the five main categories of wave devices (pitching, heaving, surging, overtopping and oscillating water column) there are a number of promising full submerged surge-type devices that have reached the stage of

prototype testing and that could meet the Applicant's evaluation criteria. Only devices which have progressed to sea trials of prototype devices are being considered. Potential technologies include the bioWave, WaveRoller and CETO devices. The bioWave and CETO technologies are surging devices that operate in the 75 to 110 feet of water at the project site and both are undergoing at-sea trials in Australia. A 250 kW bioWave device is undergoing at-sea tests in Tasmania and the CETO device is being tested offshore of Fremantle. A second generation of the WaveRoller technology was installed in Portugal in 2008. Collaborative agreements have been established between technology developers and the Applicant.

Studies that will be performed during the 36-month preliminary permit period are outlined in Exhibit 2. Those studies will include additional resource studies, evaluation of potential marine impacts, WEC selection, and design for commercial build-out including the onshore grid interconnection. An initial step of the project will be the pilot deployment of a limited number of the WEC devices (2 or 3) to confirm the technological, environmental, and economic aspects of the project. Wave energy calculations indicate that, at full build-out, the project site could accommodate up to 100 WECs, each rated at up to 1 MW for a 100 MW rated project. However, the targeted baseline commercial phase of the Applicant's project is a system with a capacity range of 10 to 30 MW. Details of a commercial system will be developed during the preliminary permit studies.

Multiple individual WEC devices would be arranged in an array in the project area. It is envisioned that a 10 MW commercial system could be configured as two rows of five 1 MW WECs spaced at 100 meter intervals for a project area of 0.5 km by 200 meters. A 30 MW commercial system could include two rows of 1 MW WECs spaced at 100 meter intervals for a system area of approximately 1.5 km by 200 meter (1 mile by 650 feet). These system areas would easily fit within the Study Area shown in Figure 1.

The proposed project will consist of the offshore WEC devices, and submarine transmission cable comprised of power cables, fiber optic communication cables, and potential onshore interconnection to the electric grid. For a CETO-type system, the proposed project would consist of the offshore WEC devices, a high pressure pipeline and seawater return system (or closed loop water

system), an onshore generator and potential onshore interconnection to the grid in San Francisco. The project would not necessarily be connected to the grid.

Given the proximity to the inbound Southern Traffic lanes approaching the entrance to San Francisco Bay, consideration would be given to appropriate aids to navigation positioned around the deployment area, in accordance with U.S Coast Guard requirements.

The submarine transmission cable would run from an offshore hub junction box to shore along the alignment of the Southwest Ocean Outfall. The length of the submarine transmission cable from the offshore hub to the shoreline would be approximately 6 miles. The shoreline terminus of the transmission cable would be a grid interconnection at the Oceanside Wastewater Treatment plant. The plant power system has the capacity to accept an additional 2 to 3 MW. For any subsequent commercial development, up to 10 MW, the transmission line could interconnect with the Daly City substation in San Mateo County, a distance of approximately 0.5 miles. Connection for a 30 MW project might require connection to the larger Martin substation in southern San Francisco, a distance of approximately 5 miles from the Oceanside facility. Upgrades at the Daly and Martin substations are likely to include a control station, transformer, circuit breaker, and other interconnect equipment dedicated to the proposed project. The exact details of the submarine transmission cable and interconnection, such as capacity, length and end connections, will be determined during the feasibility study stage of the project.

Approximately one year ago, the Applicant started a feasibility study for the proposed wave energy project including a resource evaluation, an initial identification of potential environmental issues, and stakeholder outreach. San Francisco will continue to assess the details of the wave resource through ongoing wave data collection at the project location. An initial screening level set of environmental factors and issues, including the requirements of the California Environmental Protection Act (CEQA) and the National Environmental protection Act (NEPA), has been identified and the list will be refined through further research and during stakeholder meetings. While the subsea conditions near the project area have been studied as a part of beach nourishment programs at

Ocean Beach, site-specific bathymetric and physical sediment data will be collected as part of the feasibility studies. The sea bottom in the project area is largely flat and is comprised of sand and silts.

The proposed study site is situated within the exclusion zone of the Monterey Bay Marine Sanctuary to minimize impacts to protected marine habitat and is outside the shipping channels leading to San Francisco Bay ports. The exclusion zone and navigation channels are shown on Figure 1. The area where WEC devices would be deployed would need to be designated as a project-related hazards zone where fishing and recreational boating are prohibited or restricted. The designated project area will be established during the feasibility studies in consultation with stakeholders including resource agencies and interested or potentially affected parties.

After the Applicant files a development license application, and if the Commission ultimately grants the project a development license, the deployment of WEC devices is expected to proceed in a phased approach starting with initial deployment and testing of one to three devices through the first stage of the commercial installation, approximately 10 times 1 MW devices, building to the targeted commercial capacity of 30 MW.

## **EXHIBIT 2 DESCRIPTION OF PROPOSED STUDIES**

### **1. Description of Studies**

Studies to be carried out:

Upon obtaining a preliminary permit, the Applicant will undertake a series of activities and studies in the following topic areas:

- Agency and Stakeholder Outreach
- Environmental and Physical Site Studies
- Technology Selection
- Interconnect Design
- Financial Analysis
- Pilot Project Licensing and other permitting

#### **Agency and Stakeholder Outreach**

The Applicant will consult with appropriate regulatory and resource agencies and other stakeholders to identify important, protected and restricted resources in the project area. San Francisco has developed a list of stakeholders as part of the ongoing wave energy feasibility studies and has made initial contacts with a number of key stakeholders including state and federal resource agencies, marine sanctuaries, environmental groups, coastal/wave protection groups, commercial and recreational fishing groups, community groups and neighboring municipalities. The filing deadline established by virtue of this application being in competition with application P-13308 curtailed the Applicant's intended stakeholder outreach program. Nonetheless, a list of the agencies and groups with which the Applicant has conducted preliminary consultations, is attached as Appendix C. The Applicant anticipates working with these and other agencies to undertake a detailed inventory of the protected and restricted resources in the project area.

#### **Environmental and Physical Site Studies**

Through consultation with stakeholders and review of existing information, the Applicant will continue investigations of the wave energy, geophysical/coastal, and biological resources of the project area. The Applicant has initiated study of the wave energy resource through deployment of an



Acoustic Doppler Current Profiler wave meter which records both wave and current data. Using stakeholder outreach and technical studies, the Applicant will develop descriptions of the existing conditions and issues for use in the environmental assessment including aesthetics, marine habitat and species, commercial crab fishing, and recreational activities. The stakeholder outreach process has already influenced research criteria and the Applicant expects it will continue to do so.

The site's physical conditions, including types of bottom and sub-bottom sediments, large-scale movement of sediment in the area and the potential impact of removing wave energy from the ocean system, will also be investigated. These data are needed for WEC sea-bottom foundation design and the submarine cable installation. In addition, the data will be used to evaluate the effects on waves and the impacts on sediment transport near Ocean Beach. The San Francisco Department of Public Works, in conjunction with the U.S. Army Corps of Engineers, has implemented a sediment dredging and replenishment program designed to reduce erosion of Ocean Beach.

To the extent that any aspects of the project implicate the provisions of CEQA or NEPA and require specific actions or studies, the Applicant will address those requirements as part of the project.

### **Technology Selection**

Information from device manufacturers and from other ongoing wave energy projects worldwide will be used to inform the design and development of the Oceanside Wave Energy Project and in the evaluation and selection of appropriate WEC devices. Selected WEC manufacturers will be provided with site-specific data including bottom and sub-bottom conditions, and wave and current distributions in order to develop projections of annual energy generation and project-specific capital and maintenance costs. The Applicant has already established a dialogue with a number of such technology parties.

### **Interconnect Design**

Working with appropriate PG&E and CAISO staff, the Applicant will investigate transmission capacity, interconnection and other issues associated with transporting power to the grid.

## **Financial Analysis**

The Applicant will conduct an economic and financial feasibility analysis for the proposed project. The analysis will include initial capital costs for WEC devices, submarine transmission cable or other conduit, grid interconnection, permitting and construction, and projected operations and maintenance costs. These costs will be modeled against predicted annual energy generation to develop estimates of the cost of electricity, annual rates of return, and cash flow.

## **Pilot Licensing and Permitting**

As a part of outreach to regulatory and resource agencies, the Applicant has developed a detailed list of discretionary permits and notices that are required in addition to Commission licenses. Environmental documentation required under the NEPA and CEQA are included in the list. Information will include permit category, data requirements, and timelines. The list will be further refined during the feasibility stage.

## **Schedule**

### **Year 1:**

- Continue stakeholder outreach including formalizing stakeholder input/participation
- Continue wave resource studies
- Begin site-specific environmental (including marine species) and geophysical studies
- Continue WEC device evaluation
- Develop interconnection strategy
- Develop energy yield and financial analysis

### **Years 2 and 3:**

- Finalize WEC technology selection and designs
- Perform technology testing
- Further environmental studies as appropriate and development of monitoring protocols
- Obtain discretionary permits
- Prepare and file Pilot Project License application

The Applicant acknowledges the Commission's Notice of Inquiry and Interim Statement of Policy regarding Preliminary Permits for Wave, Current, and Instream New Technology Hydropower Project dated February 15, 2007. The Applicant supports the interim policy and intends to comply fully with all requirements imposed by the Commission under the strict scrutiny approach. The Applicant is committed to progress under any preliminary permit and to report such progress to the Commission. The Applicant will also make all reports and study results available to the public.

**2. Need for New Roads**

The project will ultimately interconnect within the city of San Francisco. Neither the project nor the studies will require the construction of any new roads.

**3. Dam Construction**

The project will operate in the open ocean and will not require the construction of any type of dam.

**EXHIBIT 3**  
**STATEMENT OF COSTS AND FINANCING**

**1. Costs and Financing**

The Applicant estimates that during the preliminary period, studies, investigations, tests, surveys, maps, plans, and other related specifications for the proposed project will cost between \$1,000,000 and \$3,000,000 and will be funded by the Applicant and project partners. More detailed costs and financing will be developed as outlined in the project schedule in Exhibit 2.

Source of Funding: San Francisco City & County departments, other agencies, external sources and partnerships.

Extent of Financing: Adequate.

**2. Proposed Market and Purchasers**

The Applicant expects to be the market for the power generated by the project.

## **EXHIBIT 4 PROJECT MAPS**

### **1. Project Boundary Map**

A map of the proposed project boundary and submarine transmission cable, or other conduit, route is shown in Figure 2. The relative location and physical interrelationships of principal project features will be developed during project feasibility studies.

### **2. National Wild and Scenic Rivers**

The proposed project area does not include any areas designated as included or being considered for inclusion in the National Wild and Scenic Rivers System.

### **3. Wilderness Act**

The proposed project area does not include any areas designated as or recommended for designation as a wilderness area or wilderness study area under the Wilderness Act.

**SECTION 4.32(a)  
INFORMATION**

**1. Proprietary rights in project property**

The Applicant is the only entity that has, intends to obtain and/or will maintain any proprietary rights necessary to construct, operate, or maintain the proposed property as described in this application.

**2. Municipal Information**

- (i) No federal facilities would be used by the proposed project.

The area proposed for evaluation and testing is located within, or in the ocean water immediately adjacent to, the City and County of San Francisco and the County of San Mateo.

- (ii) (A) Cities or Towns Where Project Will be Located.

City and County of San Francisco

- (ii) (B) Cities or towns within 15 miles of the project dam.

No dam is proposed in associated with this wave energy project. Those cities and towns with a population of 5,000 or more that lie within 15 miles of the proposed evaluation and study area include:

City and County of San Francisco  
City Hall, 1 Dr. Carlton B. Goodlett Pl, San Francisco, CA 94012

County of San Mateo  
555 County Center, Redwood City, CA 94063-1665

City of Daly City  
City Hall, 333 90th Street, Daly City, CA 94015

City of Pacifica  
City Hall, 170 Santa Maria Avenue, Pacifica, CA 94044

City of Half Moon Bay  
City Hall, 501 Main St, Half Moon Bay, CA 94019

City of South San Francisco  
City Hall 400 Grand Avenue, South San Francisco, CA 94080

City of Sausalito  
420 Litho St. Sausalito, CA 94965

City of San Bruno  
567 El Camino Real San Bruno, CA 94066

City of Burlingame  
501 Primrose Road, Burlingame, California 94010

City of Mill Valley  
26 Corte Madera Ave. Mill Valley, CA 94941

City of Millbrae  
621 Magnolia Avenue, Millbrae, CA 94030

Town of Hillsborough  
1600 Floribunda Avenue, Hillsborough, CA 94010

(iii) Irrigation districts, drainage districts, and similar special purpose political subdivisions.

No federal facilities would be used by or otherwise associated with the proposed project, and no special purpose political subdivision exist within the proposed project boundary for the evaluation and testing of wave energy potential.

(iv) Other political subdivisions

No other known political subdivisions exist within the proposed project evaluation and study area; however, the Applicant will consult with all agencies and associations with regulatory authority over the waters and resources of the proposed project area during the evaluation of project feasibility.

(v) Indian tribes

No Indian tribes will be affected by the proposed project.

**CERTIFICATE OF SERVICE**

I, KIANA V. DAVIS, declare that:

I am a citizen of the United States, over the age of 18 years and not a party to the within entitled action. I am employed at the City Attorney's Office of San Francisco, City Hall, Room 234, 1 Dr. Carlton B. Goodlett Place, San Francisco, CA 94102 (415) 554-4698.

On February 26, 2009, I served the following document(s):

**APPLICATION FOR PRELIMINARY PERMIT**

by electronic mail on the Service List for FERC Proceeding No. P-13308-000 except for the party listed below who was served by mail.

Ron Adhya, Director Federal Energy Regulatory Commission San Francisco Regional Office 901 Market Street, Suite 350 San Francisco, CA 94103	Barbara Hale Asst. General Man. for Power 1155 Market Street, 4th Floor San Francisco, CA 94103
Roger Thomas GOLDEN GATE FISHERMAN'S ASSOCIATION 50 Briarwood Drive San Rafael, CA 94901-1407	Michael Stewart Surfrider Foundation P.O. Box 320146 San Francisco, CA 94132-0146

I declare under penalty of perjury that the foregoing is true and correct and that this declaration was executed on February 26, 2009 at San Francisco, California.

*Kiana V. Davis*

\_\_\_\_\_  
KIANA V. DAVIS



**CERTIFICATE OF SERVICE**

I, KIANA V. DAVIS, declare that:

I am a citizen of the United States, over the age of 18 years and not a party to the within entitled action. I am employed at the City Attorney's Office of San Francisco, City Hall, Room 234, 1 Dr. Carlton B. Goodlett Place, San Francisco, CA 94102 (415) 554-4698.

On February 26, 2009, I served the following document(s):

**APPLICATION FOR PRELIMINARY PERMIT**

by registered mail on the party listed below only in FERC Proceeding No. P-13308-000.

W. Burton Hammer, President Grays Harbor Ocean Energy Company LLC 5534 30th Avenue NE Seattle, WASHINGTON 98105	
--	--

I declare under penalty of perjury that the foregoing is true and correct and that this declaration was executed on February 26, 2009 at San Francisco, California.

  
\_\_\_\_\_  
KIANA V. DAVIS