

Southern California Edison
RTRP A.15-04-013

DATA REQUEST SET A1504013 ED-SCE-04

To: ENERGY DIVISION
Prepared by: Roman Vazquez
Title: Project Engineer
Dated: 04/03/2017

Question ALT-1-001:

The CPUC requests preliminary engineering for potential alternatives listed below

1. Alternative 1: Bellegrave – Pats Ranch Road Underground (see Figure 2). The alternative would transition to an underground position adjacent to the tie-in to Mira Loma – Vista 230 kV #1 Line. The transmission lines would travel south under Wineville Road to Bellegrave Avenue. From this intersection, the lines would travel west under Bellegrave to Pats Ranch Road. At Pats Ranch Road, the lines would turn south and remain underground within the right-of-way for Pats Ranch Road to Limonite Avenue.

The following details shall be provided for each alternative:

1. Layout of each alternative:
 - a. Indicate approximate location and height of riser poles (transition from overhead to underground).
 - b. General duct bank alignment and minimum lateral spacing between duct banks.
 - c. Indicate preliminary location of splice vaults.
2. Number of underground cables per circuit.
3. Number of duct banks per circuit.
4. Duct bank configuration:
 - a. Height,
 - b. Width
 - c. Number of ducts
 - d. Depth of burial
 - e. Phase arrangement
 - f. Include approximate size of trench excavation.
5. Type of splice vault, e.g. Pre-cast or CIP.
6. Splice vault size including approximate size of excavation necessary to place vaults.
7. For cut and cover construction method, identify the average and maximum width and length of area to be under construction at a given time.
8. Identify if there are any possible locations where jack and bore or horizontal directional drilling construction methods would be used. If these are to be used, provide construction details such as location and length, size of excavations, etc.
9. EMF modeling for proposed underground circuit configuration for a width of 200 feet. Include any proposed low-cost or no-cost EMF measures consistent with CPUC requirements.
10. Any additional construction staging areas or yards necessary for the identified alternatives.

11. Anticipated total construction duration for the underground portion of alternatives.

Figure 1: Bellegrave - Pats Ranch Road Underground



Response to Question ALT-1-001:

Please note, the following additional information pertaining to the alternative referenced above is conceptual and based on planning level assumptions, analyses performed to date, and known

conditions. The precise design, location, and methods of construction for any Riverside Transmission Reliability Project ("RTRP") alternative 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.

With respect to the requested information:

1. a. Preliminary riser pole locations cannot be determined beyond what is already described above as additional engineering and sub-surface investigations have not taken place. The height of the riser poles are 165' tall, the same as SCE's proposed Hybrid Route alternative ("Hybrid Route").

1.b. For each alternative, the general duct alignment cannot be determined beyond what is already described above as additional engineering and sub-surface investigations have not taken place. The minimum lateral separations between duct banks is 10 ft, the same as the Hybrid Route.

1.c. Preliminary splice vault locations have not been determined at this time as this would require additional engineering, subsurface investigations, and delivery logistic discussions with cable suppliers.

2. For each alternative, 2 cables per phase, 6 cables per circuit are required, the same as the Hybrid Route.

3. For each alternative, 1 duct bank per circuit is required, the same as the Hybrid Route.

4. For each alternative, the duct bank configuration and dimensions are the same as the Hybrid Route:

- a. approximately 3.5 ft. in depth;
- b. approximately 4.5 ft. in width;
- c. SCE estimates that the duct banks will be configured with nine 8 inch ducts, and three 5 inch ducts;
- d. approximately 6.5 ft. minimum depth from bottom of duct bank;
- e. to be determined during final engineering; and
- f. approximately 5 ft. wide.

5. For each of the alternatives, splice vaults are assumed to be the same as for the Hybrid Route. Their construction technique has not yet been established.

6. For each alternative, the vault excavation techniques and dimensions are the same as the Hybrid Route.

7. Estimated average width x length: approximately 6.5 ft. x 150 ft.
Estimated maximum width x length: approximately 6.5 ft. x 300 ft.

8. There are no locations where trenchless construction techniques are currently being considered as additional engineering and sub-surface investigations have not taken place.

9. Please see the attached document "*Riverside Transmission Reliability Project (RTRP) Hybrid Route, EMF Analysis for the Underground Segment* (May 2017)."

10. No additional construction staging areas or yards are planned for alternative routes

11. Estimated total construction duration of Alternative 1 Underground: 392 days

Estimated total construction duration of Alternative 2 Underground: 415 days

Estimated total construction duration of Alternative 3 Underground: 280 days

Note: The estimated construction durations are subject to change for the reasons specified at the outset of this response, and specifically depend on crew sizing used and environmental and other constraints encountered during construction.

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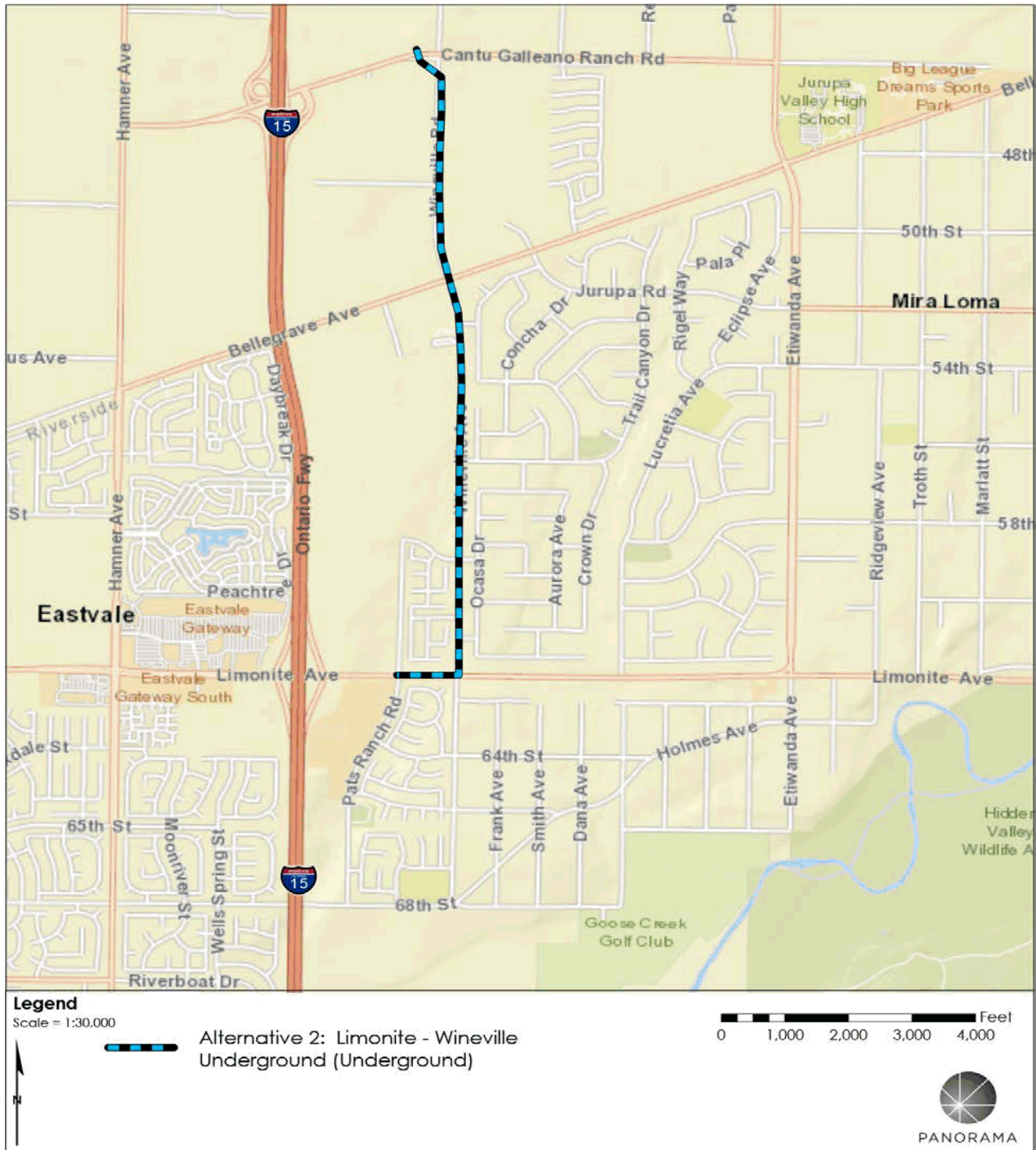
Question ALT-1-002:

Alternative 2: Wineville - Limonite Underground (see Figure 3). The alternative would transition to an underground position adjacent to the tie-in to Mira Loma – Vista 230 kV #1 Line. The transmission lines would travel south under Wineville Road to Limonite Avenue. The transmission lines would turn west at Limonite Avenue and remain underground within Limonite Avenue to Pats Ranch Road.

The following details shall be provided for each alternative:

1. Layout of each alternative:
 - a. Indicate approximate location and height of riser poles (transition from overhead to underground).
 - b. General duct bank alignment and minimum lateral spacing between duct banks.
 - c. Indicate preliminary location of splice vaults.
2. Number of underground cables per circuit.
3. Number of duct banks per circuit.
4. Duct bank configuration:
 - a. Height,
 - b. Width
 - c. Number of ducts
 - d. Depth of burial
 - e. Phase arrangement
 - f. Include approximate size of trench excavation.
5. Type of splice vault, e.g. Pre-cast or CIP.
6. Splice vault size including approximate size of excavation necessary to place vaults.
7. For cut and cover construction method, identify the average and maximum width and length of area to be under construction at a given time.
8. Identify if there are any possible locations where jack and bore or horizontal directional drilling construction methods would be used. If these are to be used, provide construction details such as location and length, size of excavations, etc.
9. EMF modeling for proposed underground circuit configuration for a width of 200 feet. Include any proposed low-cost or no-cost EMF measures consistent with CPUC requirements.
10. Any additional construction staging areas or yards necessary for the identified alternatives.
11. Anticipated total construction duration for the underground portion of alternatives.

Figure 2: Wineville – Limonite Underground



Response to Question ALT-1-002:

The information requested is provided in SCE's responses to ED-SCE-04, Question No.Alt-1-001 pertaining to "Alternative 1: Bellegrave - Pats Ranch Road Underground."

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Question ALT-1-003:

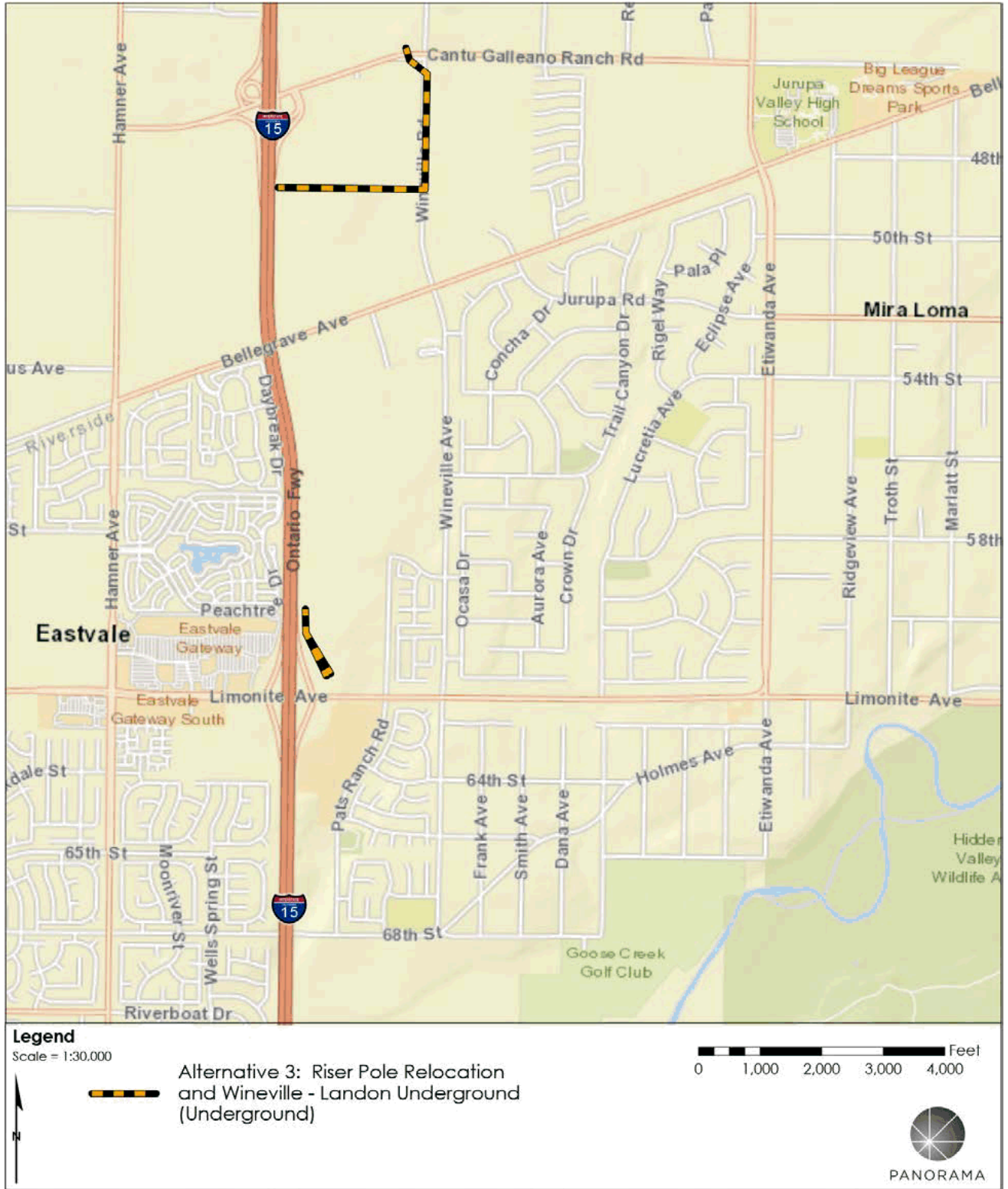
Alternative 3: Riser Pole Relocation and Wineville - Landon Underground (see Figure 4). The alternative would transition to an underground position adjacent to the tie-in to Mira Loma – Vista 230 kV #1 Line. The transmission lines would travel south under Wineville Avenue to Landon Drive. The lines would head west under Landon Drive. Just west of the terminus of Landon Drive the lines would transition to overhead. The transmission lines would follow the location of the revised project overhead lines adjacent to the I-15 freeway. Near Limonite Avenue, the riser pole would be relocated approximately 0.25 mile north-northwest of the proposed position and within the revised project alignment. The underground transmission line would follow the revised project alignment underground from the relocated riser pole.

The following details shall be provided for each alternative:

1. Layout of each alternative:
 - a. Indicate approximate location and height of riser poles (transition from overhead to underground).
 - b. General duct bank alignment and minimum lateral spacing between duct banks.
 - c. Indicate preliminary location of splice vaults.
2. Number of underground cables per circuit.
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4. Duct bank configuration:
 - a. Height,
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5. Type of splice vault, e.g. Pre-cast or CIP.
6. Splice vault size including approximate size of excavation necessary to place vaults.
7. For cut and cover construction method, identify the average and maximum width and length of area to be under construction at a given time.
8. Identify if there are any possible locations where jack and bore or horizontal directional drilling construction methods would be used. If these are to be used, provide construction details such as location and length, size of excavations, etc.

9. EMF modeling for proposed underground circuit configuration for a width of 200 feet. Include any proposed low-cost or no-cost EMF measures consistent with CPUC requirements.
10. Any additional construction staging areas or yards necessary for the identified alternatives.
11. Anticipated total construction duration for the underground portion of alternatives.

Figure 3: Riser Pole Relocation and Wineville - Landon Underground



Response to Question ALT-1-003:

The information requested is provided in SCE's responses to ED-SCE-04, Question No.Alt-1-001 pertaining to

"Alternative 1: Bellegrave - Pats Ranch Road Underground."