February 13, 2026

VIA EMAIL

Ms. Connie Chen
California Environmental Quality Act Project Manager
California Public Utilities Commission Energy Division
505 Van Ness Avenue
San Francisco, California 94201

RE: LSPGC Response to CPUC Data Request #16 for LS Power Grid California, LLC's Collinsville 500/230 Kilovolt Substation Project (A.24-07-018)

Dear Ms. Chen,

As requested by the California Public Utilities Commission (CPUC), LS Power Grid California, LLC (LSPGC) has collected and provided the additional information that is needed to continue the environmental review of the Collinsville 500/230 kilovolt (kV) Substation Project (Application 24-07-018). This letter includes the following enclosures:

- A Response to Data Request Table providing the additional information requested in Data Request #16, received February 5, 2026.

Please contact us at (925) 808-0291 or djoseph@lspower.com with any questions regarding this information. If needed, we are also available to meet with you to discuss the information contained in this response.

Sincerely,

Dustin Joseph

Dustin Joseph
Director of Environmental

Enclosures

cc: Jason Niven (LSPGC)
Doug Mulvey (LSPGC)
Lauren Kehlenbrink (LSPGC)
Clayton Eversen (LSPGC)
David Wilson (LSPGC)
Michelle Wilson (CPUC)

Aaron Lui (Panorama)
Susanne Heim (Panorama)

16150 Main Circle Drive, Suite 310, Chesterfield, MO 63017
lspower.com +1 636 532 2200

DATA REQUESTS

Section/Page Reference	CPUC Comment	Request ID	CPUC Request	LSPGC Response
n/a	**DR-1: Horizontal Direction Drilling (HDD) Construction Methods** In LSPGC Response #3 (4/2/25) to CPUC Data Request #2 (3/3/25), LSPGC submitted information regarding the feasibility of installing the 230 kV submarine cables using HDD methods. In response to DR-19, LSPGC made the following statement: "LSPGC reviewed the feasibility of Horizontal Directional Drilling (HDD) during the design of the proposed submarine cable routing. HDD is not feasible to install the submarine cables across the sand mining lease, as the cables are not spliced together, rather one continuous cable. If an HDD was used in these locations, an HDD would be required across the entire 4.5-mile route through the river, which is not feasible. HDD is feasible at the end points of the cable (i.e., shorelines); however, due to engineering constraints of the cables, the required depth of the HDD would introduce additional cables required in order to meet specified cable ratings resulting in additional impacts and time constraints in-river. Due to this, and the potential for frac-out in the river in critical habitat, HDD was not proposed." In LSPGC Response #1 (5/23/25) to CPUC Data Request #4 (5/9/25), LSPGC submitted additional information regarding the feasibility of HDD methods (response to DR-10 and in Attachment E/H: Horizontal Directional Drilling). In the attachment submitted, LSPGC states "…LSPGC has reviewed the maximum extent of distance from the shoreline that the HDD could reach and has determined that distances of up to 1,500 feet waterward are feasible…" Additional information is needed to substantiate LSPGC's findings regarding the feasible of HDD methods.	1	Please clarify if HDD technology exists that can install the proposed submarine cables across the entire Delta waterway (4.5 miles) and substantiate LSPGC's prior findings that it would not be feasible.	Based on publicly available industry records and LSPGC's review of major pipeline installations, the longest continuous horizontal directional drill (HDD) completed to date is approximately 5,200 meters (~17,000 feet) and involved installation of a 20-inch diameter steel pipeline for aviation fuel transport.[1] That installation represents the current upper bound of demonstrated HDD capability for large-diameter steel pipelines under controlled conditions. By comparison, a direct HDD crossing between the proposed southern and northern landfall locations for the Collinsville Project would require an estimated bore length of approximately 6,700 meters (~22,000 feet)—roughly 1,500 meters (~15%) longer than the current documented record. HDD performance does not scale linearly with length; drilling risk, steering complexity, drilling fluid management, annular pressure control (frac-out control), and pullback forces increase disproportionately as bore length increases. Extending beyond the longest proven installation introduces substantial technical uncertainty and elevated risk of incomplete installation or bore failure. For this reason alone, a single continuous HDD crossing of the Delta at the required distance would represent a step change beyond demonstrated industry practice. Additionally, the Proposed Project would not only require one crossing, but rather multiple (at minimum six crossings) to accommodate each phase of the cable. Importantly, the 5,200-meter reference installation involved a steel pipeline designed to withstand significant tensile and pullback forces. The Collinsville Project would require installation of high-voltage transmission cables through a PVC lined borehole, which differs materially from steel pipe in mechanical behavior. High-voltage cables are more sensitive to tensile stress, sidewall pressure, and minimum bend radius limitations during pullback. Consequently, allowable pull forces for transmission cables are generally lower for steel pipelines of comparable outer diameter, reducing the practical feasibility of ultra-long HDD installations. A more analogous project, such as the CHPE East River Crossing[2], involved significantly shorter HDD segments that did not approach the length contemplated here. No known high-voltage submarine cable installation approaches a 6.7-kilometer continuous HDD bore.

[1] https://trid.trb.org/View/2027286#:~:text=To%20meet%20the%20fuel%20demands,and%204%20months%20stoppage%20due

[2] https://trenchlesstechnology.com/2025-trenchless-technology-new-installation-project-of-the-year/#:~:text=The%20mile,and%20the%20fiber%20communication%20conduits

Section/Page Reference	CPUC Comment	Request ID	CPUC Request	LSPGC Response
				Depth and Thermal (Ampacity) Constraints Ultra-long HDD crossings of major water bodies typically require significant burial depth to maintain bore stability, avoid frac-outs, and manage hydrostatic pressure. The 5.2-kilometer installation referenced above was buried approximately 100 meters (~330 feet) below the seabed. Comparable long HDD crossings have also required depths on the order of tens to hundreds of meters below grade. For high-voltage transmission cables, burial depth directly affects thermal performance (ampacity). Increased depth: • Reduces the ability of the surrounding soil to dissipate heat; • Increases thermal resistivity due to native formation characteristics; • Limits the effectiveness of engineered backfill; and • Constrains cable spacing within the bore. As burial depth increases, cable temperature rises for a given load, potentially requiring: • Derating of transmission capacity, or • Installation of additional parallel circuits to maintain the required rating. While detailed thermal modeling would be required to quantify the exact number of circuits, a deeply buried 6.7-kilometer HDD installation would require more than the currently proposed four cables to achieve equivalent ampacity. This would further increase HDD quantity, drilling complexity, and risk of frac out. **Geotechnical and Geological Uncertainty** Shallow riverbed conditions within the Delta are relatively well characterized through existing geotechnical investigations and sediment transport studies. However, subsurface conditions at depths potentially exceeding 100 feet, and possibly approaching several hundred feet below mean high water, are far less documented. Ultra-long HDD installations at these depths introduce the following risks: • Encountering mixed-face conditions (e.g., transitions between unconsolidated sediments and competent bedrock); • Variable formation strength affecting steering control; • Elevated annular pressures and risk of inadvertent returns; • Bore collapse in unconsolidated or heterogeneous deposits; • Increased torque and drag resulting in stalled pullback. In addition, a direct alignment between the proposed landfall sites would pass beneath a known scour zone within the river channel. The currently proposed cable route was intentionally designed outside of this high-scour area to reduce exposure to active geomorphic processes. While a sufficiently deep HDD could theoretically pass beneath the scour feature,

Section/Page Reference	CPUC Comment	Request ID	CPUC Request	LSPGC Response
				doing so would require additional burial depth, potentially on the order of 100 feet or more below mean high water, to ensure long-term geotechnical stability and separation from active erosional processes. This additional depth compounds the thermal and constructability challenges described above. **Cumulative Feasibility Considerations** When considered collectively, the following constraints materially limit the feasibility of a direct HDD crossing: 1. Required bore length (~6.7 km), exceeding the longest documented continuous HDD installation and multiples times longer than the longest HDD installed high voltage transmission line ; 2. Non-linear increase in mechanical and hydraulic drilling risk at extreme lengths; 3. Mechanical limitations of high-voltage transmission cables compared to steel pipelines; 4. Ampacity reductions associated with deep burial, likely requiring additional circuits; 5. Sparse deep geotechnical characterization and elevated subsurface uncertainty; 6. Increased risk of bore instability, frac-outs, or pullback failure; 7. Alignment constraints related to known scour features. Taken together, these factors indicate that a continuous HDD crossing of the Delta at the required length and depth would not represent standard or proven industry practice for high-voltage submarine transmission infrastructure. The engineering, geotechnical, thermal, and constructability risks are substantial and collectively render this approach impractical and not technically feasible for the Collinsville Project.
		2	Please explain the HDD technology limitations for boring as it relates to the feasibility of full HDD installation of the proposed submarine cables across the Delta.	Please see response to part one.
		3	Please explain and substantiate why it would not be feasible to cross the sand and gravel lease using HDD methods. Is this assessment based on impacts to the sand and mining lease or the feasibility of submarine cable installation? The analysis in the Draft EIR already assumes that the area of the sand mining lease crossed by the proposed submarine cables would become unavailable after the cables are installed, which is based on information provided by LSPGC obtained through coordination with the lease holder.	Crossing the existing sand and mining lease would require an approximate 5,250-foot HDD to clear the deep scour feature and to avoid the southern impact of the Sand a gravel lease. As described in response to part six, this is significantly higher than the recommended 1,500 feet reviewed by a trenchless construction contractor. Additionally, if HDD was used to avoid the existing sand mining lease, this would require a deeper installation depth and thus require additional cables due to a lower ampacity. This impact is described in detail in response to part one.
		4	Please explain how splicing relates to the feasibility of HDD methods for the project, as the potential use of splicing is described in the submarine	Although Section 2.9.2 of the Draft EIR describes splicing as a potential method to address repairs or installation sequencing, the practical ability

Section/Page Reference	CPUC Comment	Request ID	CPUC Request	LSPGC Response
			cable construction methods for the Proposed Project, such as to address any repairs that may be needed (discussed in Section 2.9.2 of the Draft EIR Project Description).	to perform splices is fundamentally constrained in a long, continuous HDD installation beneath a river. A continuous HDD crossing significantly limits the feasibility of cable splicing for both installation and repair. **1. Installation Implications for Long HDD Crossings** If HDD were used for a multi-kilometer river crossing: • The full cable circuit would need to be installed in a single continuous pull. • Cable lengths would be constrained by manufacturing and transportation limits. • Pullback forces would increase substantially with bore length. • Any damage during pullback could require abandonment of the bore and re-drilling. Because intermediate splicing is not practicable within the bore, there is no opportunity to break the installation into shorter, lower-risk segments. This increases both the technical difficulty and the consequence of failure. **2. Repair and Lifecycle Considerations** Section 2.9.2 acknowledges that submarine cables may require repair over their operational life. For cables installed via marine lay methods, repair typically involves: • Locating the fault, • Recovering the cable segment, • Performing a splice in a controlled environment, • Reinstalling and reburying the cable. In contrast, a cable installed via HDD beneath a river would not be retrievable without major excavation. If a fault were to occur mid-bore: • The cable may damage the bore casing potentially preventing retrieval of the cable, • The only practical remedy could be installation of an entirely new bore. This significantly increases lifecycle risk and reduces maintainability compared to conventional submarine installation methods. **3. Feasibility Conclusion** Although splicing is a standard component of submarine cable construction and repair, it presumes physical access to the cable. A continuous multi-kilometer HDD crossing eliminates that access along the alignment. The inability to: • Perform intermediate installation splices,

Section/Page Reference	CPUC Comment	Request ID	CPUC Request	LSPGC Response
				• Access the cable for in-place repairs, • Construct controlled jointing environments within the bore, and • Implement practical long-term repair strategies, • materially constrains the feasibility of HDD for the Project's river crossing. Accordingly, while splicing is feasible and routine for submarine cable installation via marine methods, it does not mitigate the substantial technical and lifecycle limitations associated with a long, continuous HDD installation beneath the riverway.
		5	Please explain and substantiate LSPGC's determination that the maximum distance of HDD installation methods is 1,500 feet from the shorelines and why greater distances are not feasible. Please provide specific assumptions and physical constraints for the project 230 kV submarine cables that support the assessment findings.	LSPGC evaluated HDD early in the Project development process as a potential alternative to nearshore open trenching. LSPGC consulted with its experienced trenchless construction contractor to assess the technical feasibility, constructability risks, and environmental considerations associated with a shoreline HDD installation transitioning to submarine cable burial within the Delta. Following review of this information the trenchless construction contractor advised that an HDD length of approximately 1,500 feet from the shoreline represented the preferred and lowest-risk configuration. This recommended length was based on several key engineering and environmental considerations: **1. Frac-Out Risk Management** Shorter HDD lengths significantly reduce the risk of inadvertent returns (frac-outs). Annular pressure increases with bore length and depth due to hydrostatic head and frictional pressure losses. By limiting the bore to approximately 1,500 feet: • Annular pressures remain more manageable within the expected fracture gradient of shallow deltaic sediments. • The operational duration of drilling is reduced, lowering cumulative risk exposure. • Contingency response planning is simplified in the event of loss of circulation (frac-out). Extending the bore substantially beyond this distance would increase drilling fluid pressures and cuttings transport challenges, narrowing the safe pressure window between bore collapse and hydraulic fracture. **2. Constructability and Risk Optimization** From a constructability perspective, HDD risk increases nonlinearly with bore length. Limiting the shoreline HDD to ~1,500 feet: • Keeps the installation within established industry practice for transmission cable shore approaches. • Maintains manageable pullback forces within cable tensile limitations. • Reduces exposure to unknown subsurface variability.

Section/Page Reference	CPUC Comment	Request ID	CPUC Request	LSPGC Response
				• Preserves schedule certainty relative to longer, higher-risk trenchless alternatives. The contractor's recommendation reflects standard trenchless engineering practice, in which HDD is optimized for shoreline transition and environmentally sensitive segments rather than extended, multi-kilometer channel crossings. **Conclusion** Based on contractor consultation and preliminary engineering review, an HDD installation of approximately 1,500 feet from the shoreline represents the lowest risk, most technically appropriate trenchless approach for the Proposed Project. This length: • Minimizes frac-out risk, • Maintains annular pressure within manageable limits, • Aligns with demonstrated industry practice for high-voltage submarine cable installations. Accordingly, extending HDD significantly beyond this distance would materially increase technical and environmental risk without corresponding benefits.
		6	Please explain if greater HDD distances would be feasible given the requests and responses above, and if the distance limitations would be the same or different from either shore of the Delta based on specific conditions.	See response provided in part five.