

*Southern California Edison*  
**RTRP A.15-04-013**

**DATA REQUEST SET A.15-04-013 RTRP-CPUC Verbal-001**

**To:** CPUC

**Prepared by:** Gary Busted

**Title:** Environmental Project Manager

**Dated:** 12/19/2016

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**Question 01:**

Please Provide Biology GIS Data for RTRP

**Response to Question 01:**

As verbally requested on or about December 13, 2016, attached please find biological GIS data pertaining to the previously submitted Riverside Transmission Reliability Project (RTRP) 2016 technical reports for Delhi Sands Flower Loving Fly, Riparian Birds, Small Mammals, and additional Habitat Assessments in support of SCE's proposed 230 kV "Hybrid Route" Alternative. Results from those previous studies only identified locations for riparian bird species along the Santa Ana River, and a single point for California Walnut. No other resources were found in the 2016 survey efforts.

*Southern California Edison*  
**RTRP A.15-04-013**

**DATA REQUEST SET A.15-04-013 RTRP-CPUC Deficiency Report-SCE-004  
Supplemental 2**

**To:** ENERGY DIVISION  
**Prepared by:** Hunly Chy  
**Title:** Supervising Engineer  
**Dated:** 12/19/2016

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**Question 05:**

Provide details for construction of the underground duct bank including the following:

- Size and locations of duct banks
- Depth of duct banks
- Separation between duct banks
- Size of the riser poles
- Construction approach including approximately how much would be open/constructed per day of the underground line in roads and whether work would occur in multiple areas at once or just in a linear fashion down the line

Details previously provided by SCE in the RTRP 230-kV Alternatives Desktop Study may be applicable; however, many of the specific dimension provided (such as for vault structures) appear to be over sized for a 230-kV duct bank and need to be confirmed. See Attachment C for an example from another 230-kV underground project description.

**Response to Question 05:**

Attached please find a conceptual drawing of a draft conceptual double circuit 220 kV duct bank, similar to that provided in Figure 6 of the *Riverside Transmission Reliability Project (RTRP) 230 kV Underground Alternatives Desktop Study* (July 2015) (Desktop Study) submitted in response to Question 3 of Deficiency Report No.1 on or about July 24, 2015. Please note that this drawing is conceptual, representing typical underground 220 kV duct banks preliminarily deemed appropriate for the RTRP based on planning level assumptions, analyses performed to date, and known conditions. The approximate location of the duct banks, vaults, and riser poles proposed in support of the underground portions of the Hybrid Route are also depicted in SCE's response to Question 1 of Deficiency Report No. 4 Supplemental 2, provided to the CPUC on or about November 30, 2016. The precise design and location of the underground duct banks are subject to change following completion of final engineering, identification and/or verification of field conditions, completion of underground surveys, availability of labor, material, and equipment, compliance with applicable environmental and permitting requirements, and other factors.

Regarding the specifically requested information:

- **Size and locations of duct banks** - As shown in the attached duct bank drawing, each duct bank contains nine 8-inch PVC conduits for the power cable (six conduits would be occupied, with the remaining three reserved as spares). Each duct bank is approximately 4.5 feet wide and minimum of 6 feet – 6 inches deep. The strip map included in Question 1 of Deficiency Report No. 4 Supplemental 2 (Strip Map) shows the conceptual underground alignment.

SCE has based its preliminary engineering design on data from test results on a prior project where vault sizes range from 48 feet long by 8 feet wide to 64 feet long by 8 feet wide. For RTRP, the interior dimension of the proposed vault size is 46 feet long by 8 feet wide. The cable anticipated to be utilized for RTRP is 5000 kcmil copper XLPE cable.

- **Depth of duct banks** – The double circuit duct banks will be at least 6 feet – 6 inches deep. Additional engineering is anticipated, including study of the location, depth, placement, and spacing between the vaults. While the Desktop Study provides a generic approach to vault location, final engineering in which sub-surface utilities and obstacles are located and evaluated will determine the final locations of the vaults. Accordingly, duct bank placement may vary both horizontally and/or vertically to avoid obstructions or as construction dictates.

- **Separation between duct banks** – To meet ampacity requirements, the duct banks are designed with 10 feet separation. As described above, additional engineering is anticipated and final engineering in which sub-surface utilities and obstacles are located and evaluated will determine the final locations of the vaults. Accordingly, vaults may ultimately span further apart or be closer together than discussed here, in the Desktop Study, or in the Strip Map.

- **Size of the riser poles** – The riser poles are approximately 165 feet tall.

- **Construction approach including approximately how much would be open/constructed per day of the underground line in roads and whether work would occur in multiple areas at once or just in a linear fashion down the line** – Construction of the duct banks and vault placement may occur in multiple areas at the same time. Current RTRP construction estimates assume two crews will concurrently work in multiple locations (*e.g.*, one crew beginning at each end of the underground sections of the Hybrid Route) and are expected to trench a total of approximately 200 feet per day (100 feet per day per crew). SCE anticipates that each crew would construct/install only one duct bank at a time. Unexpected factors, such as unforeseen schedule impacts and/or environmental constraints, may result in construction crews constructing the duct banks and placing the vaults in a non-linear fashion. The final, specific construction approach will be determined by the construction contractor, consistent with SCE's anticipated CPCN and supporting environmental document.