Circle City Substation and Mira Loma-Jefferson 66 kV Subtransmission Project

Project Update, Load Forecast Revisions and Implications

CPUC Energy Division
May 3, 2019

Summary

Due to revised 2019-2028 forecast, the need for Circle City Substation scope of the Circle City Substation and Mira Loma – Jefferson 66 kV Subtransmission Project has been deferred to outside the 10-year forecast window, to approximately 2032.

The Mira Loma – Jefferson 66 kV Subtransmission Project need continues to be present in an N-1 situation.

Objectives

- Discuss the primary factors that resulted in need date change of substation scope
- Discuss the ongoing need for the Mira Loma – Jefferson 66 kV Subtransmission Project
- Present SCE's intended next steps to advise ALJ Kim and other Parties of removal of substation from the proceeding
- Open floor for questions

Primary Factors in Need Date Change of Substation

- Lower 2018 actual peak demand observed
  - The recorded weather-normalized peak demand amount for 2018 (399 MVA) was lower than projected (411 MVA) and lower than the recorded amount in 2017 (404 MVA)
  - SCE uses the recorded weather-normalized peak demand amount from the previous year as the starting point in its next ten year forecast. Given the lower recorded amount for 2018, SCE's starting point for the 2019-2028 forecast was lower than the previous year (deferred need date by approximately 4 years)
- Implemented SCE's revised methodology to calculate PV dependability (deferred need date by approximately 2 years)
  - Increased amount of PV that is considered dependable for planning activities
- IEPR forecasts assumptions (base growth, PV, EE, etc.) (deferred need date by approximately 3 years)
  - 2018-2027 forecast used 2016 IEPR Update
  - 2019-2028 forecast used 2017 IEPR and SCE's employed revised disaggregation methodology
  - 2017 IEPR included:
    - Lower base load growth
    - Increased PV growth
    - Increased EE growth

Mira Loma-Jefferson 66 kV Subtransmission Line Need Remains Unchanged

- Needed since 2017 under N-1 conditions and need is still present with the revised 2019-2028 forecast
- Revised forecast had less impact on subtransmission network line loading values (loads are shared between multiple lines and thus forecast reductions only moderately impact power flow analysis)
- Currently a temporary system Operating Procedure is in place as mitigation to prevent overloads expected under N-1 conditions. The Operating Procedure opens the Corona Substation circuit breaker on the existing Mira Loma-Corona-Jefferson line which would result in a redirection of power addressing the N-1 overload in the short-term. This procedure reduces the number of 66 kV sources lines to Corona Substation subjecting it to reliability concerns; however, the temporary mitigation is only expected to be needed for short durations until the permanent solution is completed

Next Steps (for discussion)

- Via letter, SCE will openly advise ALJ Kim, Energy Division and all Parties to proceeding that the substation will no longer be pursued in this proceeding
- SCE will continue activities in support of obtaining PTC approval for the Mira Loma– Jefferson 66 kV Subtransmission Project.
- SCE will continue to monitor the load in the Electrical Needs Area
- If future load exceeds projection in the ENA, SCE will evaluate potential solutions, which may include the DDOR process.

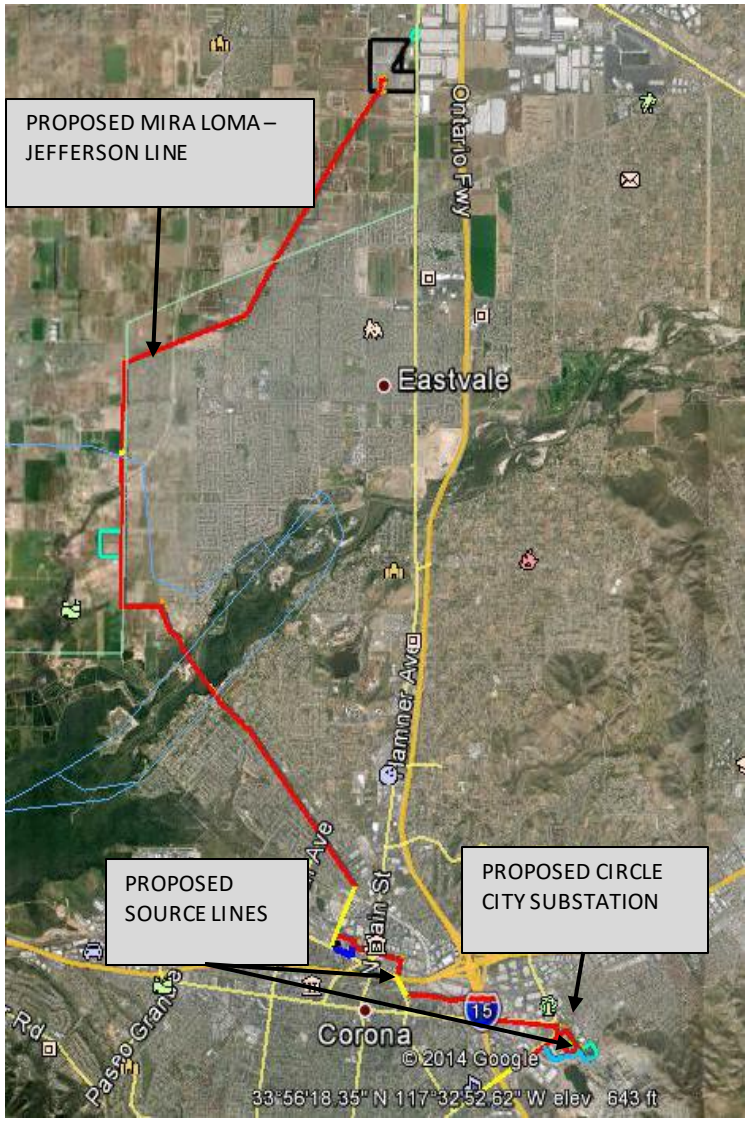
Supporting Slides

Project Overview and Map

Description & Scope:

- <u>Circle City Substation (SCE proposed project):</u>
  - Construction of a new 66/12 kV distribution substation in the City of Corona
  - Construction of a new 3.5-mile double-circuit line from Corona Substation and a 1.2-mile double-circuit tap line into the new Circle City Substation

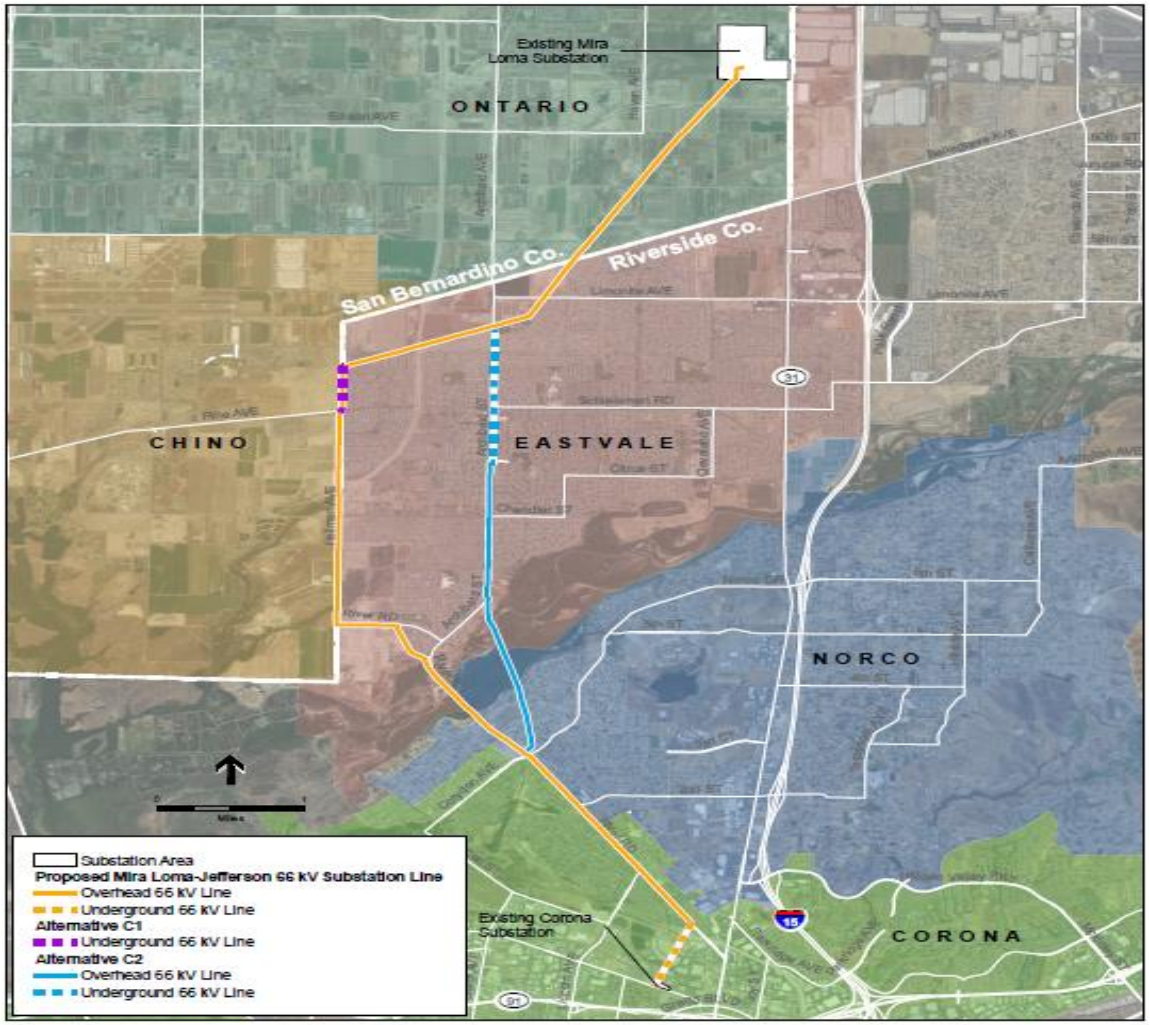
- <u>Mira Loma-Jefferson 66 kV Subtransmission Line:</u>
  - Construction of a new single-circuit subtransmission line, 10.9 miles in length, from Mira Loma Substation to just outside of Corona Substation.
  - Relocation of approximately 1.9 miles of an existing overhead 33 kV distribution line to an underground position.



Pre-read

Proposed Mira Loma-Jefferson 66 kV Line

Fig. 3-2a from CPUC's FEIR, CPUC proposed Alternative C1 as the environmentally superior alternative for the Substransmission Line Need



SOURCE: SCE, 2015

Circle City Substation and Mira Loma-Jefferson 66 kV Line Project . 207584.14

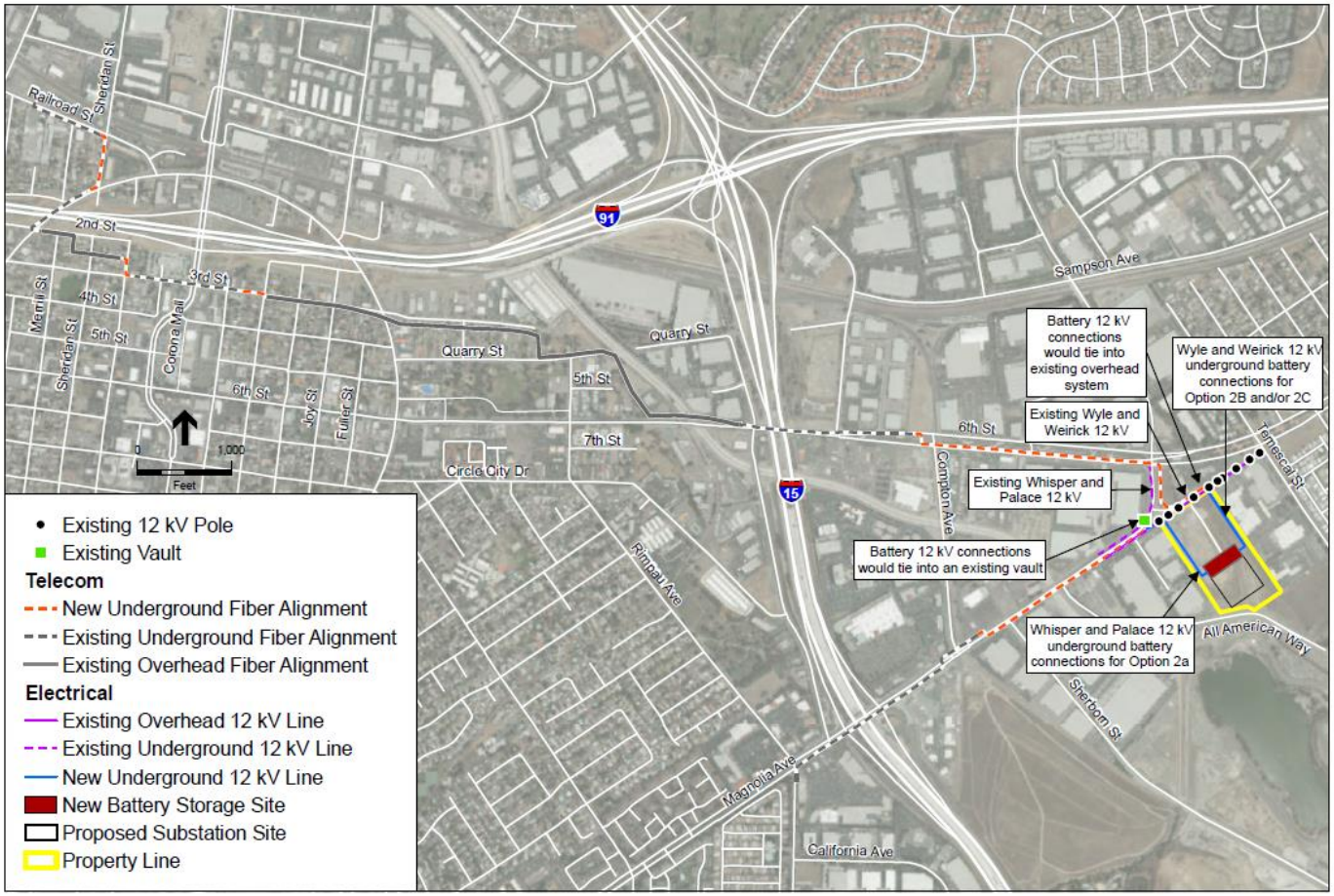
Figure 3-2a

66 kV Subtransmission Line Alternatives C1 and C2

Pre-read

CPUC Proposed Alternative D1 (Substation Need) – Battery Storage

- Fig. 3-3 from CPUC's FEIR
- CPUC proposed Alternative D1 as the environmentally superior alternative for the Substation need
- Substation need deferred outside of SCE's ten year window



SOURCE: SCE, 2017c

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Figure 3-3

Alternative D1: 12 kV Distribution-Level Battery Storage Conceptual Layout

Pre-read

Summary of Change in Scope

- Mira Loma-Jefferson 66 kV Sub-Transmission Line (FEIR Alternative C1), 10.9 miles (*Need/Scope Unchanged*):
  - Construction of a new single-circuit subtransmission line, 10.9 miles in length, from Mira Loma Substation to the Corona Substation.
    - Distribution: 12 kV relocation & 33 kV UG
    - Protective relay circuits are required to the Mira Loma-Jefferson line.
    - Trans Telecom: Relocate existing Fiber Optic lines
  - IT: Upgrades at existing Mira Loma, Jefferson & Corona substations

- SCE Proposed Circle City Substation and FEIR Alternative D1 (Battery Installation) (*Project need cannot be justified by current updated forecast.*) Note the following scope changes:
  - Substation: Eliminate Circle City substation and Battery Facility.
  - Subtransmission: Eliminate substation source lines.
  - Distribution: Eliminate 4 distribution circuits.
  - IT: Eliminate upgrade at Circle City, Pedley, & Chase Substations.
  - Trans Telecom: Eliminate scope

Pre-read

Circle City Substation Needs
2018-2027 Forecast vs 2019-2028 Forecast

2018-2027 Forecast										
Load Data for the Electrical Needs Area	Forecast Data									
	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Maximum Operating Limit (MVA)	435	435	435	435	435	435	435	435	435	435
Peak Demand: Normal Weather (MVA)	382	383	392	395	401	405	409	411	414	416
Peak Demand: Extreme Heat (MVA)	411	414	423	427	432	437	441	445	448	451
Reserve	24	21	12	8	3	-2	-6	-10	-13	-16
Percent Utilization	94.5%	95.2%	97.2%	98.2%	99.3%	100.5%	101.4%	102.3%	103.0%	103.7%

Growth rate
1.01% annually

2019-2028 FORECAST											
Load Data for the Electrical Needs Area	Recorded	Forecast Data									
	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Maximum Operating Limit (MVA)	435	435	435	435	435	435	435	435	435	435	435
Peak Demand: Normal Weather (MVA)	371	368	372	372	376	387	386	386	387	387	388
Peak Demand: Extreme Heat (MVA)	399	398	401	402	405	418	416	417	419	420	421
Reserve	36	37	34	33	30	17	19	18	16	15	14
Percent Utilization	91.7%	91.4%	92.3%	92.4%	93.0%	96.1%	95.7%	96.0%	96.2%	96.5%	96.7%

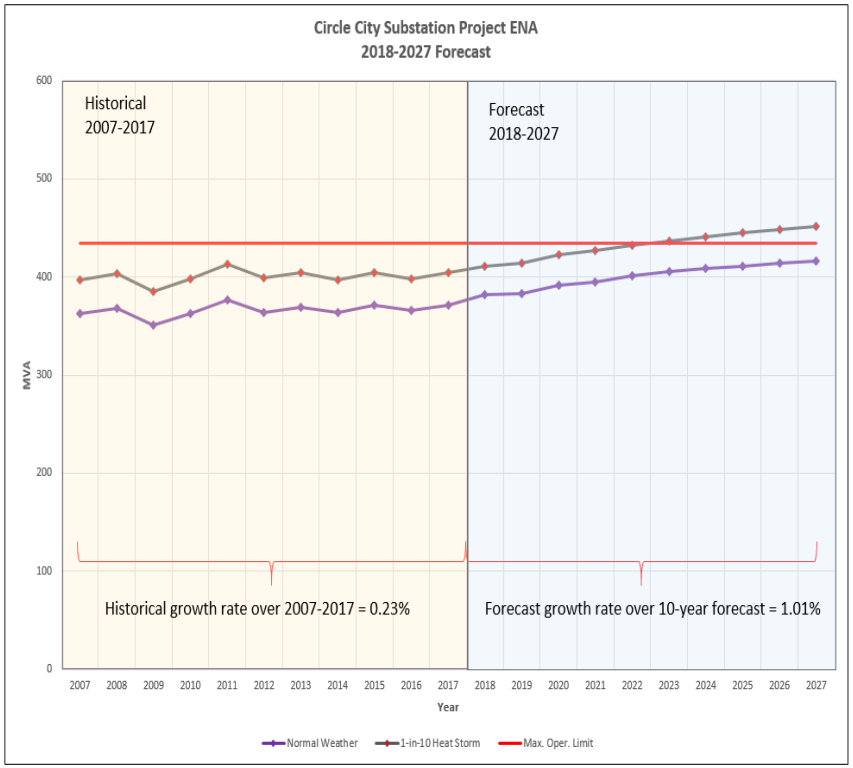
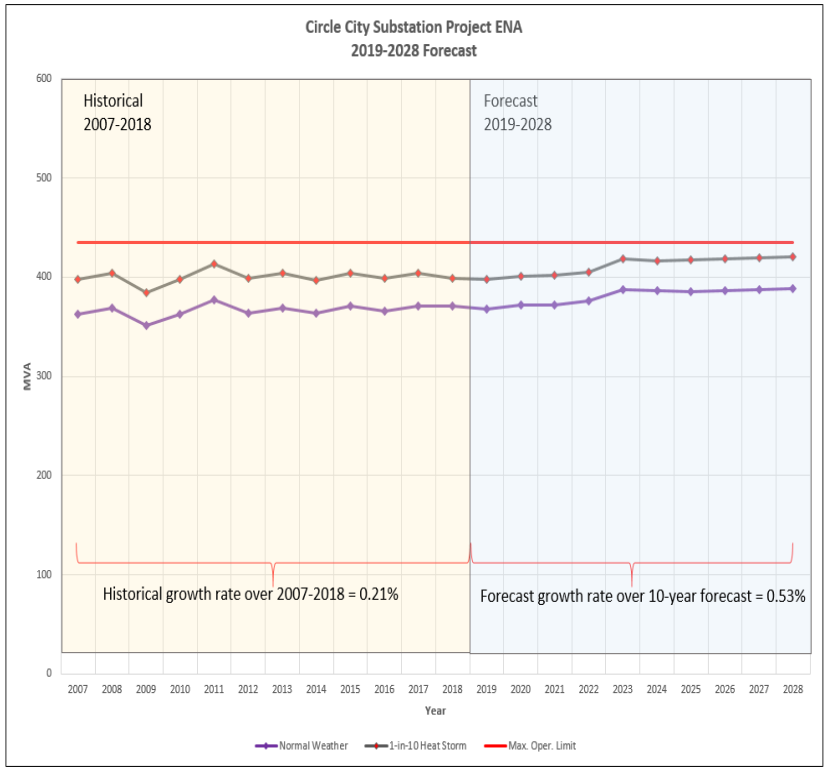
Growth rate
0.53% annually

Extrapolating the growth beyond 2028 using the same rate, results in a Need Date of roughly 2032

Pre-read

2018-2027 Forecast vs 2019-2028 Forecast

2018-2027 Forecast



2019-2028 Forecast