Attachment A: Data Request

Project:	LS Power Grid's Collinsville 500/230 kV Substation Project
Title:	Data Request #14
From:	California Public Utilities Commission Panorama Environmental, Inc.
To:	LS Power Grid California, LLC (LSPGC) Pacific Gas & Electric Company (PG&E)
Date:	January 12, 2026

DATA REQUESTS

Section/Page Reference	CPUC Comment	Request ID	CPUC Request	LSPGC/PG&E Response
n/a	**DR-1: Feasibility of Pittsburg Substation Site Alternatives** In LSPGC's Response #3 to Data Request #2, LSPGC provided Attachment C: Alternatives Substation Site Analysis, which includes information about the feasibility of two conceptual substation sites in the Pittsburg area near PG&E's existing Pittsburg Substation (discussed as Scenarios D and E). Constructing the proposed substation on the southern side of the Delta in the Pittsburg area would require that the 500 kV interconnection lines be extended beyond the proposed substation site by roughly 6 miles and across the Delta, and the proposed 230 kV transmission line would then be shortened to roughly 0.7 mile. The proposed 230 kV overhead and submarine segments would be replaced with 500 kV segments, and the 500 kV and 230 kV segment alignments would be modified. The following analysis was provided by LSPGC for Scenario D and E, which are the two Pittsburg area substation site alternatives that were considered: 1. Would develop on the abandoned PG&E Power Plant site. High probability of unknown contaminates on the property and increase cut/fill values consequently leading to high air pollutant emissions during construction due to increased truck trips. 2. Future housing development planned - environmental review for redevelopment plans of the property are in progress. Including a substation and duct banks at this location would substantially impact redevelopment plans that are supported by the City of Pittsburg. 3. Siting the substation on the south shore will require routing 500 kV cables across the Sacramento River. The approved cable rating has not been developed for submarine use. To meet the required rating, 12 500kV submerged transmission cables would need to be routed from the north shore, through the narrow available area of the bay, to the south shore. 4. Any future expansion would require additional 500kV submerged transmission cables to cross the river to reach the substation. 5. Additional submarine cables will cause significantly more impact to sand mining lease area. 6. Two seasonal windows will be required to install 12 submarine cables, causing the cable installation to occur after the required in-service date. As well, would create additional hazards to navigation as 12 hydroplow runs would be required. 7. A combination of the 500kV and 230kV duct banks needed for the initial scope and the existing Transbay duct banks will completely enclose this substation location and prevent future lines planned in the Ultimate Substation configuration specified by CAISO from being able to connect. 8. Submerged transmission cables capable of 500kV are not currently commercially available.	1	Please review the analysis submitted to CPUC regarding the conceptual Pittsburg substation site alternatives (referenced in the left column), confirm the information provided by LSPGC is accurate, or provide revisions/additional information explaining the feasibility considerations for the conceptual substation alternatives.	LSPGC and PG&E PG&E: PG&E will review LSPGC's responses and respond.
		2	Please explain why 12, submerged 500 kV cables would be needed to cross the Delta instead of the proposed 4, 230 kV cables (bullets 3 and 6).	LSPGC and PG&E PG&E: PG&E's engineers have indicated that, to accommodate the ampacity required as well as the reliability of the 500kV system, there would need to be at least 6 cables + 2 spare cables per loop.
		3	A public comment on the DEIR suggests there is substantial evidence that indicates submarine cables have been deployed at other projects including the following United States (the Neptune project connecting New Jersey and New York); United Kingdom (the Western HVDC Link connecting Scotland with Wales and England); China (500 kV submarine cable "connecting offshore installations, Ningbo and Zhoushan); and Scandinavia (the Skagerrak 4 HVDC Light link connecting Norway and Denmark). The commentor also asserts "…A 2024 report analyzing switching transients in the proposed 500 kV Java-Bali Connection submarine cable project in Indonesia observed that "[s]elf-contained fluid-filled and cross-linked polyethylene are the two technologies that can be employed for high-power submarine cable application." Please substantiate the accuracy of the statement in bullet 8 that 500 kV transmission cables needed to cross the Delta are not commercially available. If the prior statement is not accurate, please explain and revise it to be accurate. Please review the example projects and statements in the DEIR comment above, and explain if these examples are comparable to the 500 kV interconnection submarine cables that would be needed to cross the Delta under the conceptual alternatives.	LSPGC and PG&E PG&E: The example listed are mostly DC tie lines with 500 HVDC. The usage of 500kV AC lines are limited due to power losses and complexity. As far as PG&E could determine, there is only one 500 kV submarine cable in the world, and that is the one in China, which is HVDC. PG&E knows of no 500 kV AC submarine cables in the US that would be similar.
		4	Please elaborate and provide any other technical details that may not have been included in LSPGC's prior response regarding the installation of a 500 kV interconnection across the Delta, including the feasibility of installing the required equipment. Please identify any additional or associated equipment that would be required for the 500 kV submarine interconnection to function properly, if any.	PG&E: 500kV AC submarine cables are technologically demanding and expensive to manufacture and install. Crossing the delta with 500kV UG cables, which would be highly non-standard for PG&E, should not be considered if there are any other feasible options available due to the importance of the 500 kV lines and the risks of placing it in this submarine location. 500kV UG has significantly higher complexity and reliability issues than 230kV UG. (See further responses below.) 500kV UG design and construction, if even feasible, would be 3-4 years projects.

Section/Page Reference	CPUC Comment	Request ID	CPUC Request	LSPGC/PG&E Response
	9. Dual landing points on the north shore will require two separate 500kV corridors to avoid wind turbine throw distance buffers. Additional information is needed regarding the feasibility of the conceptual Pittsburg area substation sites and the feasibility of construction a 500 kV submarine interconnection across the Delta instead of 230 kV transmission lines, and how these alternatives would or would not meet the CAISO's determine need for the project and technical specifications.			The real estate needed for a 500 kV transition structure is approximately 1.5 acres. Extending the 500kV to 6 miles would require redesign and determining new locations for transposition structures resulting in substantial schedule delay.
		5	Please elaborate and provide any other technical details that may not have been included in LSPGC's prior response regarding the two conceptual substation sites, including the associated 500 kV interconnection Delta crossing.	LSPGC and PG&E PG&E: Nothing further.
		6	Please provide an update regarding LSPGC's (and PG&E's if any) coordination with the landowner/applicant of the Bay Walk Mixed Use Project, Integral Communities, where the conceptual substation sites are located in Pittsburg (bullet 2). Please describe where the two conceptual substation sites and associate transmission line are in relation to the planned features of the Bay Walk Mixed Use Project.	LSPGC and PG&E PG&E: Nothing further.
		7	Please elaborate regarding the likelihood of encountering unknown contaminates during construction of the conceptual substation sites (bullet 1). Please explain the process for potential remediation and potential remediation timelines in relation to the proposed construction schedule. Please explain the statement about a potential increase in cut/fill values and truck trips associated with remediation (bullet 1).	LSPGC and PG&E PG&E: Nothing further.
		8	Please explain how the conceptual Pittsburg Substation alternatives, including the associated 500 kV interconnection Delta crossing, would or would not address CAISO's determined need for the project.	LSPGC and PG&E PG&E: Transmission planning believes it is not so much the location of the alternative substations near Pittsburg Substation that would be the CAISO concern, but the importance of the 500 kV lines and the risks associated with losing the 500 kV power source to the Bay Area or the North/South California corridor. The main navigation channels near Pittsburg are 25-40' deep and maintained by dredging to support commercial and industrial boat traffic around Pittsburg, Antioch and the western Delta. Nearby reaches are 15-30' deep. As an example, an anchor drop damaged the 230 kV Transbay cable in 2014 near the Carquinez Bridge, causing an outage of 4 months for repair, which is a typical repair time for submarine cables. Often repairs take longer. The 500 kV lines are too important to risk this type of outage.
		9	Please explain how the conceptual Pittsburg Substation alternatives, including the associated 500 kV interconnection Delta crossing, would or would not address CAISO's technical specifications established for the project.	LSPGC and PG&E PG&E: See previous response.
n/a	**DR-2: Access Restriction for In-water Construction** A public comment on the DEIR notes that additional details are needed regarding public access restrictions including buffers surrounding barges and vessels during in-water construction.	1	Please explain if public restriction buffers would be required for the in-water work activities. Please explain when and where such buffers would be implemented and provide the anticipated distances of potential access restriction buffers. Please explain the methods for establishing such buffers, such as using temporary buoys, spud piles, or other navigation	LSPGC

Section/Page Reference	CPUC Comment	Request ID	CPUC Request	LSPGC/PG&E Response
			markers. Please cite any established guidelines for such restrictions that would be implemented.	
n/a	**DR-3: Proposed Changes to APM REC-1** Based on the DEIR comment above, the CPUC proposes the following changes to APM REC-1: **APM REC-1: Access Restrictions in the Delta.** Construction crews would coordinate with the USCG's San Francisco Waterways Branch, the San Francisco VTC, and the City of Pittsburg's harbor master prior to any temporary in-water access restrictions to ensure that Delta users are aware of upcoming restrictions. In addition, a Local Notice to Mariners would be submitted to the USCG's District 11 at least 15 days prior to the start of each phase of in-water construction. Public access would be restricted surrounding in-water construction when required to ensure public and worker safety, as necessary. The distance and methods for restricting public access would be determined based on the specific work activity requirements, and determined in coordination with USCG, Vessel Traffic Service, the Harbor Master, and other applicable agencies, as required.	1	Please confirm the proposed changes to APM REC-1 are acceptable or propose alternative revisions that address the concern about public access restrictions.	LSPGC
n/a	**DR-4: Home Port(s) of Barges and Vessels during Construction** A public comment on the DEIR requests that the project description identify the home port location for work barges and vessels that would be used during construction, as well as distances from the port(s) to project construction area. This information would inform potential impact considerations for the spread and introduction of aquatic invasive species, ensure that vessel emissions are accurately calculated as part of project generated emissions analyses, and potentially be incorporated into discussion of impacts to transportation resources.	1	Please identify the home port location(s) for work barges and vessels that would be used during construction, as well as distances from the port(s) to project construction area if feasible. If the home port location is not known, provide the geographic area/region where you expect the vessels to come from.	LSPGC
n/a	**DR-5: PG&E Wetland Delineation and Aquatic Resources Delineation Report** On Page 8 of 10 of PG&E's DEIR comment letter, the following comment is included: "PG&E also suggests eliminating the Hydrology and Water Quality measure, MM HYD-1, for two reasons. First, PG&E has now completed the wetlands delineation effort in Solano County and has determined that all work on PG&E's interconnection facilities can be accomplished without impacting waters of the State or United States.[10] Given the lack of a potentially significant impact, no mitigation is justified. Further, even if jurisdictional waters could be impacted by project activities, PG&E would consult with the USACE and the relevant regional water board to determine which permits would be required. The requirements set forth in MM HYD-1 are not necessarily consistent with any likely USACE or water board permits, and those agencies have jurisdiction over the requirements."	1	Please provide the wetland delineation data and Aquatic Resources Delineation Report for CPUC review and consideration. This report was previously requested and the data has not been provided. Please provide this report to the CPUC by January 30, 2026. If the report cannot be provided by that date, please explain the reason for the delay.	PG&E: PG&E was delayed due to access issues. The tenant on the Contra Costa site has now been notified, and we have permission to access. Access will occur next week. Anticipating completion of the ARDR by the end of Feb.

Section/Page Reference	CPUC Comment	Request ID	CPUC Request	LSPGC/PG&E Response
	*Footnote 10: "The Aquatic Resources Delineation Report has not yet been finalized pending landowner approvals in Contra Costa County, where no wetland impacts are expected. The Report will be submitted to the CPUC when it is completed." The wetland delineation data and Aquatic Resources Delineation Report are needed to support PG&E's comment regarding the elimination of MM HYD-1.			
n/a	**DR-6: PG&E Microwave Tower** A public comment on the DEIR requests that the microwave tower be constructed using a monopole structure instead of the proposed lattice steel tower (LST) to reduce potential avian impacts, consistent with the transmission structure changes described for Alternative 3.	1	Please explain the feasibility of constructing the proposed microwave tower at the proposed Collinsville Substation communication yard using a monopole structure instead of the proposed lattice structure. According to general research, it appears PG&E has used monopoles for microwave towers on other projects, such as Vierra Reinforcement Project described in the Final IS/MND. In addition, Federal Communication Commission records indicate at least one existing PG&E microwave tower located at Kasson Substation in Tracy, CA. If a monopole structure is not feasible at the Collinsville Substation, please provide specific reasons, such as but not limited to the required height, soil or geological conditions, seismic considerations, site and surrounding topography, etc.	PG&E: Using monopoles for poles over 100' tall is not recommended. Guying would be required, which is generally a greater concern for birds due to birds flying into the guys and killing themselves. The biggest concern using monopole poles vs lattice towers is the height clearances. After running multiple Microwave surveys, it was determined that a 150' structure is needed to clear all obstructions. PG&E typically only installs monopoles when the height requested is under 90-100'. The location of the structure has changed, so PG&E will be redoing the surveys next week and can confirm the tower height at that time. The following considerations drive the choice of structures. Height Limitations: Monopole towers have shortened height limitations compared to lattice towers. This can affect their suitability for certain applications, especially in areas where they are required to overcome obstructions or maximize coverage. Loading Capacity: Monopoles have lower loading capacity compared to lattice towers, affecting their suitability for applications that require heavy equipment or multiple antennas. Multiple antennas will be installed on the structure here and it may be a future MW hub for future PG&E projects/solutions. Sway: In addition to other concerns, wind can produce monopole sway which can cause substantial antenna movement. From a technical perspective, installing a large diameter microwave antenna at the top of a monopole will cause it to twist and sway, which will cause signal degradation and path outages. In the past, PG&E had a 60' monopole installed at Modesto Service Center, and the path would suffer degradation and outages when winds would pick up due to the monopole's swaying. PG&E has attempted to avoid this situation on subsequent installations. Monopoles are typically used for cellular networks and radio broadcasting, requiring a compact design and minimal ground space. They are made of galvanized steel or reinforced concrete and have a height range of 15 to 40 meters. In contrast, lattice structures are designed for long-distance communication and support microwave antennas, with a height range of 30 to 150 meters. They are made of structural steel with corrosion-resistant coatings and are more robust due to their lattice framework and cross-bracing.
		2	Please respond to the same questions above, but with consideration to the microwave tower at the sites of the Collinsville Substation considered	PG&E: PG&E has not run path surveys for the alternative locations to date. The assumption is that it would be a similar situation given they

Section/Page Reference	CPUC Comment	Request ID	CPUC Request	LSPGC/PG&E Response
			with Alternatives 1 and 2. Explain any feasibility differences between the Proposed Project and these alternatives.	would need to clear the height of the wind turbines in the surrounding area.
		3	Please explain any differences in construction between installing the microwave tower on a monopole structure vs. the proposed lattice structure.	PG&E: Monopoles require much deeper foundations compared to self-supporting towers (24-inch slab vs. 30-foot pier for an equivalent height structure of around 100'). Exact Foundation depth and design is determined by the type of soil, and ground composition, which requires soil, and geotechnical analysis.
		4	Please explain what if any avian nesting or perching deterrents or guidelines would be incorporated into PG&E's design and construction of the proposed microwave tower on a lattice structure. Provide references to applicable guidelines and specific deterrent examples that would be implemented for this type of structure vs. a transmission tower.	PG&E: The telecom towers are designed with few flat spots to easily build nests. The tower legs are round pipe. To further discourage nesting, PG&E will work with its tower manufacturers to design microwave towers with round member diagonals and horizontal bracing to minimize the amount of "flat areas" for nests to be built. If for any reason that design is not feasible, PG&E will include another form of deterrent, which could include reflectors, spikes on the tower members, or mesh, wire or sealing holes to prevent birds from accessing the structure.