Updated Description of Phased Build Alternative from Final EIR, Appendix 5 Alternatives Screening Report

The changes shown in this section with underlining and ~~strikeout~~ show changes made after publication of the Final EIR was published in December 2015.

4.4 Phased Build Alternative

This alternative has been retained for analysis because it would avoid most of the environmental impacts associated with removal of the existing double-circuit towers and construction of new double-circuit towers, while still allowing import of generation from all the reasonably foreseeable generation projects defined by the CAISO.[1] The alternative components are illustrated in Figures Ap.5-5a and Ap.5-5b.

Alternative Description

This alternative is derived from the project proposed by SCE in 2005 as the West of Devers System Upgrades. The purpose of this alternative is to reduce construction by retaining as many existing tower structures as possible and installing lighter-weight but higher-performance conductors on the retained towers. The high-performance conductors would maximize power transfer and avoid structurally overloading the existing towers. The alternative would:

- **Remove and replace existing single-circuit towers.** In most of the existing right-of-way (ROW), the two sets of existing single-circuit towers would be removed and one set of new double-circuit towers would be constructed to replace the removed towers. The new set of double-circuit towers would be constructed in the existing ROW paired with existing/retained structures, generally immediately north or south of the existing double-circuit towers, as detailed by segment below. The new set of double-circuit structures would be installed with an approximately 50-foot separation from the centerline of the existing (retained) structures, as defined for the Proposed Project.
- **Install interset towers where required.** Interset towers would be required where the spans between retained towers exceed the strength of existing towers, and at locations where conductor blowout (where conductors could sway horizontally, potentially result in insufficient horizontal safety clearance to the adjacent line) could occur. There could be from 105 to 110 interset towers. Exceptions to this general description would occur in Segments 1, 2, and 5.
- **Ensure compliance with the requirements of the Tower Relocation Alternative** (as described in Final EIR Section 4.2). The Phased Build Alternative would retain (and not remove) most existing double-circuit structures near the center of the ROW. Constructing the second line adjacent to the retained structures ensures that no new structure would be located nearer to an adjacent residence than is currently the case.
- **Retain existing double-circuit towers.** Nearly all of the existing double-circuit towers would be retained. ~~Prior to reconductoring some existing structures would be strengthened and their heights increased.~~

[1] The Phased Build Alternative would have capacity for all the generation included in the CAISO 2024 Reliability Base Case (see Attachment 2 to this Appendix, pages 5-6 and page 21, Table A4). This scenario includes 3,754 MW of Total Generation On-line and 6,901 MW of Total Generation Capacity), from renewable and conventional resources, as well as the power flow on the system resulting from import of 1,400 MW from the Imperial Irrigation District into the LA Basin.

- **Install high-capacity conductors on all four circuits.** Both the new and existing 220 kV double-circuit towers would have the "795 Drake" Aluminum Conductor Composite Reinforced (ACCR) installed, with the exception of Segment 1, where only two of the existing four circuits would be modified.
- **Allow for future capacity expansion of the existing corridor** with several optional future phases. These phases would be implemented as generation projects become certain and capacity is clearly required. Because the Phased Build Alternative would accommodate projects now defined in the CAISO's 2024 Reliability Base Case, it may be 10 years or more before additional upgrades are needed. The configuration of future transmission expansion that may be required cannot now be predicted, and would depend on many factors, including type and location of future renewable generation, the type and location of future transmission upgrades by SCE or other parties, and the regulatory systems in place that define transmission capacity requirements (i.e., energy only versus full capacity deliverability). The future phases could include:
  - Reconductoring of the newly constructed 220 kV structures with higher capacity conductors and replacement of the retained 220 kV structures with new, stronger 220 kV structures in order to carry heavier, higher capacity conductors;

    And/or:
  - Installation of a single- or double-circuit 500 kV or 220 kV line in the vacant space remaining in the ROW.

In Segment 5 on Morongo land, the Phased Build Alternative would look very much like the Proposed Project, as illustrated in Figure Ap.5-5b, and would incorporate the Morongo relocation of a part of the ROW and use of tubular steel poles. Under the SCE-Morongo ROW agreement, the Morongo Band may conclude that the Phased Build Alternative does not satisfy SCE's obligation to timely obtain all required regulatory approvals of the Proposed Project. If the Morongo Band concludes that this alternative does not satisfy SCE's obligations, the Morongo Band could direct the Department of Interior to cancel the ROW, which would create a legal impediment to this project alternative.

The Phased Build Alternative would use a composite reinforced conductor in an appropriate size to allow import from all generation projects that are reasonably foreseeable (i.e., included in the CASIO's 2024 Reliability Base Case, as well as allowing import of an additional 1,400 MW from the Imperial Valley). A high-performance conductor weighs less and has lower thermal expansion than the SCE-standard ACSR conductor, resulting in less sag for an equivalent strength and durability as the ACSR conductor. Therefore, using an alternative conductor would satisfy the basic project objectives while simultaneously avoiding the need to rebuild towers in the corridor.

Configuration by Project Segment. The Phased Build Alternative would be configured differently in these the following segments:

Segment 1 would be configured to:

- Retain the existing double-circuit 220 kV towers and the San Bernardino–Vista and Etiwanda–San Bernardino circuits without change.
- Re-use the existing double-circuit 220 kV towers, and reconductor to replace the two existing circuits in the 220 kV positions nearest to the edges of the ROW so that Devers–San Bernardino and El Casco–San Bernardino use a new 795 Drake ACCR conductor.
- Either retain or relocate the ~~all~~ existing 66 kV circuits, based on final design. ~~in Segment 1 in place and unmodified. (Note that in this alternative~~ If the 66 kV circuits are required to be relocated, the Iowa Street 66 kV Underground Alternative would ~~not~~ still be required (as with the Proposed Project). If the

66 kV circuits are not relocated, ~~because~~ that Iowa Street Underground Alternative would not be required. ~~segment of 66 kV line would not be required.)~~

Segment 2 would be configured to:

- Re-use the existing double-circuit 220 kV towers, and reconductor so that both existing circuits between Devers–Vista use a new 795 Drake ACCR conductor.
- Retain all existing 115 kV circuits in Segment 2 in place and unmodified.

Segment 5 (including Morongo Land and non-Morongo land) would be configured as follows:

- All existing 220 kV structures on Morongo Land would be removed and replaced with two sets of new double-circuit tubular steel poles and double-circuit lattice steel tower structures (see description of tubular steel poles [TSPs] below) having the same strength capabilities and spacing as the Proposed Project double-circuit towers.
- In the westernmost 3 miles of tribal land, all transmission facilities in the existing ROW would be removed and relocated south to new ROW closer to I-10, as defined for the Proposed Project. For the 17 pairs of new structure pairs that SCE and Morongo have agreed would be TSPs in the Proposed Project, those would be TSPs in this alternative. The remaining structures on Morongo land would be lattice steel towers, as in the Proposed Project. ~~with tubular steel pole and double-circuit lattice steel tower structures~~
- On private land in Segment 5, the existing double-circuit structures would be retained. The two sets of single-circuit 220 kV structures would be removed and replaced with a single set of new double-circuit lattice steel towers having the same strength capabilities and spacing as the Proposed Project double-circuit towers.
- All conductors in Segment 5 would be conductored with 795 Drake ACCR.
- The Morongo towers would be able to support 1590 kcmil conductors (if required in the future), so no future structure replacement would be required on Morongo land. On private land in Segment 5, the retained structures would have to be replaced with stronger structures in order to support the 1590 kcmil conductors (if they are determined to be needed).
- ~~In this westernmost segment, 19 pairs of new double-circuit tubular steel poles would be installed and the high-capacity conductors (795 Drake ACCR) would be installed on the new poles.~~

~~On the eastern portion of the Morongo land, 30 pairs of new double-circuit lattice steel towers would replace the existing single-circuit towers; high capacity conductors (795 Drake ACCR) would be installed on these new towers.~~

Two options for Segment 5 are suggested for agency consideration, if the Phased Build Alternative is adopted:

Segment 5, Phased Build Alternative Option 1

Option 1 would have the same structures as the Proposed Project in all of Segment 5, but would be conductored with 795 Drake ACCR conductor at this time. All Segment 5 towers (not only the approximately 60% on Morongo land) would be removed and replaced with the Proposed Project tubular steel pole and double-circuit lattice steel tower structures, capable of supporting 1590 kcmil conductors. This would acknowledge the complex land ownership pattern in Segment 5, where the current ROW runs along tribal/private parcel boundaries. This option would ensure that no future tower construction would occur in Segment 5. However, there would be future construction activity related to reconductoring from Drake 795 to 1590 kcmil conductors.

Segment 5, Phased Build Alternative Option 2

Option 2 would have the same structures and conductor as the Proposed Project in all of Segment 5. All of Segment 5 (both Morongo and private land) would be initially conductored with 1590 conductor and not 795 Drake ACCR conductor. This would eliminate all possible future effects on Morongo lands, including use of access roads, pull sites, or shoo flies.

Segments 3, 4, and 6 would be configured as follows:

- As with the Proposed Project, reconfigure San Bernardino Junction to accommodate the new double-circuit tower line north of the existing double-circuit towers. This means that the Devers–San Bernardino and El Casco–San Bernardino circuits would be on the northern side of the existing ROW in Segment 3.
- The intent of the Tower Relocation Alternative (TRA) is incorporated into the Phased Build Alternative: For the 29 pairs of towers included in the TRA, the existing double circuit structures (which would be retained in the Phased Build Alternative) are located near the center of the ROW, so the new adjacent structures would be approximately 50 feet from the existing structures. In all cases, the new towers would be farther from the edge of the ROW than the now existing towers.
- Re-use the existing double-circuit 220 kV towers and reconductor those two circuits using new 795 Drake ACCR conductor.
- Remove the two single-circuit 220 kV structures and replace them with a single set of new double-circuit towers having the same strength capabilities and spacing as the Proposed Project double-circuit towers, and install new 795 Drake ACCR conductor for both circuits. The single set of new double-circuit towers would be north of the existing double-circuit towers in Segment 3 and in Segment 4 near El Casco Substation. In the remainder of Segment 4 and in Segment 6, the single set of new double-circuit towers would be south of the existing double-circuit towers.
- Reconfigure Banning Junction to eliminate individual 220 kV circuit crossings. To avoid circuit crossings at Banning Junction, the Devers–San Bernardino and Devers–El Casco circuits would be on the northern side of the ROW for all of Segments 4, 5, and 6, and both Devers–Vista circuits would be on the southern side of the ROW.

The new double-circuit towers that would be constructed would be located ~~at least~~ approximately 50 feet north of the existing double-circuit towers in Segment 3 and ~~at least~~ approximately 50 feet south of the existing double-circuit towers in Segments 4 and 6. The types of new double-circuit towers in Segments 3 through 6 would have the strength capabilities and spans of the Proposed Project double-circuit towers and would be capable of future upgrade to the Proposed Project conductors. The strength of the newly built towers would mean that the new double-circuit structures could be reconductored in the future with the SCE-proposed 2B-1590 kcmil conductor, although a double-bundled conductor is not part of the alternative considered here.

SCE reviewed the description of the Phased Build Alternative in comparison with the Proposed Project and found that the construction plan for the Phased Build Alternative would require either (a) several more multiple line outages, due to the removal of existing conductors from the retained double-circuit towers before new conductors could be installed, or (b) greater use of numerous temporary structures (shoo-flies) to carry existing energized conductors while new conductors are installed on the existing double-circuit towers (Response to Data Request ALT-29: SCE, 2014/2015). SCE evaluated alternative scenarios for construction of this alternative, and concluded that using shoo-flies to carry energized conductors (the second option) would be preferred in order to mitigate the need for multiple line outages. Because of the need to schedule and plan for outages, overall construction of this alternative would take about the same amount of time as the Proposed Project.

The Proposed Project would give the WOD corridor a large planning margin of capacity to handle power flow during all conditions and for future growth. Independent power flow modeling was conducted to assess the loading in each of the corridor's circuits, during normal operations and during times when one or more circuits are out of service. Attachment 1 to Appendix 5 presents data and discussion that compare the ability of the Proposed Project with the Phased Build Alternative to handle anticipated power flow loads.

Construction Disturbance. The Phased Build Alternative would result in ~~substantially~~ at least 20% less overall construction activity taking place in the ROW than the Proposed Project. A reduction in the level of construction activity results in direct reductions in vehicle emissions, dust, noise, loss of habitat, erosion, and visual disruption. The specific construction differences are:

- Proposed Project would require ~~460~~ 467 new standard structures (both lattice steel towers and tubular steel poles) to be constructed and ~~556~~ 600 structures to be removed;
- Phased Build Alternative would require ~~216~~ between 260 and 265 new standard structures to be constructed and approximately 360 [previously 364] to 365 structures to be removed. The Phased Build Alternative avoids the Proposed Project's need to remove approximately 160 existing double-circuit structures.
- Using very conservative (worst-case) estimates, the Phased Build Alternative would require installation of approximately 105 to 110 interset structures to be constructed. Use of interset towers eliminates the need to replace or strengthen most the approximately 30% of retained towers (as was defined in the Final EIR).
- No interset structures would be required for the Proposed Project.
- Proposed Project would require 51 temporary shoo-fly structures to be constructed and then removed in the 220 kV segment; and the Phased Build Alternative would require 136 temporary shoo-fly structures to be constructed and then removed in the 220 kV segment.

Overall, the reduced construction required for the Phased Build Alternative would result in 20% to 25% less new structure construction than the Proposed Project and it would avoid the need to demolish nearly 160 structures. Both permanent and temporary ground disturbance would also be reduced by 20% to 25%. In addition, the new double-circuit structures would be moved further from the edge of the ROW than the Proposed Project.

Consideration of CEQA Criteria

Project Objectives, Purpose and Need

Basic Project Objective 1, Increase system deliverability: The Phased Build Alternative would allow SCE to fully deliver about 3,000 MW of the output from new generation projects, so it fully achieves Basic Project Objective 1 by providing an increase in deliverability that is 1,400 MW over the present capability of 1,600 MW and at least 2,200 MW over the capability of the WOD 220 kV corridor before the Proposed Project was planned, which was limited to approximately 550 MW. Based on power flow modeling completed for this alternative (see results in Table A3 in Attachment 2 to this appendix), this alternative satisfies the CAISO's 2024 Reliability Base Case, which includes specific generation projects that the CAISO has determined to be most likely to be constructed plus a scenario of 1,400 MW from IID to the CAISO.

Section A.2.1.4.1 of this EIR describes the generation projects whose capacity is expected to be carried by the Proposed Project, and explains how these projects are categorized for the EIR. Table Ap.5-3 shows the projects accommodated and likely to be made deliverable by the Phased Build Alternative.

Basic Project Objective 2, Support renewable energy goals: This alternative would facilitate progress toward achieving California's RPS goals by adding more than 800 MW of transfer capacity for renewable energy projects located east of Devers Substation while accommodating at least 1,000 MW of future growth.[2] This would support increased import of renewable generation into the Los Angeles basin.

Table Ap.5-3. Projects Accommodated by the Phased Build Alternative

Projects Considered to be Connected Actions	Projects Considered to be Cumulative	Projects Considered to Fill Remaining Growth-Inducing Capacity
Analyzed in Section D, Environmental Analysis	**Analyzed in Section E, Cumulative Scenario and Impacts**	**Analyzed in Section F Other CEQA Requirements**
• Palen Solar Power Project (500 MW solar thermal, CAISO Queue 365) • EDF Desert Harvest (150 MW solar PV, CAISO Queue 643AE) • 50 MW Solar PV Project connecting to Blythe–Eagle Mountain 161 kV line (CAISO Queue 421) • 250 MW Solar PV Project Connecting at Red Bluff Substation 230 kV (CAISO Queue 1070) • 224 MW Solar PV Project connecting at Colorado River Substation 230 kV (CAISO Queue 576) • 150 MW Solar PV Project connecting at Colorado River Substation 230 kV (CAISO Queue 970) • 150 MW Solar PV Project Connecting at Colorado River Substation 230 kV (CAISO Queue 1071)	• Blythe Energy Project, Phase II (570 MW gas-fired combined cycle plant) • NextEra Genesis Project and NextEra McCoy Project (250 MW solar trough; 250 MW solar PV) • NextEra Blythe Project (485 MW solar PV) • IID Path 42 Upgrades (230 kV transmission line) • CAISO Queue 798 (221 MW solar PV connecting at Colorado River Substation; energy only)	• None accommodated by Phased Build Alternative

[2] The EIR preparers asked CPUC RPS Staff to test the "RPS Calculator" to show how future renewable resource portfolios might change with a smaller upgrade to WOD than SCE has proposed. With RPS Calculator V.5: there would be no additional transmission capacity needed elsewhere in the state to make up for generation decreased in Riverside East; and renewable generation in Westlands or other zones (including San Diego South and Solano) would replace the generation decreased in Riverside East, using existing transmission capacity available in the other zones. With RPS Calculator V.6.1: there would be no impact on the generation selected in Riverside East or elsewhere.

Table Ap.5-3. Projects Accommodated by the Phased Build Alternative

Projects Considered to be Connected Actions	Projects Considered to be Cumulative	Projects Considered to Fill Remaining Growth-Inducing Capacity
1,474 MW generation from Connected Actions accommodated by Phased Build Alternative (Same as the Proposed Project)	**1,776 MW generation from Cumulative Projects accommodated by Phased Build Alternative, plus additional power flow across Path 42 Upgrades** (Note: this does not include the Delaney–Colorado River 500 kV Transmission Line that could be accommodated by the Proposed Project.)	**0 MW generation to fill Growth-Inducing Capacity accommodated by Phased Build Alternative** (1,571 MW less than the Proposed Project)

Basic Project Objective 3, Maximize remaining space in the corridor: The Phased Build Alternative would meet this objective by removing the existing single-circuit towers to create space for future transmission lines, including a 500 kV line within the ROW, although less space would be available than with the Proposed Project. In this alternative, some new double-circuit towers in Segments 4 and 6 (as defined in the Tower Relocation Alternative) would be placed further from the south edge of the ROW, resulting in the structures being 50 feet farther from residences in Segments 4 and 6 than under the Proposed Project. There would remain adequate space within the ROW (up to 175 feet) for transmission expansion, if needed by SCE in the future, as shown in Table Ap.5-2. As with the Proposed Project, any future 500 kV line within the ROW would need to cross the 220 kV circuits at or near the El Casco Substation. See EIR Section E.2.3.2 for additional information on this Cumulative Transmission Scenario.

Feasibility

Legal and Regulatory Feasibility. While the Morongo Band has a conditional contractual right to terminate its ROW Agreement with SCE, the Phased Build Alternative appears to be preliminarily feasible considering legal and regulatory factors, because it is currently uncertain whether the Morongo Band may or will exercise that right, and particularly because on Morongo lands the alternative is entirely consistent with the Project (as defined in Exhibit A to the DCA). Although the alternative is designed to meet the same project objectives as the Project described in the ROW Agreement and DCA and the tower structures would be exactly the same as SCE's Proposed Project on Reservation lands, comments from the Morongo Band assert that this alternative may be legally infeasible given the right of the Morongo Band to terminate the ROW Agreement if the SCE does not secure approvals by January 1, 2017 for the project described in the DCA (which arguably differs from the Phased Build Alternative in the tower locations off the Morongo Band lands, but is wholly consistent on Morongo Band lands). That termination right, however, has not been exercised and thus no such legal infeasibility currently exists. If that right is properly and timely exercised by the Morongo Band in the future, no transmission upgrades could be constructed across the Reservation absent the subsequent execution of a replacement ROW Agreement.

Technical Feasibility. The technical feasibility of the alternative has been evaluated based on SCE's responses to CPUC data requests, augmented by independent reviews in two technical areas: the ability of the existing structures to be reused and reconductored, and the ability of the new alternative conductor to handle anticipated power flow loads. Based on these efforts, this alternative appears to be feasible based on the following considerations.

Using the lighter-weight Drake 795 conductors on the existing double-circuit towers would increase the capacity of the circuits and postpone the impacts of rebuilding or replacing ~~the~~ towers that cannot support the larger conductors that areas proposed. These conductors are 70 percent as heavy as the existing 1033.5 kcmil ACSR used in the corridor.[3] Based on information provided by SCE subsequent to issue of the Final EIR, the use of 795 Drake ACCR conductor and soldiering of new towers adjacent to the existing line, as called for in the Phased Build Alternative, will necessitate the addition of some interset towers to eliminate conductor blowout. The use of these interset towers will eliminate the need for replacement or modification of most of the 30 percent of existing double-circuit structures that SCE had previously identified in Data Requests[4].

- **Use of ACCR.** While ACCR is not one of SCE's typical conductor types, high capacity conductors are commonly used by major utilities. High Temperature Low Sag (HTLS) options exist to the proposed 1590 ACSR conductors; these HTLS conductors are commercially available and need to be explored further for feasibility. HTLS conductors are a proven and accepted technology in the electric utility industry for upgrading capacity in existing corridors and on existing structures as well as for new line construction. HTLS conductors can normally operate at much higher temperatures. Therefore, it is possible to greatly increase power transfer capacity, compared to an equivalent ACSR type of conductor, while maintaining required clearances, because of the low sag nature of HTLS conductors. ACCR conductor was first commercially installed in the United States in 2001 by Xcel Energy and at a 2005 test site operated by San Diego Gas & Electric (SDG&E) in Oceanside (CEC, 2008). since that time it has been used domestically by multiple utilities, such as Pacific Gas and Electric (PG&E) near Santa Clara, Western Area Power Administration, Arizona Public Service, Silicon Valley Power, Alabama Power and Platte River Authority at voltages up to 230 kV and for critical generation tie lines. This type conductor and the comparable aluminum conductor composite core (ACCC) conductor are also used internationally by utilities like British Columbia Transmission Corporation and Shanghai Power. Another common HTLS conductor used by PG&E is the aluminum conductor steel supported (ACSS) type, which is used in new circuits serving the San Francisco peninsula and East Bay area including the Eastshore, San Mateo, and Dumbarton Substations.
- **ACCR is not one of SCE's typical conductor types.** As a result, SCE would have to develop a new spare-parts inventory system and implement worker training for operation and maintenance of this conductor type.
- **Line losses:** ACCR material has higher electrical losses. These losses would result in economic consequences, but these would have to be compared to the reduced construction cost achieved from the reuse of the existing 220 kV towers. The actual level of electrical losses, which depends on line loading, and potential sources of energy that would need to change dispatch to overcome the losses have not been quantified. Incremental GHG emissions would be minimized because upstream electric generation facilities are primarily renewable.
- **Vacant space within ROW:** This alternative would result in adequate space in the ROW for future expansion by removing the existing single-circuit towers, although the amount of space remaining would be limited by the locations of the existing double-circuit towers that would be reused and reconductored. Based on the locations of the existing double-circuit towers, there would remain adequate space within the ROW (up to 175 feet) for transmission expansion, if needed by SCE in the future.

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3 ACSR and ACCR weights and capacities are derived from vendor technical properties fact sheets. Rated ampacity at 75° C for ACSR and 210° C for ACCR. (3M, 2015) http://solutions.3m.com/wps/portal/3M/en_US/EMD_ACCR/ACCR_Home/TechnicalInfo/ProductDataSpecs/

4 SCE Response to Data Request ALT-18a indicated that up to 30 percent of the existing double-circuit structures would need to be replaced or modified to provide increased strength and/or heights increased in order to support the 795 Drake ACCR conductor in this alternative, but this need no longer exists due to the shortening of spans that occurs with the addition of interset towers.

Construction Timeframe. Because this alternative would avoid near-term construction related to removing and re-building all towers, there would be less overall construction activity with the Phased Build Alternative than with the Proposed Project. However, the alternative would result in a need to install a greater number of temporary structures (shoo-flies) to minimize line outages, and this would require scheduling and sequencing that could slow the pace of construction activities. While the reuse and reconductoring of the existing double-circuit towers would result in less construction activity overall, SCE's review of the alternative (Response to Data Request ALT-29) shows that the duration of construction could be similar to that of the Proposed Project. The construction plan defined by SCE may be able to be condensed through final engineering, but the environmental analysis assumes similar overall timeframes for the Proposed Project and the Phased Build Alternative.

Reliability. Like the Proposed Project, the Phased Build Alternative would comply with all reliability requirements of NERC, FERC, and the CPUC.

Environmental Advantages

The Phased Build Alternative would avoid many environmental impacts of the Proposed Project by retaining and reconductoring the existing double-circuit towers with high-performance conductor. In addition, by moving towers in residential areas farther from the south edge of the ROW, visual impacts are reduced. These advantages are summarized as follows:

- **Construction Activity and Ground Disturbance.** This alternative would reduce construction impacts (noise, air emissions, ground disturbance, traffic) because the existing double-circuit towers would remain in place, rather than being removed and replaced. This alternative would avoid the Proposed Project impacts related to removing all towers by reusing existing double-circuit structures for as long as possible. The existing reconductored towers would be replaced only after this alternative reaches the electrical capacity of its configuration. Even with additional required interset towers, the Phased Build Alternative would require 20% to 25% less new structure construction (and associated ground disturbance) in comparison with the Proposed Project.
- **Visual Resources.** This alternative would reduce significant visual impacts to residences on south side of corridor (Beaumont, Calimesa, Banning, Whitewater) because the existing towers that would be retained are closer to center of ROW than the Proposed Project towers. This alternative would achieve the same visual benefit of the Proposed Project from removing the single-circuit towers, resulting in a less cluttered ROW with similar tower styles. While approximately 105 to 110 interset towers may be required, the location of all structures nearer to the center of the ROW still provides an overall visual benefit. In addition, the number of interset structures would likely be reduced through final design of this alternative, if it is selected by the CPUC and BLM. In final design, SCE would design the alternative without relying on the Proposed Project tower locations, which it currently uses to illustrate likely locations for interset towers. With a new design unconstrained by Proposed Project structure locations, SCE could retain most existing double-circuit structures and develop a new layout for the soldiered (paired) new structures that incorporates appropriate engineering that would almost certainly reduce the need for interset structures below the current estimate.

Environmental Disadvantages

There are two potential disadvantages of the Phased Build Alternative:

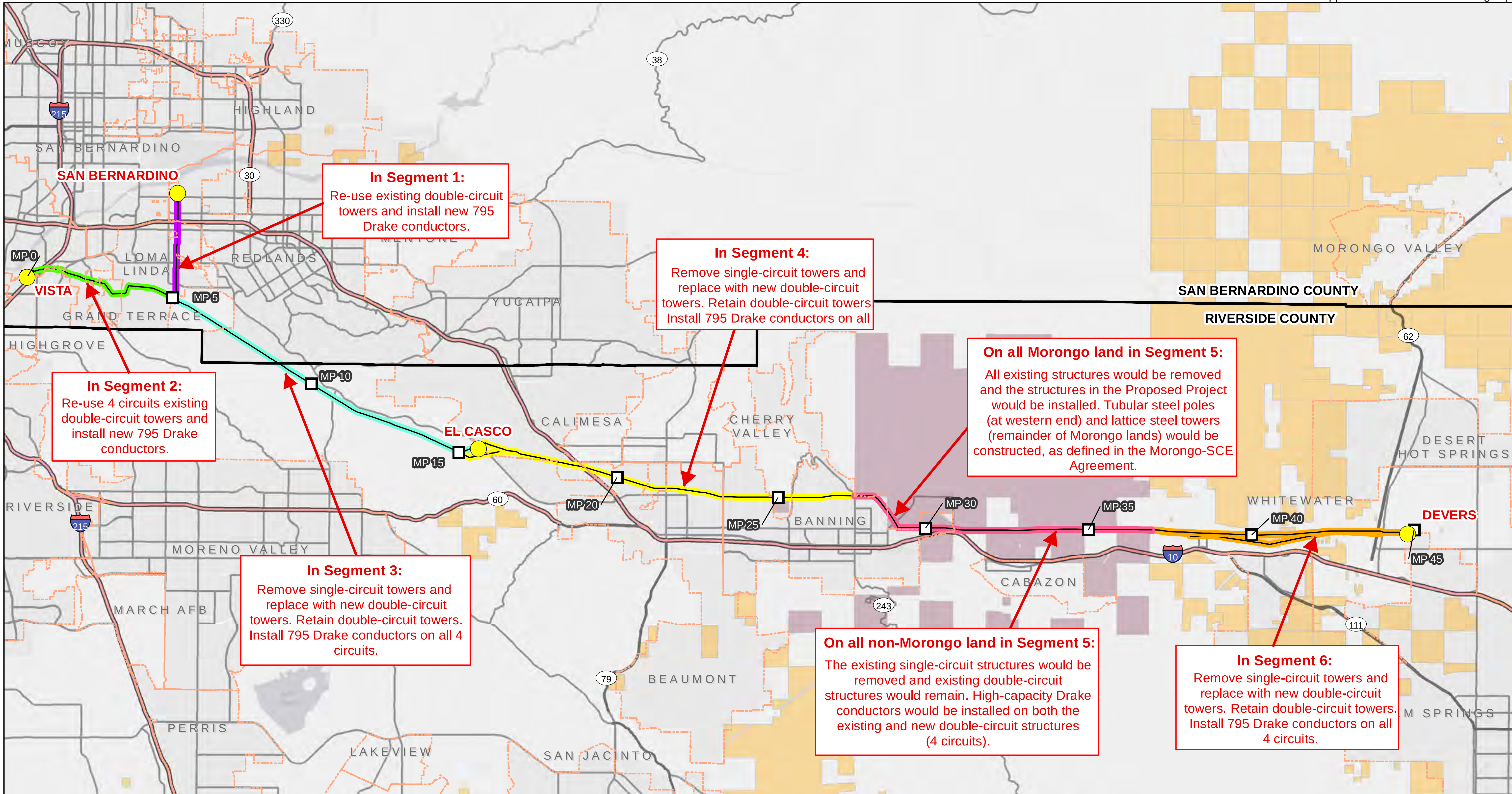
- **Later Construction of Phased Build Components.** One beneficial feature of this alternative is that it would reduce the amount of near-term construction activities required to removing the double-circuit towers (as required for the Proposed Project). The Phased Build Alternative may provide adequate capacity for 10 years or more (based on the CAISO's Reliability Scenario). However, depending on other transmission system upgrades, it is possible that over the longer-term, the implementation of this alternative could require future construction activities to increase system capacity.

- **Operations and Maintenance.** Using ACCR or other high-performance conductors would introduce new conductor materials that are not standard to SCE's routine operations. These conductors and spare parts, including specialized splices or connectors would require storage, and operating the system would involve additional training for SCE personnel.

Alternative Conclusion

***Retained for Analysis*.** The Phased Build Alternative is retained for EIR analysis because it would reduce the environmental impacts of the Proposed Project. It would achieve all three Basic Project Objectives. In addition, this alternative is technically feasible. The alternative conductor type has been proven and is in use by other utilities.

See attached updated Figures Ap.5-5a and Ap.5-5b.



Sources: SCE 2014

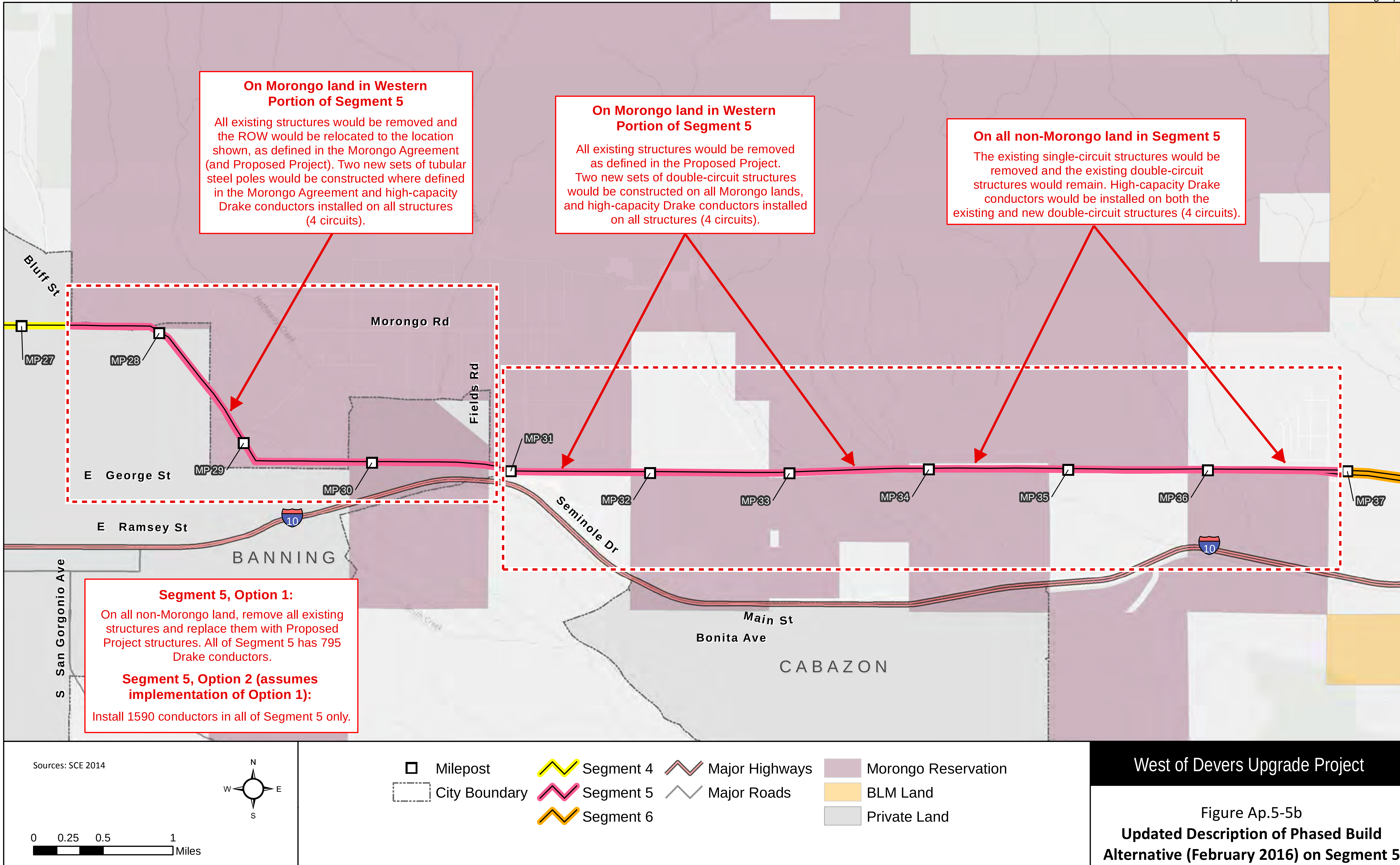
N W E S

0 1.25 2.5 5 Miles

- Substation
- Milepost
- City Boundary
- Segment 1
- Segment 2
- Segment 3
- Segment 4
- Segment 5
- Segment 6
- Major Highways
- Highways
- Major Roads
- County Boundary
- BLM Land
- Forest Service Land
- Morongo Reservation

West of Devers Upgrade Project

Figure Ap.5-5a
Updated Description of Phased Build Alternative (February 2016)


On Morongo land in Western Portion of Segment 5
All existing structures would be removed and the ROW would be relocated to the location shown, as defined in the Morongo Agreement (and Proposed Project). Two new sets of tubular steel poles would be constructed where defined in the Morongo Agreement and high-capacity Drake conductors installed on all structures (4 circuits).
On Morongo land in Western Portion of Segment 5
All existing structures would be removed as defined in the Proposed Project. Two new sets of double-circuit structures would be constructed on all Morongo lands, and high-capacity Drake conductors installed on all structures (4 circuits).
On all non-Morongo land in Segment 5
The existing single-circuit structures would be removed and the existing double-circuit structures would remain. High-capacity Drake conductors would be installed on both the existing and new double-circuit structures (4 circuits).
Segment 5, Option 1:
On all non-Morongo land, remove all existing structures and replace them with Proposed Project structures. All of Segment 5 has 795 Drake conductors.
Segment 5, Option 2 (assumes implementation of Option 1):
Install 1590 conductors in all of Segment 5 only.
Bluff St
Morongo Rd
Fields Rd
E George St
E Ramsey St
S San Gorgonio Ave
BANNING
Seminole Dr
Main St
Bonita Ave
CABAZON
10
MP 27
MP 28
MP 29
MP 30
MP 31
MP 32
MP 33
MP 34
MP 35
MP 36
MP 37
Sources: SCE 2014
N
W
E
S
0
0.25
0.5
1
Miles
Milepost
City Boundary
Segment 4
Segment 5
Segment 6
Major Highways
Major Roads
Morongo Reservation
BLM Land
Private Land
West of Devers Upgrade Project
Figure Ap.5-5b
Updated Description of Phased Build Alternative (February 2016) on Segment 5