

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

**APPLICATION FOR A PRELIMINARY PERMIT**

**HGE Energy Storage 1 LLC**

**Vandenberg East Project**

**August 7, 2013**

## INITIAL STATEMENT

### PRELIMINARY PERMIT APPLICATION FOR HGE Energy Storage 1 LLC Vandenberg East Project

#### A. INITIAL STATEMENT

##### Statement of Purpose

HGE Energy Storage 1 LLC (or Applicant) hereby applies to the Federal Energy Regulatory Commission for a preliminary permit for the proposed project in Santa Barbara County, CA near Vandenberg Air Force Base as described in the attached exhibits. This application is made in order so that the Applicant may secure and maintain priority of application for a license for the project under Part 1 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 the project.

HGE Energy Storage 1 LLC is a wholly owned subsidiary of Hydro Green Energy, LLC of Westmont, IL. The Applicant is aware of other permits in the area. This permit application will not interfere with those proposed projects, if developed.

##### 2. Project Location

The approximate location of the proposed project near Vandenberg AFB, CA is:

Point	Latitude	Longitude
<b>1</b>	34°53'33.31"N	120°34'44.49"W
<b>2</b>	34°51'37.00"N	120°33'51.33"W
<b>3</b>	34°50'9.66"N	120°36'58.35"W
<b>4</b>	34°51'55.23"N	120°37'18.44"W

State or territory: California

Counties: Santa Barbara County, CA

Township or nearby town: Vandenberg AFB, CA

Stream or other body of water: Pacific Ocean

##### 3. Applicant's Contact Information

The exact name, business address, telephone number, fax and email for the applicant are:

HGE Energy Storage 1 LLC  
4900 Woodway, Suite 745  
Houston, TX 77056  
877-556-6566

The exact name, business address, telephone number, fax and email for each person authorized to act as an agent for the applicant in this application are:

Wayne Krouse, Managing Partner  
HGE Energy Storage 1 LLC  
4900 Woodway, Suite 745  
Houston, TX 77056  
877-556-6566 x-709  
[wayne@hgenergy.com](mailto:wayne@hgenergy.com)

Mark R. Stover  
Vice President, Corporate Affairs  
Hydro Green Energy, LLC  
900 Oakmont Lane, Suite 301  
Westmont, IL 60559  
877-556-6566 x711 (work)  
[mark@hgenergy.com](mailto:mark@hgenergy.com)

#### **4. Statement of Authority**

HGE Energy Storage 1 LLC is a domestic corporation and is not claiming municipal preference under section 7(a) of the Federal Power Act.

#### **5. Term of Permit**

The proposed term of the requested preliminary permit is 36 months.

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

There are no existing dams or facilities associated with the proposed project.

**B. ADDITIONAL INFORMATION REQUIRED BY 18 C.F.R. § 4.32(a)**

1. The identity of every person, citizen, association of citizens, domestic corporation, municipality, or state that has or intends to obtain and will maintain any proprietary right necessary to construct, operate, or maintain the Project, other than the Applicant:

Hydro Green Energy, LLC – owner of HGE Energy Storage 1 LLC  
HGE Development Holdings – owner of Hydro Green Energy, LLC

2. Every county in which any part of the project, and any Federal facilities that would be used by the project, would be located is listed as follows:

Santa Barbara County, CA  
735 Anacapa St, 93101  
PO Box 1990  
Santa Barbara, CA 93102

3. Every city, town, or similar local political subdivision

a) In which any part of the project, and any Federal facilities that would be used by the project, would be located:

Vandenberg Air Force Base  
Vandenberg AFB, CA 93437

b) That has a population of 5,000 or more people and is located within 15 miles of the project:

Santa Maria, CA  
110 E. Cook Street,  
Santa Maria, CA, 93454-5190

Vandenberg Air Force Base  
Vandenberg AFB, CA 93437

4. Every irrigation district, drainage district, or similar special purpose political subdivision

a) In which any part of the project, and any Federal facilities that would be used by the project, would be located:

None of which we are aware

b) That owns, operates, maintains, or uses any project facilities or any Federal facilities that would be used by the project:

Vandenberg Air Force Base  
Vandenberg AFB, CA 93437

5. Every other political subdivision in the general area of the project that there is reason to believe would likely be interested in, or affected by, the application:

None of which we are aware

6. All Indian tribes that may be affected by the project:

None of which we are aware

**C. ATTACHED EXHIBITS**

- Exhibit 1: Description of Proposed Project
- Exhibit 2: Study Plan and Work Schedule
- Exhibit 3: Statement of Costs and Financing
- Exhibit 4: Project Maps

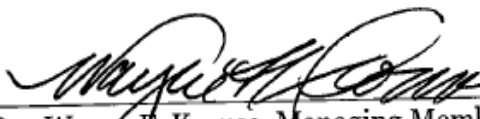
**SUBSCRIPTION & VERIFICATION**

This application for a preliminary permit is executed in the State of Texas, Harris County, by HGE Energy Storage 1 LLC, a wholly owned project development subsidiary of Hydro Green Energy, LLC of Westmont, IL.

Wayne F. Krouse, as Managing Member of HGE Energy Storage 1 LLC and Founder of Hydro Green Energy, LLC, being duly sworn, deposes and says that the contents of this application are true to the best of his knowledge or belief.

The undersigned applicant has signed the application this 25<sup>th</sup> day of July, 2013.

Applicant: HGE Energy Storage 1 LLC  
4900 Woodway  
Suite 745  
Houston, TX 77056



By: Wayne F. Krouse, Managing Member, HGE Energy Storage 1 LLC

Subscribed and sworn to before me, a Notary Public of the State of Alabama (state of residence of Wayne F. Krouse, Managing Member of HGE Energy Storage 1 LLC), this 25<sup>th</sup> day of July, 2013.

My Commission expires on 10-1-2016.



**EXHIBIT 1****DESCRIPTION OF PROPOSED PROJECT****1. Proposed Facility**

The pumped storage hydropower project will consist of a single new reservoir, created by the construction of embankments, joined with the Pacific Ocean by approximately 10,000 feet of conduit. Maximum hydraulic head will be approximately 1,490 feet. Equipment will consist of six 223 MW, reversible variable-speed pump-turbines in a new powerhouse, totaling 1,338 MW of generating capacity. Annual energy production is projected to be approximately 3,911,925 MWh.

The Project will interconnect to the power grid via a new single-circuit 230 kV line approximately 12 miles in length. The details of the proposed Project are found below.

Please note that the large initial project boundary reflects our need to study as many options as possible for the placement of the upper reservoir and conduit to the powerhouse. As the specific locations are identified within the current proposed boundary, the Applicant will revise its boundary and greatly reduce its overall size before any draft or final licensing activities. This boundary will also be revised during consultation with the appropriate personnel at Vandenberg AFB.

**Embankments**

	<b>Height (ft)</b>	<b>Length at Crest (ft)</b>	<b>Type</b>
<b>Upper Embankment</b>	<b>30</b>	<b>4,150</b>	<b>Earthen with Rubber Sheet and Asphalt Lining</b>
<b>Lower Embankment</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>

**Reservoirs**

	<b>MSL (ft)</b>	<b>Volume (AF)</b>	<b>Surface Area (ac)</b>
<b>Upper Reservoir</b>	<b>1,490</b>	<b>6,152</b>	<b>24.61</b>
<b>Lower Reservoir</b>	<b>0</b>	<b>N/A</b>	<b>N/A</b>

**Conduits**

	<b>Length (ft)</b>	<b>Diameter (ft)</b>	<b>Lining</b>
<b>Pressure Shaft</b>	<b>TBD</b>	<b>TBD</b>	<b>Concrete and Steel Lined</b>
<b>Penstocks (6)</b>	<b>10,000</b>	<b>10</b>	<b>Steel Lined</b>
<b>Tailrace</b>	<b>500</b>	<b>250 (width)</b>	<b>Concrete Lined</b>

## **Powerhouse**

The powerhouse and substation will be located near the Pacific Ocean, approximately 100 feet below ground level. Tentative dimensions are 250 feet long by 75 feet wide by 100 feet high.

## **Access Tunnels**

A vertical access tunnel approximately 400 feet in height and 30 feet in diameter will lead from ground level to the powerhouse.

## **Breakwater and Intake Structure**

A breakwater is planned for purposes of reducing water level fluctuation during pumping mode and to dissipate energy from discharge water during generation mode, helping to protect the marine environment.

This breakwater would be constructed of precast concrete tetrapods. The dimensions and configuration of this breakwater will be determined during the study phase. A vertical intake structure would lead to the tailrace 100 feet below sea level in order to provide the required anti-cavitation depth for pumping mode.

## **Water Source**

The Project will operate with seawater drawn directly from the Pacific Ocean. Equipment will be designed for corrosion-resistance, extremely stringent leakage protection, marine organism fouling protection, and other measures required for the use of seawater. The Applicant has secured a Letter of Interest from a major equipment supplier for the project. This supplier provided equipment and has maintained a sea-water pumped storage project in Japan since the early 1990's with no negative marine ecosystem consequences.

## **Transmission Lines**

The Project will interconnect with a planned AC-DC converter station, as indicated on map, via a new single-circuit, 230 kV line approximately 12 miles in length. The Project's transmission line will be routed along existing road and transmission right of ways to minimize environmental impact and will require up to a 75-foot right of way.

## **Operation**

The Project will be operated to provide support to variable, intermittent renewable resources being interconnected to the transmission grid in the State of California. The Project will use the dynamic capabilities of pumped storage to provide ancillary services in the efficient integration of wind and solar resources from both an operational and economic standpoint.

## **Federal Lands**

The Project will be located on federal property at the Vandenberg Air Force Base.

## **Public Interest**

The Project as proposed would have a substantial benefit to the public. All power produced would be emissions-free, domestic and clean. The project would result in direct economic benefits to the local community in terms of construction, installation and maintenance jobs. Finally, competitively priced power will be generated at the facility – power that will also be available during peak power demand periods.



## EXHIBIT 2

### STUDY PLAN AND WORK SCHEDULE

#### **(1) General**

##### **(i) Study Plan**

The Applicant plans to engage in the following studies in order to design the technical aspects of the project and to confirm its economic viability:

- Project land surveys
- Environmental impact studies
- Archaeological studies
- Groundwater studies
- Energy production studies
- Water quality studies
- Water rights studies
- Engineering studies, including soil studies, test pits and core holes.
- Study on the energy market for the project
- Transmission interconnection studies
- Determination of equipment configuration and sizing
- Cost estimates
- Additional studies may be required as the need arises.
- 

##### **(ii) New Roads**

No new roads will be needed for the purpose of conducting the studies described in this exhibit.

#### **(2) Work Plan for New Dam Construction**

##### **(i) Description of field studies, tests, and other land disturbing activities**

A subsurface investigation will be required to determine the rock structure and stability for the proposed dam sites. Samples shall be checked for rock structure as well as determine the suitability for project features for the dams and power tunnels. The Applicant proposes to use existing roads located within the project boundary to minimize or eliminate the potential for any land disturbing activities.

**(ii) Studies Schedule**

Work Item	Schedule	
	Month Beginning	Month Ending
<b>Engineering</b>		
Conceptual refinement and evaluation of alternatives	0	6
Initial scoping and consultation	0	8
Engineering studies	0	24
Archaeological studies	6	12
Environmental studies	0	24
Geological investigations	8	16
Selection of equipment	16	18
<b>Environmental</b>		
Agency consultation	0	6
Environmental studies	6	20
Prepare draft application	12	24
<b>Other</b>		
Land & ROW	0	24
Water rights studies	0	36
Transmission interconnection planning	6	24
Cost estimating, economic feasibility, and financial planning investigations	8	24
Power sales marketing	12	24
Additional stage consultation and documentation	20	36

This schedule may be adjusted and supplemented depending on need and contingencies that may develop as studies proceed. Barring a major impediment to development, a final license application would be filed with the Commission prior to the expiration of the original preliminary permit.

## **EXHIBIT 3**

### **COSTS AND FINANCING**

#### **(3) Statement of Costs and Financing**

##### i. Estimated cost of studies

The estimated cost of carrying out and preparing the studies, investigations, tests, surveys, maps, plans and specifications described in this application is estimated to be between \$1.0 and \$1.5 million.

##### ii. Expected sources of financing

The expected sources of financing to conduct the studies described in this application are private investors, hydroelectric development firms with whom the Applicant is exploring partnerships and other renewable energy development firms that may benefit from the Project.

## EXHIBIT 4

### PROJECT MAPS

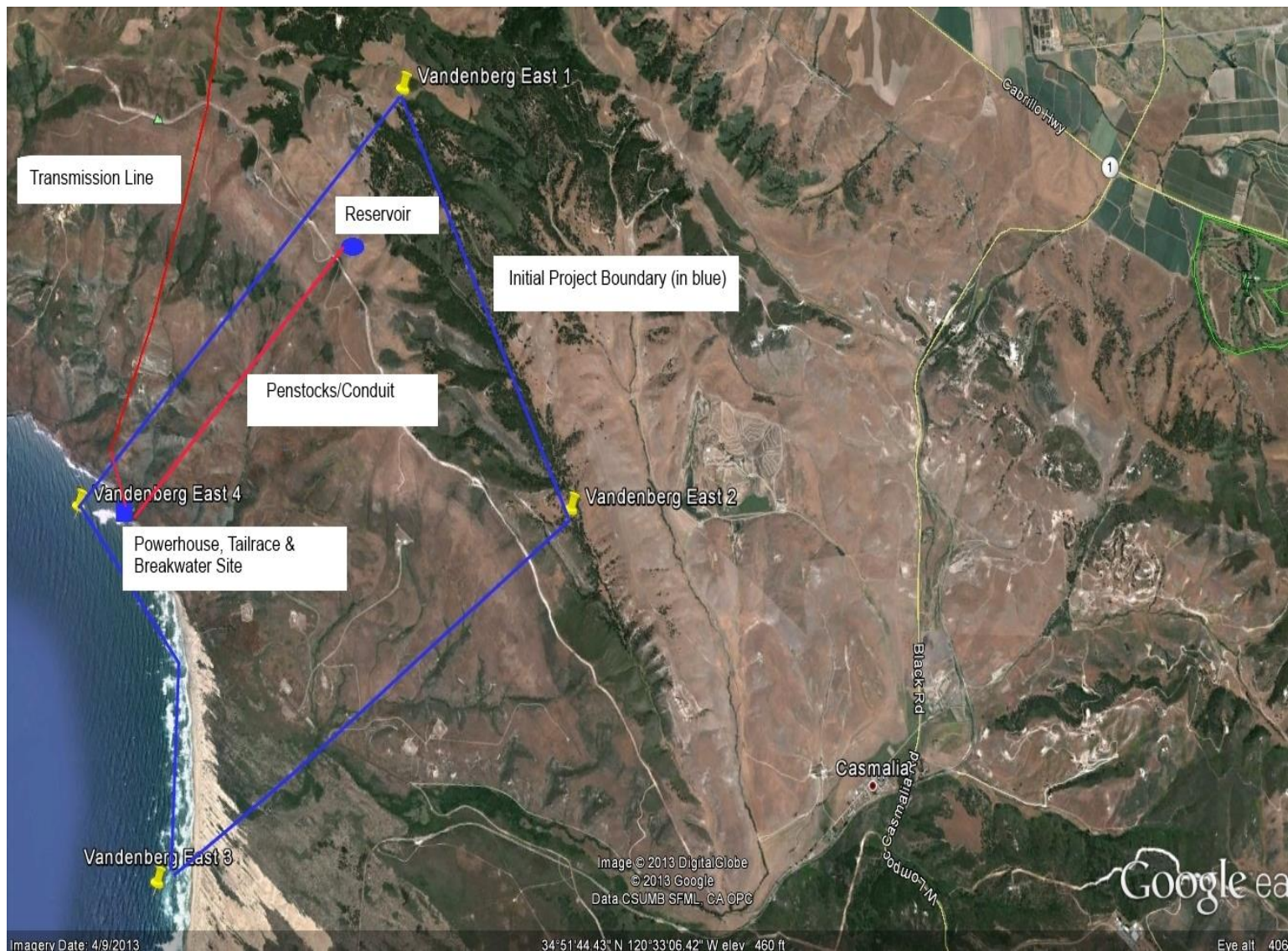
Illustration 1- Map of project area, including approximate locations of key features and general boundary for purposes of the preliminary permit

Illustration 2 – Transmission line map

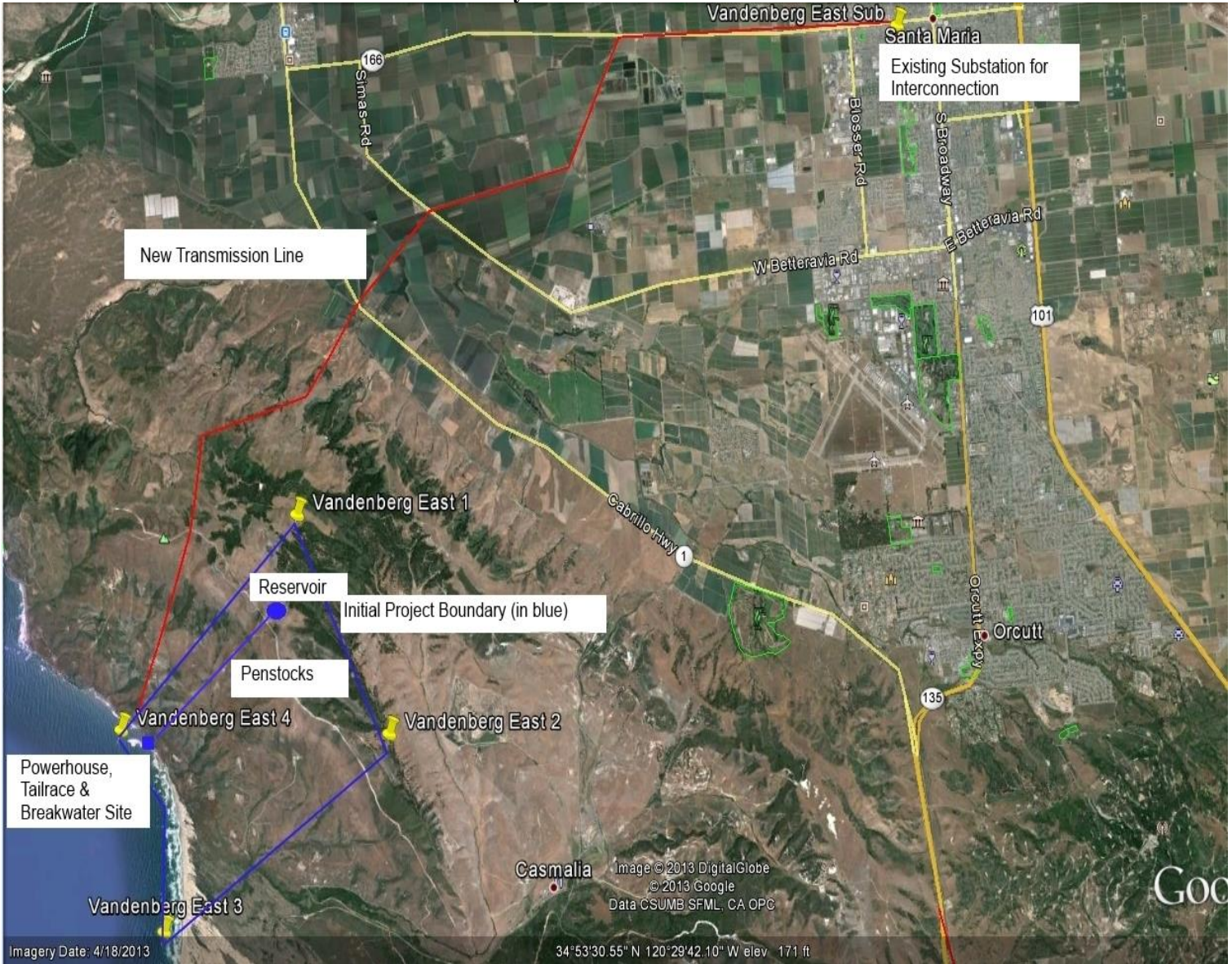
Illustration 3 – Generic project layout

- NOTE:**
1. No areas within the study boundary are designated as wilderness area or wilderness study area, or recommended for designation as wilderness areas.
  2. No areas within the study boundary are included in or have been designated for study for inclusion in the National Wild and Scenic Rivers System

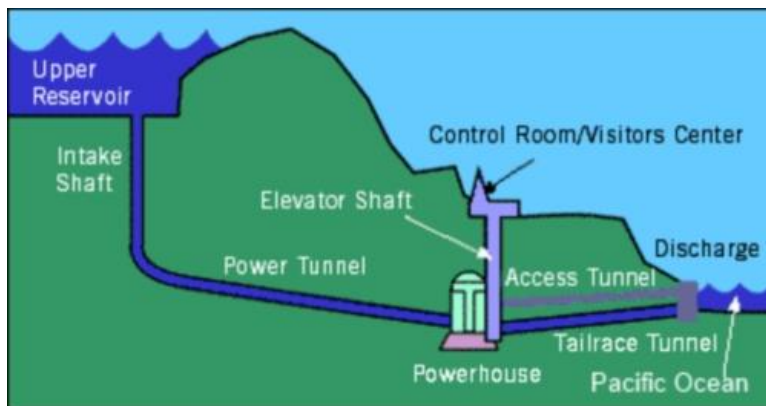
#### Illustration 1 – Initial Boundary & Project Features



**Illustration 2 – Transmission Line Pathway & Interconnection**



**Illustration 3 – Generic Project Layout**



Document Content(s)

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