



ATTACHMENT 1 – Summary Provided to Ms. Hammond on May 5, 2016

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SOCRE IS UNNECESSARY, COSTLY AND DEFICIENT

SOCRE is not needed to accommodate peak South Orange County ("SOC") load. SOC peak load has dropped significantly since 2007 (it currently hovers at 415 MW), and SDGE's high load forecast ignores distributed solar generation. SOCRE is not urgently needed [OB Section 2.2].

SOCRE is not needed to comply with NERC or CAISO Standards. SDGE admits that most of the contingency scenarios SDGE claims will violate NERC Standards are Category C events which can be mitigated by load shedding [T173 at 15, T1288 at 1, etc.]. CAISO also admits that the NERC violations which SOCRE is intended to address can be mitigated by "NERC permissible load shedding" [T 372 at 19]. **SDGE's own power flow studies demonstrate** that the reconductoring alternative will fully address the few scenarios which could result in NERC violations under extreme (>475 MW) loads and it eliminates any need to mitigate via load shedding because it increases system capacity by more than 30%. Neither NERC nor CAISO standards require a second power source to serve SOC. [OB Sections 2.4.3.1, 2.4.3.2, and 2.1.3].

SOCRE is not needed to upgrade/replace San Juan Capistrano Substation ("SJC"). SJC was placed on SDGE's Priority List for replacement in 1997, so the need to replace SJC was established long before SOCRE [SDGE Ex. 1.3R pg. 12 at 13] was contemplated. In fact, none of SDGE's reliability scenarios of concern are caused by (or even involve) SJC equipment. [RB pg. 14 & 35].

SOCRE is not needed to protect SOC load during substation maintenance activities. Risks to the SOC load during Talega maintenance (claimed in Tables 4-2 & 4-3 of SDGE Ex1.3R) can be mitigated by reconfiguring Talega [OB page 40 & section 2.3.3.2 on pg. 34]. Risks to the SOC load during maintenance at other SOC substations (claimed in Tables 4-4, 4-5 & 4-6 of SDGE Ex1.3R) can be mitigated by simply reconfiguring the Pico bus [OB pgs. 39-40 and FN 110, 111, 112].

SOCRE Does NOT Provide SOC with a Redundant Source of Power. SDGE's witness admits that SOCRE will drop one-third of SOC load if Capistrano is removed from service even if Talega remains operational; SOCRE is susceptible to the same load loss problems that it purports to address [RB pg. 8 item 3]. Also, the SOCRE 230 kV lines are undersized and cannot serve SDGE's projected peak load when the SONGS-Talega and Escondido-Talega lines are down. [RB pg. 9]

SOCRE will NOT serve SOC load if a fire or earthquake disrupts Talega service. The SOCRE Capistrano substation is served by the same 230 kV facilities that serve Talega; a catastrophic event that interrupts Talega service will also interrupt service to Capistrano and drop SOC load. [RB pg. 8 item 1 & pgs. 28-29]. SDGE's witnesses affirm that SOC's second power source should be located far from Talega [T58 at 20-59 at 6; T1063 at 26-1064 at 1]. SOCRE does not meet this.

SOCRE does NOT address SOC voltage problems. With SOCRE, SOC will have voltage problems if a contingency event curtails service at Talega [T1140 at 4]. It will even have voltage concerns when the Talega STATCOM is removed from service at the end of its useful life. [T1138 at 14].

SDGE intends to expand the SOCRE project to accommodate the Valley-Inland project. This will subject SOC to very complicated loop flow conditions which SDGE has not addressed [Ex 416].

THE \$383.6 MILLION SOCRE PROJECT IS NOT NECESSARY TO MEET ANY PROJECT OBJECTIVES AND IN FACT IT ACTUALLY FAILS TO MEET MOST OF THEM.

FRONTLINES ALTERNATIVES ARE MORE EFFECTIVE, COST LESS, AND HAVE FEWER IMPACTS:

FRONTLINES recommends the following modifications to achieve reliable service in SOC and comply with all NERC Standards beyond the 10 year planning horizon:

THE RECONDUCTORING ALTERNATIVE is comprised of the following elements:

Reconfigure Talega without expanding the substation: Rearranging the Talega bus so that transformers do not terminate in the same bays and replacing the 2 aged, low capacity transformers with one high capacity transformer will address SDGE's load loss concerns during Talega maintenance events. [Ex. 407C, OB pgs. 40-41 and Section 2.3.3.2 on pg. 34] at a cost of \$10 million [OB pg. 51].

Reconfigure Pico: Rearranging the Pico substation so that each bus is connected to one line running south to Talega and one line running north from Pico will address SDGE's load loss concerns during maintenance events at Pico, Santa Margarita and Rancho Mission Viejo. [Ex. 423, OB pgs. 39-40] at a cost of less than \$5 million [OB pg. 51].

Reconductor 13535, 13816, 13836 & 13846 w/ HST-ACSS & replace minor equipment at SIC. SDGE's witnesses confirmed that these modifications would increase transmission capacity by more than 30% and SDGE's own power flow studies demonstrate that these modifications will address all of SDGE's contingency scenarios and NERC compliance concerns identified on pages 44-65 of SDGE Exhibit 1.3R. [OB pgs. 41-42; OB Sections 2.4.3.2.1 on pg. 43; OB Section 2.4.3.2.2 on pg. 46]. This would cost less than \$62 million [OB pg 51].

THE TRABUCO ALTERNATIVE

Neither NERC nor CAISO Standards require that a load pocket like SOC be served with multiple power source connections to the CAISO grid. To the contrary, both NERC and CAISO recognize that such configurations can cause reliability problems because they establish transmission paths which parallel the CAISO grid and induce unwanted impacts such as "loop flow". In fact, prior Commission decisions have determined that subtransmission system reliability is *enhanced* by severing load from multiple CAISO connections and limiting load service to a single CAISO connections [D.10-06-014 and Approved Advice letter 2789-E (See RB FN 5 and FN 27)].

Nonetheless, a second CAISO connection at Trabuco via SCE's SONGS-Santiago line can improve SOC system reliability if properly designed with SPS to prevent "loop flow" [OB Section 2.3.3.1].

The lot abutting Trabuco has abundant room for a 230 kV substation & 3 transformers [OB pg. 23] and RWQCB devices can be designed to easily accommodate SDGE access needs. [OB pgs. 24-26]

SDGE has an above ground ROW between SCE's line and the Trabuco substation that is flat, has no structures and is located between a street and a railway line so it can accommodate the few 230 kV towers needed to connect the SCE lines to a new Trabuco 230 kV. [T724 at 13 to T732 at 2]

Loop flow is eliminated by disconnecting the Trabuco transformers via SPS [OB pg. 17-21] and impacts of this "Trabuco Alternative" on SCE's system are virtually identical to SOCRE [OB pg. 32].

The cost of this "Trabuco Alternative" is less than \$95 million [OB pg. 50].

FRONTLINES' ALTERNATIVES COST LESS THAN ONE FORTH OF THE \$383.6 MILLION SOCRE PROJECT AND ARE SUBSTANTIALLY SUPERIOR TO SOCRE.

ATTACHMENT 2 – FRONTLINES' Exhibit 423.

Frontlines20-SDGE 07/31/2015 Response
A.12-05-020 SDGE South Orange County Reliability Enhancement Project, SOCRE
Frontlines Data Request 20 Issued July 10, 2015
Questions 1-31

QUESTION 13:

Is it at all possible to reconfigure the Pico bus to connect one of the lines from Talega (either TL13836 or TL13846) to the west bus and connect either TL13833 or TL13816 to the east bus? If yes, what problems would be created by this configuration? If not, why not? In either case, please provide a detailed answer and include all facts and documents which support this answer

SDGE RESPONSE:

SDG&E objects to Frontlines use of the term "at all possible" as calling for speculation and disregarding prudence, feasibility, cost, safety and reliability. SDG&E will respond regarding what it deems prudent, safe, reliable, and reasonably feasible and cost-effective.

With respect to the question whether such a physical connection could be made, SDG&E estimates that underground trench, cables, and conduits would be required to cross the transmission lines in order to create this configuration, and the current foundation steel poles would need to be replaced with cable riser poles. Underground Transmission lines would increase costs. Additionally, higher ampacity cable would be required to meet the same line ratings as the existing line. Further engineering would be required to determine the full scope of this work. SDG&E has not studied "what problems would be created by this configuration," and therefore cannot respond regarding such problems at this time.

ATTACHMENT 3 – Table 6.1 From SDGE Exhibit 3.2RC- June 24, 2015 Rebuttal Testimony.

Table 6-1: Category C Overloads in 2020 with Reconstructed TL 13835

Monitored Element	Contingency	Requires N-1 Load Shed in Violation of NERC TPL-003-0b
13816	C3: 13831+13833	123% of Emergency Rating
13816	C3: 13831+13835	112% of Emergency Rating
13816	C3: 13833+13835	103% of Emergency Rating
13816	C3: 13833+13838	112% of Emergency Rating
13816	C3: 13835+13838	104% of Emergency Rating
13833	C3: CP BK40+13831	N/A
13833	C3: CP BK40+13838	N/A
13833	C3: 13816+13831	N/A
13833	C3: 13831+13834	N/A
13833	C3: 13834+13838	N/A
13836	C3: 13831+13846 D	115% of Emergency Rating
13836	C3: 13835+13846 E	102% of Emergency Rating
13836	C3: 13838+13846 F	106% of Emergency Rating
13846A	C3: 13831+13836 A	102% of Emergency Rating
13846A	C3: 13835+13836 B	N/A
13846A	C3: 13836+13838 C	N/A
13846A	C2:TA 8T A	102% of Emergency Rating
13846C	C3: 13831+13836 A	102% of Emergency Rating
13846C	C3: 13835+13836 B	N/A
13846C	C3: 13836+13838 C	N/A
13846C	C2:TA 8T A	102% of Emergency Rating

TL 13816

TL 13836 & TL 13846

< 30% p9 12 item 1

⇒ RECONSTRUCTING WILL ADDRESS

NO SHEDDING & NOT A NERC VIOLATION

< 30%

⇒ RECONSTRUCTING OR OPS p9 13 item 3 p9 2 item 2

WILL ADDRESS

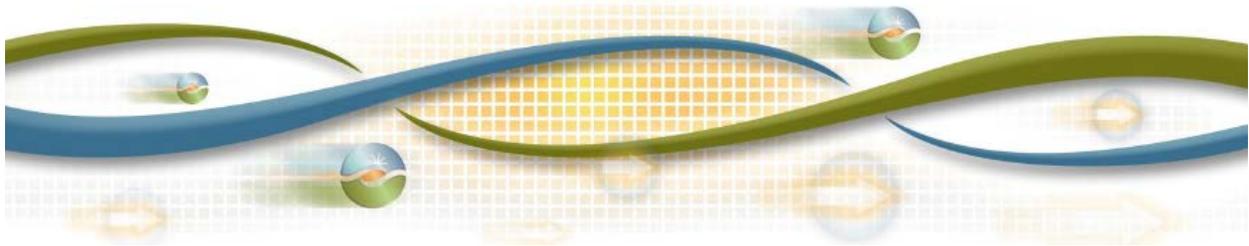
ATTACHMENT 4 – FRONTLINES Exhibit 415

PAGE 4 INDICATES THAT SOCRE CREATES POTENTIAL OVERLOADS ON TL13833.

Agenda – Day 1 Preliminary Reliability Assessment Results

Tom Cuccia
Senior Stakeholder Engagement and Policy Specialist

2013/2014 Transmission Planning Process Stakeholder Meeting
September 25-26, 2013



Metro Area – Results

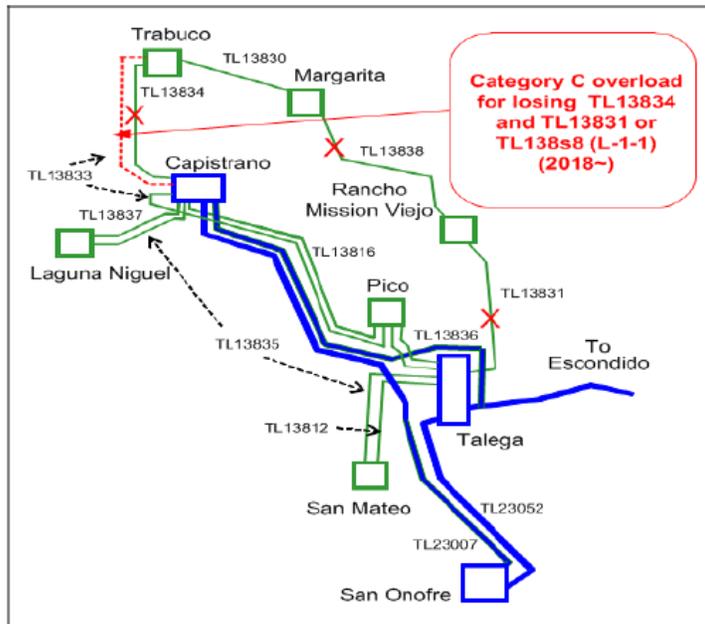
- Thermal overload
 - Ellis–Johanna 230 kV line (2015)
 - Ellis–Santiago 230 kV line (2015)
- Potential Mitigation
 - Increase the ratings of the lines to the full rating of the conductors or
 - Dispatch all available generation, add/dispatch preferred resources



Metro Area Potential Solutions

- **Potential Mitigation Solutions**
 - Dispatch all available generation in LA Basin/San Diego areas (SONGS study area) to full capacity, add and dispatch preferred resources
 - Increase ratings of Ellis–Santiago & Ellis–Johanna 230 kV lines
 - New 500 kV source(s) in the SONGS study area
 - Operating solutions
 - Selection of preferred mitigations will be closely coordinated with the CPUC LTTP process and the mitigations identified for the SDGE area
 - May not happen prior to March 2014 and could extend into the next planning cycle

Category C Thermal Violation – (4)



Orange Country 138 kV T/L

- Thermal overload
 - ❖ L-1-1 overload on TL13833 section Trabuco-Capistrano for losing TL13834 & TL13831 or TL13838 (2018~)
- Potential Mitigation
 - ❖ Re-conductor TL13833 section of 3.7 miles from Trabuco to Capistrano, or
 - ❖ SPS to shed loads

**Below page number references to printed slide number within 09/25 ISO presentation “San Diego Gas & Electric Area Preliminary Reliability Assessment Results” section.

1. CAISO presentation slide #6: the overloaded facility and associated contingency appears to be correct on the diagram but not accurate on the text description. SDG&E concurs with CAISO’s findings on the two overloaded facilities; with the identified need date for reconductoring Stuart Tap- Las Pulgas segment in 2015 and San Luis Rey-Oceanside Tap in 2016. Both segments are slated to be part of SDG&E’s “Wood-to-Steel” fire-hardening upgrade; SDG&E recommends CAISO approval of both as independent reliability projects which will ensure the project’s completion by the need date for the identified reliability compliance.
2. CAISO presentation slide #7: SDG&E concurs with CAISO’s findings and proposed mitigation on the overloaded facilities. The loop-in of the TL617 at Rose Canyon will eliminate a three-terminal line and provide additional reliability benefit and operation flexibility.
3. CAISO presentation slide #8: SDG&E currently has an SPS to trip Talega bank 50 for this overload. Reconductor can be an option to address this issue too.
4. CAISO presentation slide #10: SDG&E has also continues finding indications of loading excursions for TL6916 [Sycamore – Scripps]. SDG&E and CAISO operations have managed loading issues for TL6916 for several years. In years predating the peaker installations, the line from Scripps to Miramar would only occasionally be opened at Scripps pre-contingency to address potential for line loading violations. Presently, managing TL6916 loading has been accomplished principally from availability and reliance on the peakers located at Miramar, MEF #1 and/or #2. In addition, as part of the Sunrise project SDG&E successfully increased the rating of TL6916 to the present day limit of 164 MVA continuous and emergency limits. This line has now reached its maximum rating, barring a major upgrade that would require extensive rebuilding and possibly the acquisition of additional right of way, similar in scope to the proposed Sycamore-Miramar line (TL6942) that was rejected several years ago by the CPUC. In this TPP request window, SDG&E has proposed to add a third 230 kV circuit from Suncrest to Los Coches. Among all other benefits to the 230 kV systems, this line will better distribute power coming into the load basin at Sycamore 230 kV and offload the 69 KV network at or near Sycamore, thereby addressing the loading issue on TL6916.
5. CAISO presentation slide #11: SDG&E concurs with ISO that building a new Artesian 230/69 kV sub and loop-in TL23051 will not only address multiple system loading issues at Poway load pocket but also provide loading relief for the Sycamore Canyon 230/69 kV transformers. SDG&E does not support installation of an SPS to mitigate this particular contingency, and generally does not support SPS mitigation for non-credible N-2 or low-probability N-1-1 contingencies. SDG&E would support development of an operating procedure that would utilize short-term emergency ratings to allow manual load shedding

in the event of this contingency until the recommended mitigation (Artesian 230 kV) is in place.

6. CAISO presentation slide #12: SDG&E supports CAISO's proposal to add a class 70 (230/69 kV) transformer at Mission to fix loading issues on Bank 50 and 51 (138/69 kV). It will provide additional benefits of improving the voltage control at Mission, and eliminate the on-going circulating VARs caused by the two class-50 transformers that operate without TCUL tap changer capability. Again, SDG&E does not support installation of an SPS to mitigate this particular contingency, and generally does not support SPS mitigation for non-credible N-2 or low-probability N-1-1 contingencies. SDG&E would support development of an operating procedure that would utilize short-term emergency ratings to allow manual load shedding in the event of this contingency until the recommended mitigation (Mission 230/69 kV bank #2) is in place.
7. CAISO presentation slide #14: The voltage deviation identified is due to the simulated outage of TL6912 and radialized Pendleton 69 kV bus, therefore greater than 5% voltage drop post-contingency is acceptable. SDG&E recommends investigating the voltage deviations on a case-by-case basis and refrain from adopting higher Voltage Deviation criteria cross the board as a solution.
8. CAISO presentation slide #15: Note that the existing Encinitas capacitor banks (2 x 6 MVAR) may be undersized for the load served. Also the diagram shown does not include Del Mar reconfiguration, which is an approved CAISO project to loop in TL674 and RFS TL666D, with an ISD of 2015. SDG&E recommends review of the power flow case to ensure the correct system topology is in place.
9. CAISO presentation slide #17, Otay Mesa-TJI 230 kV overloads: CAISO suggests Post SONGS Transmission Plan will fix this issue. Depending on which "Post SONGS Transmission Plan" will be in place, it may help or may aggravate the TJI overloads. The problem is regional in nature and impacts other Balancing Authority Areas (BAA). As the balancing authority for SDG&E, the CAISO is ideally situated to coordinate study work with the two or three other affected BAA's (IID, CFE, and APS). In their presentation, CAISO suggests "Modify SPS to trip generation in IV prior to cross tripping TL23050 tie in the short term" but does not offer any analysis on how effective the generation tripping would be, or how much generation tripping would be required to mitigate the overloads, or for how long such a scheme would be effective. Given that this is a regional issue, and is significantly affected by generation dispatch and loading conditions in SCE, Arizona, IID, and CFE, SDG&E does not support limiting the mitigation of this regional issue only by tripping generation that is critical to serving San Diego load.

In this TPP request window, SDG&E proposed a Phase Shifting Transformer Flow Control device at IV. SDG&E believes there is sufficient justification in the current study work to approve this project as a short to medium term mitigation for system issues relating to the SONGS and other OTC retirements and the effective integration of Imperial Valley renewables. CAISO has inquired of SDG&E regarding the installation

ATTACHMENT 5 – Excerpt From Section 2.4.3.2.1 of FRONTLINES Opening Brief.

2.4.3.2.1 System Overloads are Avoided with the Reconductoring Alternative

SDGE conducted a power flow study of the transmission line and transformer upgrades recommended by FRONTLINES as part of the Reconductoring Alternative¹²⁷. According to this analysis, overloads would still occur on TL13833, TL13836, and TL1384 when the South Orange County load reaches 475 MW.¹²⁸ [Note: SDGE's power flow analysis erroneously omitted the TL13816 upgrade component of FRONTLINES Reconductoring Alternative¹²⁹, therefore Table 6-1 wrongly identifies overloads on TL13816 that should be disregarded]. However, these overload concerns assume an unreasonably high peak load level that is unlikely to occur even well beyond the 10 year planning horizon. In addition, the following factors regarding SDGE's claimed future overload concerns on TL13833, TL13836 and TL13846 should be considered:

TL13833

According to Table 6-1, the overloads identified for TL13833 do not exceed the emergency rating on the line, and pertain only to the normal rating which is limited by the underground section. The underground section has a 9-hour thermal rating¹³⁰, which means that the 475 MW peak load would have to persist continually for nearly 9 hours before any actual overload concerns would arise. This, coupled with the fact that the TL13833 overloads do not violate any NERC standards¹³¹ demonstrate that SDGE's TL13833 overload concerns are overstated. Additionally, it was revealed in the evidentiary hearings that, even if the SOCRE Project is constructed as proposed, TL13833 may require upgrades anyway¹³². For all of these reasons, the Commission should disregard SDGE's complaint that the Reconductoring Alternative poses potential overload problems on TL13833.

TL13836 and TL13846

The remaining overload scenarios of concern are indicated in the last 11 lines of Table 6-1 and address lines TL13836 (which extends from Talega to Pico) and TL13846A & B (which also extends from Talega to Pico, with a connection at the Talega tap). One solution is to implement SPS, because these scenarios would not exceed CAISO's guidelines on the number of contingencies and elements monitored [transcript page 1208 at 19 to page 1210

at 3]. When asked about this possibility, SDGE's Witness Smith expressed doubts because of the possibility of more overloads beyond those found with the 2020 load (of 475 MW), and indicated that he would have to confer with CAISO regarding such an approach [transcript page 1210 at 7-19].

An additional low cost alternative would also be to upgrade TL13836 and TL13846 (which are each less than one mile in length and all above ground¹³³). The viability of this solution was affirmed by SDGE witnesses. Specifically, Witness Thomas confirmed that a 30% increase in capacity could be achieved on TL13836 and TL13846 by replacing the existing ACSR conductor with ACSS conductor¹³⁴, and Witness Smith confirmed that a 30% increase on TL13836 and TL13846 would address all the overloads identified on these lines¹³⁵.

Alternatively, these overload concerns could also be handled via Special Protection Schemes that are coordinated with the CAISO¹³⁶.

¹²⁷ See Section 3 of Chapter 6 of SDGE Exhibit 3.2R

¹²⁸ The results are reported in Table 6-1 of SDGE Exhibit 3.2RC on page 62; the peak load assumption was confirmed during evidentiary hearings as being the 2020 load assumed by Mr. Jontry in Table 2-1 of SDGE Exhibit 2.2RC [transcript page 1206 at 28 to 1207 at 11]. As shown on Table 2-1 of SDGE Exhibit 2.2RC, the load forecast for 2020 is 475.4MW.

¹²⁹ SDGE's Witness Jontry affirmed that SDGE incorrectly assumed that FRONTLINES' reconductoring alternative did not include upgrades on TL13816 [transcript page 203 at 17 -24] even though FRONTINES testimony clearly asserts that upgrades on TL13816 are necessary to address six different operational contingencies identified by SDGE [FRONTLINES Exhibit 400.1c page 9 at 13-14]

¹³⁰ FRONTLINES Exhibit 422C -Scenario 17 clarifies that line TL13833 has a 9-hour rating limit of 273 MVA. This means that loading on line TL13833 can remain above its normal limit of 205 MVA (shown in the last row of the Table provided in FRONTLINES Exhibit 424C) for up to 9 hours as long as the system maintains loading on TL13833 below the 273 MVA emergency rating.

¹³¹ Transcript page 1207 at 12-15 referring to Table 6-1 on page 62 of SDGE 3.2RC: Q: "Is it correct to say that all the events identified in Column 3 for which an N/A is marked do not violate NERC Standards? A: Yes, I believe that is true.

¹³² See page 4 of FRONTLINES Exhibit 415, which indicates a potential overload on TL13833 as early as 2018.

¹³³ Transcript page 1211 at 25 to page 1212 at 1.

¹³⁴ The transmission capacities on lines TL13836 and TL13846 are limited by the same type of ACSR conductor [transcript page 753 at 28 to 754 at 1] which is identified as "Ortolon 1033" ACSR wire (see FRONTLINES Exhibit 424C). SDGE Witness Thomas confirmed that replacing this ACSR conductor with an ACSS conductor would increase the transmission capacity of these lines by 30% even if operated within SDGE's 270 F temperature limits [transcript page 754 at 2-10].

¹³⁵ SDGE Witness Smith confirmed that a 30% increase on lines TL13836 and TL13846 would eliminate all the TL13836 and TL13846 overloads identified in Table 6-1 [transcript page 1212 at 4 to 13]. However, and for reasons that remain unclear, witness Smith expressed uncertainty regarding whether lines 13836 and 13846 could actually be upgraded because they are "special" lines that are grouped with other transmission lines and "maxed out" [transcript 1250 at 6 to 16]. Subsequent to these remarks, Witness Smith admitted that Witness Thomas was SDGE's expert regarding such matters [transcript page 1284 at 22-24], and that he would defer to Mr. Thomas regarding the ability to upgrade TL13836 and TL13846 [transcript page 1284 at 27 to 1285 at 7]. According to Witness Thomas's testimony, upgrades on TL13836 and TL13846 are not only possible, they are absolutely necessary should the Commission select the "No Project Alternative" [SDGE Exhibit 2.2RC page 78 at 26 to 37] or the "Reconductoring

Alternative” [SDGE Exhibit 2.2RC on page 93 at 26 to 33]. Additionally, it should be noted that Witness Thomas was cross examined extensively regarding TL13836, TL13846, and reconductoring/upgrades on these lines [transcript pages 736 to 754] and throughout all of it, Witness Thomas *never* expressed any concern regarding whether scheduled upgrades can be done. The Commission should disregard Witness Smith’s testimony regarding potential difficulties in upgrading TL13836 and TL13846 because it contradicts the testimony and opinions of Witness Thomas, who is SDGE’s identified expert regarding such matters.

136 The evidentiary hearings revealed that these 11 remaining “overload” scenarios involving lines 13836 and 13846A & B collapse into 6 actual contingency scenarios that involve 3 monitored elements [Transcript page 1209 at 18 to 1210 at 3]. It was further revealed that these circumstances could meet CAISO’s policy limits regarding the use of Special Protection Schemes [Transcript page 1209 at 4 – 19]. Though SDGE’s Witness Smith indicated that he was not certain on this point, and would have to confer with CAISO [page 1210 at 17-19], there is nothing in the evidentiary record to suggest that this approach is not viable.

ATTACHMENT 6 – Annotated Excerpt Given to Ms. Hammond:

Page 51 FRONTLINES Opening Brief

If The Commission Deems a Second Power Source Is Not Needed:

FRONTLINES recommends the Reconductoring Alternative as described above in Section 2.4.3.1. Two costs are provided: the first assumes that potential overloads on TL13836 and TL13846 are addressed through upgrades (recommended) and the second assumes these overloads are addressed via SPS as described in FRONTLINES testimony [Exhibit 400.C 13 at 5].

<u>Reconductor</u> TL13835:	\$43.4 million ¹⁴⁴
Reconfigure the Pico Bus:	\$4.5 million ¹⁴⁵
Reconfigure <u>Talega</u> :	\$10 million ¹⁴⁶
<u>Reconductor</u> TL13816	\$16 million ¹⁴⁷

OR

TL13816, TL13846, TL13836: \$18.5 million¹⁴⁸
(avoids SPS)

Total without SPS on TL13836 and TL13846:	\$76.4 million (recommended)
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OR

Total with SPS on TL13846 and TL13836:	\$73.9 million
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¹⁴⁴ This assumes \$28 million to reconductor 8.1 miles of overhead circuits without replacing structures based on the \$3.5 million per mile rate derived from SDGE Witness Thomas' estimate (\$4 million per mile adjusted down from a 50% contingency to a 35% contingency [transcript 794 at 3-18]). It also includes \$15.4 million to reconductor 11,800 feet of underground circuits based on the \$2.5 million per 1800 feet cost to replace underground conductor identified by Witness Thomas [793 at 1-3].

¹⁴⁵ SDGE Exhibit 3.2 page 72 at 9

¹⁴⁶ This includes removing Bank 60, replacing bank 62 with a high capacity transformer, and reconfiguring Talega connections so that banks 61 and 62 do not terminate in the same bays.

¹⁴⁷ Assumes \$2.5 million to reconductor the underground portion [transcript 793 at 1] and \$13.9 million to reconductor 4 miles of above ground circuits based on the \$4million per mile identified by SDGE Witness Thomas adjusted down from a 50% contingency to a 35% contingency [transcript 794 at 3-18]

¹⁴⁸ SDGE Exhibit 2.2 page 93 at 9

8. COMPLIANCE WITH STANDARDS GOVERNING SAFE & RELIABLE OPERATIONS

The Trabuco Alternative includes the construction of a new 230 kV substation that will be configured in a breaker and a half arrangement in compliance with applicable standards governing safe and reliable operation.

ATTACHMENT 7 – Excerpts From Section 2.1.3 of FRONTLINES Opening Brief (page 6).

Notably, *none* of the written testimony offered by either SDGE or CAISO state that an additional power source is required to serve South Orange County under the NERC or CAISO standards. This point was reiterated during the evidentiary hearings, when CAISO's Witness Sparks confirmed that NERC does not have a standard which requires two power sources to serve 500 MW of load [356 at 24 to 357 at 1], and he could not point to a CAISO standard that requires two power sources to serve 500 MW of load [353 at 25 to 355 at 1]. He further stated that "the closest thing" [357 at 24 and 359 at 24] would be CAISO Standards 5, which "sets out what is necessary to upgrade the transmission system from a radial to a looped configuration". [357 at 15-19] Yet, Mr. Sparks subsequently confirmed that SDGE's South Orange County system is not radially served [359 at 27], so CAISO Planning Standard 5 does not even apply. Mr. Sparks' testimony demonstrates that CAISO has no standard which requires a second source to serve South Orange County's load, and clarifies that the CAISO standard providing the closest "match" to such a requirement does not apply to South Orange County.

SDGE's Witness Jontry's testimony similarly does not assert that either the CAISO or the NERC standards require an additional power source in South Orange County. However, during cross examination, he opined [161 at 23-27] that provision #4 of CAISO Planning Standard 5 could *justify* upgrades in South Orange County. However, such justification requires a "benefit to cost ratio above one" or other extenuating circumstances. Witness Jontry did not indicate that SDGE had ever performed a benefit to cost ratio for the SOCRE Project, and although he stated that CAISO "may have done a benefit cost ratio analysis" [162 at 8], CAISO did not present such an analysis when it approved SOCREP [See Attachment 7 of SDGE Exhibit 1.3R.]

ATTACHMENT 8-Excerpt from Decision D.10-06-014 (Proceeding A.08-01-029).

ALJ/RMD/ avs

Date of Issuance 6/4/2010

Decision 10-06-014 June 3, 2010

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

In the Matter of the Application of SOUTHERN CALIFORNIA EDISON COMPANY (U 338-E) for a Permit to Construct Electrical Facilities With Voltages Between 50kV and 200kV: Devers-Mirage 115 Kilovolt Subtransmission System Split Project.

Application 08-01-029
(Filed January 31, 2008)

**DECISION GRANTING SOUTHERN CALIFORNIA EDISON COMPANY
A PERMIT TO CONSTRUCT DEVERS-MIRAGE 115 KILOVOLT
SUBTRANSMISSION SYSTEM SPLIT PROJECT**

**DECISION GRANTING SOUTHERN CALIFORNIA EDISON COMPANY
A PERMIT TO CONSTRUCT DEVERS-MIRAGE 115 KILOVOLT
SUBTRANSMISSION SYSTEM SPLIT PROJECT**

1. Summary

This decision grants Southern California Edison Company a permit to construct the Devers-Mirage 115 Kilovolt Subtransmission System Split Project using the Proposed Project, as identified in the Environmental Impact Report.

As the Lead Agency for environmental review of the Proposed Project, we find that the Environmental Impact Report prepared for this project meets the requirements of the California Environmental Quality Act, Public Resources Code §§ 21000, *et seq.*, and that there are overriding considerations that merit construction of the Proposed Project notwithstanding its significant and unavoidable environmental impacts on air quality.

The primary components of the Proposed Project include rearrangements and modifications of subtransmission line connections, construction of substation modifications in the Cities of Palm Springs, Rancho Mirage, Indian Wells, Cathedral City, Palm Desert, and unincorporated areas of Riverside County, including the Thousand Palms community, and minor modifications to existing telecommunications equipment at the Edom Hill Communications site and the Palm Springs Service Center. The Proposed Project includes two new 115 kilovolt (kV) subtransmission lines, seven 115 kV subtransmission/line reconfigurations, a 220 kV transmission line loop-in, substation modifications, and upgrades to telecommunications infrastructure. Implementation of the Proposed Project will split the existing Devers 115 Kilovolt Subtransmission System into two systems, the Devers 115 kV System and the Mirage 115 Kilovolt System.

This proceeding is closed.

14. Assignment of Proceeding

Dian M. Grueneich is the assigned Commissioner and Regina M. DeAngelis is the assigned ALJ in this proceeding.

Findings of Fact

1. Construction of a Devers-Mirage 115 Kilovolt Subtransmission System Split Project will improve needed capacity and address reliability concerns.
2. No protests were filed to the Application.
3. The Draft EIR related to the Proposed Project conforms to the requirements of CEQA.
4. Project Alternatives 1, 2, 3, 5, 6 and 7 would each have significant unavoidable impacts.
5. Alternative 1 is the Environmentally Superior Alternative.
6. The Final EIR was completed in compliance with CEQA.
7. The Commission has reviewed and considered the information contained in the EIR.
8. The EIR reflects the Commission's independent judgment.
9. The need to improve reliability on existing infrastructure is an overriding consideration that supports our approval of Alternative 1, as referred to as the Proposed Project, despite its significant unavoidable impacts.
10. Alternative 1 includes no-cost and low-cost measures (within the meaning of D.93-11-013, and D.06-01-042) to reduce possible exposure to EMF.
11. SCE agrees to comply with the mitigation measures described in the Final EIR.
12. The Commission considered the EIR in deciding to approve the Proposed Project.
13. The Final EIR reflects the Commission's independent judgment.

ATTACHMENT 9 – Body Of Approved Advice Letter 2789-E.

STATE OF CALIFORNIA
PUBLIC UTILITIES COMMISSION
SAN FRANCISCO, CA 94102-3258

Edmund G. Brown Jr. Governor



November 15, 2012

Advice Letter 2789-E

Akbar Jazayeri
Vice President, Regulatory Operations
Southern California Edison Company
P O Box 800
Rosemead, CA 91770

**Subject: Notice of Proposed Construction Project Pursuant to
G.O. 131-D, East Kern Wind Reliability Area 66 kV
Reconfiguration Project**

Dear Mr. Jazayeri:

Advice Letter 2789-E is effective November 3, 2012.

Sincerely,

A handwritten signature in cursive script that reads "Edward F. Randolph".

Edward F. Randolph, Director
Energy Division

ADVICE LETTER (AL) SUSPENSION NOTICE
ENERGY DIVISION

Utility Name: Southern California Edison Date Utility Notified: October 25, 2012 via email
Utility No./Type: Electric E-Mail to: AdviceTariffManager@sce.com
Advice Letter No: 2789-E
Date AL filed: October 4, 2012 Fax No.: N/A
Utility Contact Person: Milissa Marona ED Staff Contact: John Boccio
Utility Phone No.: (626) 302-4872 **For Internal Purposes Only:**
Date Calendar Clerk Notified ___/___/___
Date Commissioners/Advisors Notified ___/___/___

INITIAL SUSPENSION (up to 120 DAYS from the expiration of the initial review period)

This is to notify that the above-indicated AL is suspended for up to 120 days beginning October 25, 2012 for the following reason(s) below. If the AL requires a Commission resolution and the Commission's deliberation on the resolution prepared by Energy Division extends beyond the expiration of the initial suspension period, the advice letter will be automatically suspended for up to 180 days beyond the initial suspension period.

A Commission Resolution is Required to Dispose of the Advice Letter

Advice Letter Requests a Commission Order

Advice Letter Requires Staff Review

The expected duration of initial suspension period is 120 days

FURTHER SUSPENSION (up to 180 DAYS beyond initial suspension period)

The AL requires a Commission resolution and the Commission's deliberation on the resolution prepared by Energy Division has extended beyond the expiration of the initial suspension period. The advice letter is suspended for up to 180 days beyond the initial suspension period.

If you have any questions regarding this matter, please contact John Boccio at (415) 703-2641 or by email at jbx@cpuc.ca.gov.

cc:
EDTariffUnit

October 4, 2012

**ADVICE 2789-E
(U 338-E)**

PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA
ENERGY DIVISION

SUBJECT: Notice of Proposed Construction Project Pursuant to General
Order 131-D, East Kern Wind Reliability Area 66 kV
Reconfiguration Project

Southern California Edison Company (SCE) hereby submits notice pursuant to General Order 131-D (GO 131-D), Section XI, Subsection B.4 of the Construction of Facilities that are exempt from a Permit to Construct. GO 131-D was adopted by the California Public Utilities Commission (Commission) in Decision (D.) 94-06-014 and modified by D.95-08-038.

PURPOSE

This advice filing provides a copy of the Notice of Proposed Construction (Attachment A) and the Notice Distribution List (Attachment B) which comply with the noticing requirements found in GO 131-D, Section XI, Subsections B and C.

BACKGROUND

SCE proposes to construct the East Kern Wind Resource Area 66 kV Reconfiguration Project (EKWRA 66kv Project). The purpose of the EKWRA 66 kV Project is to mitigate reliability and operational issues currently existing on the Antelope-Bailey 66 kV system. The Antelope-Bailey 66 kV system has been experiencing operational, economical, and reliability challenges caused by the increase in wind power generation and load increases on the Antelope-Bailey 66 kV system. The Antelope-Bailey 66 kV system as currently configured is inadequate to deliver increases in wind generation to meet the load demands. The EKWRA 66 kV Project will separate the existing Antelope-Bailey 66 kV system into two separate systems: (i) The northern system will be served from the Windhub Substation and will be known as the Windhub 66 kV system, (ii) The southern system will be served from Antelope and Bailey Substations and will continue to be known as the Antelope-Bailey 66 kV system. All wind and hydro generation and partial load in the northern system will be diverted to Windhub Substation. The majority of the existing load will remain in the new Antelope-Bailey 66 kV system. All north-to-south 66kV lines will be converted to tie lines between the two 66kV systems. The EKWRA 66kv Project, which includes both the

construction of new facilities and the replacement and reconditioning of existing facilities, involves approximately twenty-five (25) miles of subtransmission line and approximately fifty (50) miles of fiber optic cable. The EKWRA 66kV Project will traverse portions of Kern County, Edwards Air Force Base and Bureau of Land Management (BLM) lands, all within existing easements, rights-of-way (ROW) and SCE fee-owned property.

Specifically, the EKWRA 66 kV Project includes the following elements:

Telecom Elements:

- Installation of approximately 50 miles of fiber optic cable between five (5) SCE substations; (Cal Cement Substation, Corum Substation, Goldtown Substation, Monolith Substation, Windhub Substation) and one (1) communications site (Oak Peak Communication Site.)
- The fiber optic cable installation will be constructed on approximately 1,690 existing sub-transmission poles (or new poles where replacements are required), in approximately 675 feet of existing underground conduit and in approximately 7,900 feet of 5 inch underground conduit to be constructed.

Subtransmission Elements:

- Install approximately 26,400 feet of new 66 kV line along Oak Creek Road from Koch Street to Windhub Substation located at 8500 West Oak Creek Road. This scope of work requires the installation of approximately one hundred and nine (109) -75 foot tall Light Weight Steel (LWS) poles, one (1) double circuit Tubular Steel Pole (TSP) across from Windhub Substation and the removal of 50 wood poles.
- Install approximately 1000 feet of underground duct bank and 66kV cable from Windhub Substation to the new TSP across from Windhub Substation. Replace four (4) - 60 foot to 70 foot wood poles at the intersection of Trotter Road and Division Street in Mojave, CA with four (4) 75 foot LWS poles.
- Replace four (4) - 60 foot to 70 foot wood poles at the intersection of 100th Street West and Sunshine Road in Mojave, CA with five (5) 75 foot LWS poles.
- Replace six (6) wood H-frame structures with six (6) LWS H-frame structures within an existing ROW from Cal Cement Substation to Arbwind Substation located on Tehachapi Boulevard in Tehachapi, CA.
- Install two (2) underground duct banks and 66kV underground cable for approximately 9,500 feet from Windhub Substation to two (2) new 70 foot tall TSPs to be installed on Oak Creek Road at 100th Street West in the existing ROW.

- ♦ Replace approximately forty-five (45) 70 foot tall wood poles with approximately forty-five (45) 75 foot tall LWS poles and approximately 116 wood 60 foot tall H-frame structures with approximately 116 LWS 80 foot tall H-frame structures and replace 75,000 feet of 3/0 Solid Copper and 653 ACSR conductor with approximately 75,000 feet of 954 SAC conductor from Monolith Substation located on Tehachapi Boulevard to the intersection of Oak Creek Road and 100th Street West.
- ♦ Install one (1) 80 foot LWS H-frame structure on Oak Creek Road at 100th Street West in the existing ROW and install approximately 1,000 feet of 954 SAC conductor from the new H-frame structure to the new TSP on the opposite side of Oak Creek Road at 100th Street West.

Substation Elements:

- ♦ Install new 66kV bus/switchrack and an A-bank transformer and a 220kV bank position at Windhub Substation.
- ♦ Expand 66kV bus/switchrack and install a new Mechanical Electrical Equipment Room (MEER) room at Rosamond Substation.
- ♦ Install a new MEER room at Corum Substation.
- ♦ Install a new Substation Automation System (SAS) at Goldtown Substation.
- ♦ In addition to the foregoing substation elements, SCE will be conducting minor modifications to the several substations in the project area.

Pursuant to Commission GO 131-D, Section III.B.1, projects meeting specific conditions are exempt from the Commission's requirement to file for an application requesting authority to construct. This project qualifies for the following exemption:

- "g. power line facilities or substations to be located in an existing franchise, road-widening setback easement, or public utility easement; or in a utility corridor designated, precisely mapped and officially adopted pursuant to law by federal, state or local agencies for which a final negative Declaration or EIR finds no significant unavoidable environmental impacts."

GO 131-D, Section XI, Subsection B.4, requires that this advice filing be made not less than 30 days before the date such construction is intended to begin. SCE intends to begin construction no sooner than November 19, 2012.

No cost information is required for this advice filing.

This advice filing will not increase any rate or charge, cause the withdrawal of service, or conflict with any other rate schedule or rule.

TIER DESIGNATION

Pursuant to GO 96-B, Energy Industry Rule 5.2(4), this advice letter is submitted with a Tier 2 designation.

EFFECTIVE DATE

Because this filing is being made in accordance with the noticing requirements described in GO 131-D, Section XI, Subsection B.4, this advice filing will become effective on November 3, 2012, the 30th calendar day after the date filed.

NOTICE

Anyone wishing to protest this advice filing may do so by letter via U.S. Mail, facsimile, or electronically, any of which must be received no later than October 24, 2012. Protests should be mailed to:

CPUC, Energy Division
Attention: Tariff Unit
505 Van Ness Avenue
San Francisco, California 94102
E-mail: Edtariffunit@cpuc.ca.gov

Copies should also be mailed to the attention of the Director, Energy Division, Room 4004 (same address above).

In addition, protests and all other correspondence regarding this advice letter should also be sent by letter and transmitted via facsimile or electronically to the attention of:

Akbar Jazayeri
Vice President of Regulatory Operations
Southern California Edison Company
8631 Rush Street
Rosemead, California 91770
Facsimile: (626) 302-4829
E-mail: AdviceTariffManager@sce.com

Leslie E. Starck
Senior Vice President
c/o Karyn Gansecki
Southern California Edison Company
601 Van Ness Avenue, Suite 2030
San Francisco, California 94102
Facsimile: (415) 929-5540
E-mail: Karyn.Gansecki@sce.com

There are no restrictions on who may file a protest, but the protest shall set forth specifically the grounds upon which it is based and shall be submitted expeditiously.

In accordance with Section 4 of GO 96-B, SCE is serving copies of this advice filing to the interested parties shown on the attached GO 96-B service list. Address change requests to the GO 96-B service list should be directed by electronic mail to AdviceTariffManager@sce.com or at (626) 302-4039. For changes to all other service lists, please contact the Commission's Process Office at (415) 703-2021 or by electronic mail at Process_Office@cpuc.ca.gov.

Further, in accordance with Public Utilities Code Section 491, notice to the public is hereby given by filing and keeping the advice filing at SCE's corporate headquarters. To view other SCE advice letters filed with the Commission, log on to SCE's web site at <http://www.sce.com/AboutSCE/Regulatory/adviceletters>.

For questions, please contact Milissa Marona at (626) 302-4872 or by electronic mail at Milissa.Marona@sce.com.

Southern California Edison Company

Akbar Jazayeri

AJ:mmjm
Enclosures

ATTACHMENT 10 – Excerpt From Section 2.3.2 of FRONTLINES Opening Brief (page 11).

In addition, the SOCREP project itself is configured in such a way that it poses significant risk to South Orange County load during certain contingency events at Capistrano *even if the Talega substation is fully operational*. This is because SOCREP is configured to serve the Laguna Niguel substation solely via lines from Capistrano, and these lines will carry no power in the event both 138 kV buses are down at Capistrano⁴⁰. The evidentiary hearings confirmed that such an event at Capistrano will drop both Capistrano load and Laguna Niguel load⁴¹, which is more than one third of the entire South Orange County Load.⁴² This risk to one-third of the South Orange County load that is posed by the proposed SOCREP cannot be eliminated in any way, and can only be addressed by “jumpering” a “shoe-fly” connection between one of the Laguna Niguel lines to one of the Trabuco lines⁴³. Though it would take less than a day to accomplish this, it would still cause more than one-third of South Orange County customers to be without power until the “shoe-fly” was installed and energized. Moreover, should the South Orange County load “peak” while the “jumper” connection were in place, lines TL13131 and 13838 would exceed their emergency thermal rating⁴⁴, which would demand even more load shedding to keep all lines operating within acceptable limits.⁴⁵

⁴⁰ SDGE Exhibit 3.2RC page 66 at 7-8

⁴¹ Transcript page 135 at 2-9 {Cross examination of SDGE witness Jontry}. Also, page 403 at 6-12 (cross examination of CAISO witness Sparks)

⁴² Transcript page 134 at 24 to 135 at 1.

⁴³ Transcript page 134 at 2-17. Also page 734 at 5-14.

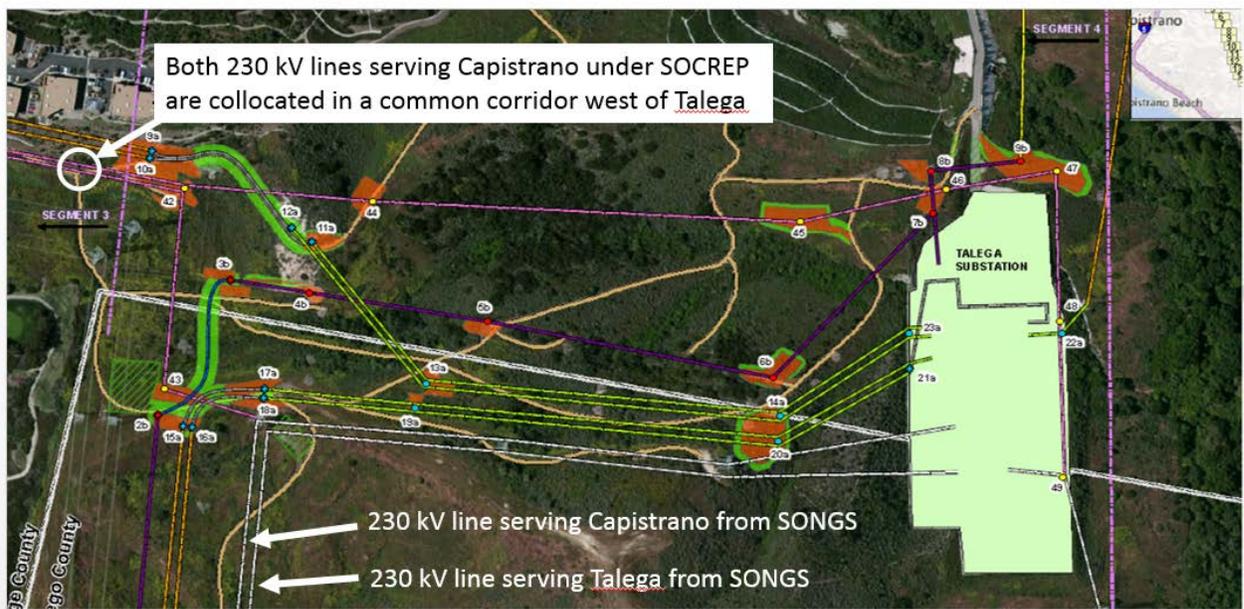
⁴⁴ Transcript page 1149 at 26 to 1150 at 24

⁴⁵ Transcript page 1151 at 10-22

ATTACHMENT 11–Excerpt & Aerial From Section 6.0 of FRONTLINES Reply Brief (page 28)

SDGE's Assessment of Fire Risk to the SOCREP 230 kV System is Unsupported in the Record

SDGE's Opening Brief states (on page 17) "For a fire to affect both 230 kV lines to Capistrano - which are on opposite sides of Talega- the fire would have to be so large as to engulf the substation". This statement is patently untrue; as evidenced by SDGE's own figure 3.7 (reproduced below) from the PEA which clearly indicates that both the 230 kV lines serving Capistrano *are co-located on common structures on the west side of Talega*. The 230 kV line from Escondido does approach Talega from the east side, but it is routed directly to the west side where it exits Talega and heads toward Capistrano in the same transmission corridor as the second 230 kV line that serves Capistrano from SONGS. And these 230 kV lines intended to serve Capistrano lie adjacent to the 230 kV lines that currently serve Talega from SONGS.



These facts notwithstanding, SDGE representation that only a very large fire would engulf the Talega substation is *absurd on its face*. The Talega substation is imbedded in SDGE's Fire Threat Zone (FRONTLINES Exhibit 429) and it is surrounded on all sides by vacant wildland (as shown in Figure 2-1 of the DEIR). As SDGE is aware¹⁰⁶ through its experience with the Witch and Guejito fires (which killed several people and destroyed thousands of homes) California wildland fires can quickly engulf tens of thousands of acres, so there is every reason to believe a fire occurring on one side of Talega will quickly surround Talega. Additionally, the Commission's own studies¹⁰⁷ contradict SDGE's assertion that even if "smoke or firefighting forces all of SDG&E's 230 kV lines out of service, such an outage is temporary and relatively short (hours)". Commission studies confirm that fire can damage conductors (whether they are on wood or steel poles) and under such

circumstances, conductors must be replaced because they cannot be repaired. With SOCREP, a wildfire in the vicinity of Talega will indeed affect all 230 kV service to South Orange County, and if the conductors are damaged, the outage will *not* be “temporary and relatively short”. Unlike SOCREP, the Trabuco Alternative can serve South Orange County load via SCE’s system in the event a fire damages either Talega or the 230 kV lines that serve Talega. This has never been contested by SDGE or CAISO and it is another reason why the Trabuco Alternative is superior.

¹⁰⁶ Proceeding A.09-08-020

¹⁰⁷ The Commission study (“Effect of Wildfires on Transmission Line Reliability”) was included in Attachment 1A of the EIR issued for the Sunrise Proceeding (A.06-08-010) and it states (page 1): “When a wildfire occurs very near a transmission line right-of-way (ROW), wood poles can burn. Lines carried by steel towers are also vulnerable to heat from wildfire. The conductors on both wood- and steel-carried transmission lines are susceptible to physical damage from the heat of a wildfire, and conductor damage is not repairable (conductors must be replaced). A fire can force the outage of a transmission circuit if it raises the ambient temperature of the air around the conductors above the line’s operating parameters.

ATTACHMENT 12 – Excerpt From Section 2.0 of FRONTLINES Reply Brief (page 8).

SOCREP is designed to serve South Orange County load from Capistrano via the same 230 kV infrastructure that currently serves Talega, therefore it is susceptible to the same extreme events that would remove Talega from service.⁴⁵ An extreme event involving this 230 kV infrastructure would remove both Talega and Capistrano, thereby dropping all of South Orange County load. The risk of an extreme contingency event that removes Talega from service can only be properly mitigated by providing South Orange County with a second 230 kV source that is located far from the Talega Substation and is served by infrastructure that will not be affected by an extreme (fire, earthquake, terrorism, etc.) event occurring in or around Talega⁴⁶. SOCREP does not meet this condition; it does not provide a second 230 kV source located far from the Talega substation, and it is served by infrastructure that is co-located with infrastructure that serves Talega. For this reason, SOCREP does not provide redundancy.

⁴⁵ SDGE's Fire Threat Zone extends from Camp Pendleton (adjacent to SONGS) and San Clemente (where the Talega Substation is located) up to Capistrano, therefore the SOCREP 230 kV lines face the same fire threat as the Talega 230 kV lines [see FRONTLINES Exhibit 429]. Also, SDGE Witness Mortier affirmed [transcript page 56 at 27 to page 57 at 15]. Also, see FRONTLINES Exhibit 100.1C: Section 7 on page 20. Also, see Sections 2.3.2 and 2.4.2 of FRONTLINES Opening Brief.

⁴⁶ SDGE Witness Mortier affirmed [transcript page 58 at 20 to page 59 at 6] and SDGE Witness Iliev affirmed [transcript page 1063 at 26 to 1064 at 1]

ATTACHMENT 13 – Excerpt From Section 4.0 of FRONTLINES’ Reply Brief (page 20).

There is no need for “interim measures” to limit flows on Path 43 with the Trabuco Alternative because the Trabuco Alternative can be configured so that it does not affect flows on Path 43 [page 17]. Path 43 is comprised of four transmission lines between SONGS and SCE’s service territory (SONGS-Viejo, SONGS - Serrano, and two SONGS-Santiago lines). The Trabuco Alternative reconfigures one of the SONGS-Santiago lines to a SONGS-Trabuco-Santiago line over which power will continue to flow from SONGS to Santiago. A contingency event that eliminates either SONGS-Trabuco or Trabuco-Santiago under the Trabuco Alternative configuration is no different from a contingency event that eliminates one of the SONGS-Santiago lines under the current Path 43 configuration. Moreover, a contingency event on one or more of the Path 43 lines from SONGS will not cause “loop” flow through South Orange County because, under such conditions, the transformer circuits at Trabuco will be opened, (thus disconnecting South Orange County from Path 43 as described on page 17 FRONTLINES’ Opening Brief) which will revert Path 43 back to its current configuration. SDGE’s own testimony shows that there is sufficient capacity in the Path 43 transmission lines to accommodate the Trabuco Alternative, since the normal rating of *each* of the lines serving Santiago is 1195 MVA [SDGE Exhibit 2.2RC page 106 at 18]. Therefore, using one of these lines to serve up to 500 MW of SOC load still provides a combined transfer capability to Santiago which exceeds 1800 MW. This is in *addition* to the power transfers provided by the remaining Path 43 lines (specifically SONGS-Viejo and SONGS-Serrano).

ATTACHMENT 14–Excerpt From FRONTLINES Opening Brief (page 31 and 33).

FROM PAGE 31:

It should be noted that the results presented in Table 1 are based on a model that assumes an *exceedingly* high 1800 MW northbound flow on Path 43⁷⁹ coupled with the loss of one of the lines that comprise an element of Path 43 (specifically the SONGS-Trabuco line). These circumstances induce high power flows from Talega to SCE's Santiago substation through South Orange County and essentially force SDGE's transmission facilities in South Orange County to serve SCE load north of Trabuco. However, (and as discussed in more detail in Section 2.3.3.1.2) these "loop" flow conditions are easily addressed by disconnecting South Orange County from the SCE system should such an extreme event occur. So, even if there had been overloads indicated for the 138 kV lines identified in Table 1 of CAISO's Exhibit 505, this approach would mitigate them anyway.

⁷⁹ Since the elimination of SONGS generation, south to north power flow on Path 43 has not exceeded 1440 MW [SDGE Exhibit 3.2RC page 86 at 8]. And, given that there are no plans to replace SONGS generation at the SONGS location, there is little reason to believe that south to north power flows along Path 43 will exceed 1500 MW in future. Therefore, CAISO's assumption of an 1,800 MW south-north power flow on Path 43 is extreme and excessive. Witness Sparks was cross examined extensively regarding the efficacy of this assumption [transcript page 321-330], but could provide no quantifiable justification for it. For example, he states: "I can give a tendency, an expectation that we're expecting that there will be a need for this transmission path to have that capability. And -- and I can basically say that I am certain that that is a transfer capability that the system should be planned to at that time".[328 at 23].

FROM PAGE 33:

- Witness Spark's Trabuco Alternative analysis results provided in Table 1 of Exhibit 505 show no overloads on SDGE's existing 138 kV system even under the *extreme* circumstances that were modeled (an 1800 MW power flow on Path 43 coupled with a peak summer load coupled with multiple line outages on SCE's and SDGE's systems). Therefore, new CAISO modeling results that actually show overloads with the Trabuco Alternative would have to be premised on even more extreme circumstances than those assumed in Table 1. This fact is borne out by Witness Spark's oral testimony, given that a "new" scenario that he posits involves removal of the SONGS-Santiago and SONGS-Trabuco line [338 at 9]. This eliminates *half* the lines comprising Path 43 and [as page 5 of ORA Exhibit 214 proves] it is in fact a Category D event because SONGS-Santiago and SONGS-Trabuco are in a common right of way along the entire path length from SONGS to Trabuco . Simply put, the modeling inputs CAISO assumed in Table 1 of Exhibit 505 already stretch the bounds of credulity, therefore even more extreme scenarios posited in CAISO's "new" studies should be utterly disregarded.

- Modeling results that are derived from extreme and unrealistic input assumptions are themselves extreme and unrealistic, and should be recognized as such and disregarded. As Witness Sparks readily admits, CAISO can conceive of an infinite number of possible scenarios that can cause every line in South Orange County to overload [417 at 19-14]. For this reason, the Commission should not presume that all of CAISO’s modeling results are legitimate simply because they are conceived of by CAISO. Table 1 of Exhibit 505 is a case in point, because it assumes an extreme (1800 MW power flow) circumstance that CAISO *cannot* and *does not* justify with facts or figures⁸⁰.
- Assuming that the “new” studies of the Trabuco Alternative that Witness Sparks prepared also address “loop” flow conditions (like those in Table 1 of Exhibit 505), they can be mitigated by disconnecting South Orange County from SCE’s system north of Trabuco (as described in Section 2.3.3.1.2).

⁸⁰ Witness Sparks was cross examined extensively regarding the efficacy of this assumption [transcript page 321-330], but could provide no quantifiable justification for it. For example, he states: “I can give a tendency, an expectation that we’re expecting that there will be a need for this transmission path to have that capability. And -- and I can basically say that I am certain that that is a transfer capability that the system should be planned to at that time”. [328 at 23].

ATTACHMENT 15 – Excerpt From Section 1.0 of FRONTLINES’ Reply Brief (page 2).

According to SDGE, the SOC 138 kV system connecting seven distribution substations is “unique” because “it is served by a single connection to the 230 kV bulk power system”. However, SDGE’s South Orange County system is not at all “unique” in this regard as evidenced by a FERC order issued just a month ago which identifies 7 distinct 115 kV transmission systems, each of which have a single point of connection to the CAISO grid and serve multiple distribution substations¹. Despite the fact that these are very large 115 kV systems², FERC determined that they were “distribution facilities” and not part of the BES because they were all individually served by a single CAISO connection and therefore and not part of the CAISO grid or subject to FERC jurisdiction or NERC reliability standards.³ This FERC decision is consistent with testimony offered by CAISO Witness Sparks, who confirmed that NERC standards are not intended to address a system with only one power source because such systems are considered distribution and not part of the BES⁴. Notably, two of the 7 systems were, until recently, fully integrated with the CAISO grid and served by two 220 kV CAISO connections. However, in 2010, the Commission authorized SCE to split these grid-integrated systems into separate networks that would each be radially served from a single 220 kV connection to the CAISO grid⁵. Additionally, one of these systems (the “El Casco” system) was recently completed pursuant to Commission decision D.08-12-031, and it was specifically designed with a single 220 kV CAISO grid connection at Casco to serve load in the cities of Beaumont, Banning, Yucaipa, Calmesa, and Redlands.

FERC determined that these 7 large transmission systems are “distribution facilities” pursuant to FERC Order 773⁶ based on the 7-factor test established in FERC Order 888 (which is used as a “starting point” for such determinations⁷). Analyzing SDGE’s SOC system through the lens of FERC’s 7-factor test reveals that it is similarly not part of the BES, and is in fact “distribution”:

Factor one - proximity of facilities to retail customers

FERC deems that transmission facilities comport with this factor if they are located in close proximity to the retail customers that they serve⁸. SDGE’s 138 kV SOC facilities are entirely surrounded by the retail customers they supply and are fully imbedded in the load pocket that they serve⁹. Therefore, it meets this Factor 1.

Factor two - primarily radial in character

FERC deems that transmission systems comport with this factor if they radiate from a single substation connected to the BES (CAISO grid) and do not form a parallel path to the BES¹⁰. SDGE’s 138 kV SOC system connects to the CAISO grid at a single substation¹¹ and has a radial arrangement¹² that does not form a parallel path¹³ to the grid. Therefore, it meets this Factor 2.

Factor three - power flows into local distribution systems, and rarely, if ever, flows out

FERC deems that transmission systems comport with this factor if power flows into the system from the BES (CAISO grid) through a single point¹⁴. Power flows into SDGE’s 138 kV SOC system via a single point connection¹⁵, therefore, it meets this Factor 3.

Factor four - Power entering local distribution is not reconsigned or transported to other markets

FERC deems that transmission systems comport with this factor if power entering the system from the BES (CAISO grid) remains within the system, and the radial nature of the system prevents power from being transported back into the BES for consignment to another market¹⁶. SDGE's 138 kV SOC system is only connected to the CAISO grid at one location¹⁷ which prevents power from being transported back into the BES. Therefore, it meets this Factor 4.

Factor five - consumption of power entering the distribution system is in a restricted area

FERC deems that transmission systems comport with this factor if the power that enters the system is consumed in a restricted geographical area as evidenced by the proximity of the facilities to the retail customers¹⁸. All of the power that enters SDGE's 138 kV SOC system from the BES (CAISO grid) is used to serve load¹⁹, and is consumed by the customers located in of SDGE's restricted SOC service area²⁰. Therefore, it meets this Factor 5.

Factor six - meters at the transmission/distribution interface measure flow to the distribution system

FERC deems that transmission systems comport with this factor if they are metered at or near the point of interconnection to the CAISO grid²¹. Presumably, SDGE maintains meters on or near the 138kV side of the transformers at Talega to enable reliable transfer of energy between the CAISO controlled high voltage grid and the 138 kV system. If such meters do not already exist at Talega, they can be added. Therefore, SDGE's 138 kV SOC system either already meets, or could be modified to meet, this Factor 6.

Factor seven - local distribution will be of reduced voltage

FERC deems that transmission systems comport with this factor if the higher voltage lines in the system are of a limited nature and their use is of a retail nature.²² FERC has also determined that transmission lines operated above 100 kV are "reduced voltage" if long distances must be traversed to serve retail load.²³ SDGE's 138 kV SOC lines are used only to interconnect distribution substations²⁴ within SDGE's large Orange County territory (see figure 5.1 of SDGE Exhibit 3.2RC), thus the preponderance of the circuits operate at 12 kV or less. Therefore, SDGE's 138 kV SOC system meets both of these Factor 7 circumstances.

SDGE's SOC system meets all 7 factors relied upon by FERC to determine whether facilities are "local distribution", thus confirming the unreasonableness of imposing NERC reliability standards on the SOC system. There is clearly nothing unique about the single point of connection that SDGE's 138 kV SOC system has to the CAISO grid; such configurations occur throughout California. What is unique is that it is a local distribution system which is being managed by SDGE and regulated by CAISO as if it were integral to the BES.

¹ FERC "Order on Local Distribution Determination"; 153 FERC ¶ 61,384 issued December 31 2015 in Docket RC15-1.

² Id. at 8, the largest supplies 1,825 MW to 23 distribution substations. They cumulatively comprise 19+0% of SCE load.

³ Id at 1.

⁴ Transcript page 356 at 14: "I am not aware that the NERC Standards are intended to address a system with only one power source. Essentially a radial -- you're almost talking about distribution, which would not be bulk electric system".

⁵ D.10-06-014 in Proceeding A.08-01-029. Shortly after the Commission issued D.10-06-014, CAISO relinquished control over these radial systems because they were not part of the Bulk Electrical System ("BES")

[http://www.caiso.com/Documents/Devers-MirageFacilitiesToBeRemoved_ISOOperationalControl.pdf] Notably, SDGE cited

D.10-06-014 in its Opening Brief (page 51) to support an argument that SOCREP should be approved because it demonstrates that “the Commission found increasing loads and unreliable service constituted overriding considerations that justified approving the project despite significant and unavoidable impacts”. However, SDGE’s Opening Brief ignores that D.10-06-014 authorized SCE to *sever* distribution load from a second connection to the CAISO-controlled grid to improve system reliability. As a result of D.10-06-014, thirteen load serving distribution substations (Garnet, Farrell, Thornhill, Eisenhower, Yucca, Hi Desert, Leatherneck, Carodean and Bottle on the Devers system and Concho, Indian Wells, Santa Rosa and Tamarisk on the Mirage system) were converted from a configuration that served load via two CAISO connections to a configuration that served load via a single CAISO connection. Therefore, D.10-06-014 is inapposite (and even contrary) to SDGE’s argument that a second CAISO connection is required to reliably serve SOC load.

⁶ FERC Order 773 (December 2012) and 773-A (April 2013) approved the NERC definition of “Bulk Electrical System” facilities (identified in the NERC Glossary of Terms reproduced by SDGE in Attachment 26 of Exhibit 3.2RC.)

⁷ “Order on Local Distribution Determination” at 3; 153 FERC ¶61,384 issued December 31 2015; Docket RC15-1.

⁸ “Order on Local Distribution Determination” at 20; 153 FERC ¶ 61,384 December 31 2015, Docket RC15-1.

⁹ SDGE Exhibit 1.3R pages 8 and 9 *generally*.

¹⁰ “Order on Local Distribution Determination” at 21; 153 FERC ¶ 61,384 December 31 2015, Docket RC15-1.

¹¹ SDGE Exhibit 1.3R page 1 at 17.

¹² SDGE Exhibit 1.3R page 32 at 8

¹³ SDGE Witness Smith clarified that power flow on a parallel path is “loop” flow [transcript page 1179 at 8-15].

¹⁴ “Order on Local Distribution Determination” at 22; 153 FERC ¶ 61,384 December 31 2015, Docket RC15-1.

¹⁵ SDGE Exhibit 1.3R page 1 at 17.

¹⁶ “Order on Local Distribution Determination” at 23 and 24; 153 FERC ¶61,384 December 31 2015, Docket RC15-1.

¹⁷ SDGE Exhibit 1.3R page 1 at 17.

¹⁸ “Order on Local Distribution Determination” at 25; 153 FERC ¶ 61,384 December 31 2015, Docket RC15-1.

¹⁹ SDGE Exhibit 1.3R page 8 at 9-12.

²⁰ SDGE Exhibit 1.3R page 7 at 8-13.

²¹ “Order on Local Distribution Determination” at 26; 153 FERC ¶ 61,384 December 31 2015, Docket RC15-1.

²² Declaratory Order issued in Docket EL10-75 paragraph 29 and 47 at 133 FERC ¶ 61,018.

²³ “Order on Local Distribution Determination” at 27; 153 FERC ¶ 61,384 December 31 2015, Docket RC15-1. Notably, among the 115 kV systems deemed “local distribution”, the El Casco system has only a 50 square mile area which is smaller than SOC system, which occupies an area at least 11 miles by 7 miles (or 77 square miles)[Figure 5-1 in SDGE Exhibit 3.2RC]

²⁴ SDGE Exhibit 1.3R page 8 at 9-12.

ATTACHMENT 16 – Excerpt From Section 1.0 of FRONTLINES’ Reply Brief (page 4).

SDGE's Opening Brief demands that the SOCREP EIR recognize that "Compliance with Mandatory NERC Standards is a Basic Project Objective". However, the South Orange County 138 kV system is not part of the Bulk Electrical System, therefore the NERC reliability standards are only imposed through operation of the CAISO Planning Standard²⁵. CAISO does not typically control radially served distribution systems and has, over the last two years, relinquished control over at least 10 such systems in Southern California because they were deemed to be "distribution facilities" that are not integrated into the grid²⁶. FERC has specifically clarified²⁷ that the determination of whether transmission facilities belong under CAISO control turns on whether the facilities are shown to be integrated into the CAISO grid based on application of the 5-factor *Mansfield Test*.²⁸ Application of the Mansfield Test to SDGE's 138 kV SOC system reveals that control over the system should not rest with CAISO, to wit:

Factor 1 - Whether the transmission facilities are "radial"

According to CAISO, transmission facilities are considered radial if they are not operated in parallel to the CAISO grid²⁹ and they are deemed connected radially if they are connected to the CAISO grid at a single point³⁰. FERC considers systems that are connected to the CAISO grid at a single point to be connected in a "radial manner"³¹ and that systems which are "radial in nature" meet the first element of the Mansfield test³². As discussed *supra*, the 138 kV facilities emanating from Talega are connected to the CAISO grid solely at Talega and do not operate in parallel to the CAISO grid. Therefore, these facilities meet the first factor of the Mansfield test according to CAISO's criteria.

Factor 2 - Whether energy flows only in one direction

According to CAISO, transmission facilities meet the second element of the Mansfield Test if they carry power which flows predominantly in one direction (to serve load)³³. As discussed *supra* the 138 kV SOC system serves only load and carries power only in one direction to serve load. Therefore, it meets the second factor of the Mansfield Test according to CAISO's criteria.

Factor 3 - Whether the transmission provider can provide service to itself or others

According to CAISO, transmission facilities meet the third element of the Mansfield Test if they cannot be used by CAISO to serve customers other than the transmission owner³⁴ (i.e. SDGE). The SOC 138 kV system serves only SDGE's customers³⁵ and as discussed *supra*, it does not operate in parallel to the CAISO grid, thus it cannot be used by CAISO to serve other customers. Therefore, it meets the third factor of the Mansfield Test according to CAISO's criteria

Factor 4 - Whether the facilities provide benefits to the transmission grid

According to CAISO, transmission facilities meet the fourth element of the Mansfield Test if they "cannot be relied upon for coordinated operation of the grid" and if they are "radial to the CAISO controlled grid".³⁶ As discussed *supra*, the 138 kV SOC system is radial to the CAISO grid and does not operate in parallel to the CAISO grid so it does not provide a CAISO grid function. Additionally, operation of the CAISO grid does not rely on the 138 kV SOC system because loss of the SOC system would not have a significant impact on the CAISO grid³⁷. Therefore it meets the fourth factor of the Mansfield Test according to CAISO's criteria.

Factor 5 - Whether an outage on the facilities would affect the transmission system

According to CAISO, transmission facilities meet the fifth element of the Mansfield Test if the CAISO grid is unaffected by any outage that occurs on these facilities.³⁸ The CAISO grid is not impacted by operation of the 138 kV SOC system. In fact, CAISO has stated unequivocally that there would be no significant impacts on the CAISO grid if the entire 138 kV SOC system were dropped³⁹. Therefore, it meets the fifth factor of the Mansfield Test according to CAISO's criteria.

Taken together, these facts demonstrate that SDGE's 138 kV SOC facilities are not integrated into the CAISO grid and instead function as radial facilities that should not be under CAISO control. And it is solely through the contrivance of CAISO control over SDGE's SOC system that the NERC standards are imposed on SDGE's SOC system. This contrivance is entirely of SDGE's and CAISO's making, therefore the Commission should not accede to SDGE's demand that the EIR recognize "compliance with mandatory NERC standards is a basic project objective". Furthermore, a finding by the Commission that the NERC reliability standards apply to SDGE's 138 kV SOC facilities would be inconsistent with FERC's recent determination that such facilities (when served by a single connection to the BES) qualify as distribution facilities not subject to NERC reliability standards.

²⁵ FRONTLINES Opening Brief page 3 and as set forth *supra*.

²⁶ Three systems are within the Antelope-Bailey and East Kern Wind Resource Area system and affirmed by FERC ["Order on Complaint", 147 FERC ¶ 61,050, April 17 2014, Docket EL 14-14] as "local distribution facilities" [at 55] "not integrated into the CAISO grid" [at 39]. Seven others were affirmed by FERC ["Order on Local Distribution Determination" (*supra*)] as "local distribution facilities" [at 18] and therefore not part of the Bulk Electric System [at 3]

²⁷ "Order on Complaint" at 39, 147 FERC ¶ 61,050, April 17 2014, Docket EL 14-14. The facilities were, at one time, fully integrated into the CAISO grid and served by multiple grid connections. However, with Commission approval of advice letter 2789-E SCE was authorized to split these facilities into 3 separate, radially served systems that were severed from multiple grid connections. This converted more than 20 distribution substations to a configuration served via a single grid connection.

²⁸ The *Mansfield* test consists of five factors. See: *Mansfield Municipal Electric Dept.*, Opinion No. 454, 97 FERC ¶ 61,134 (2001), *reh'g denied*, Opinion No. 454-A, 98 FERC ¶ 61,115 (2002) (*Mansfield*).

²⁹ Page 17 of CAISO's Answer to Complaint filed in FERC Docket EL14-14.

³⁰ *Ibid* at Page 19

³¹ Paragraph 53 of FERC Order on Complaint issued April 17 2014 in Docket EL 14-14.

³² *Ibid* at 42

³³ See page 18 of CAISO's Answer to Complaint filed in FERC Docket EL14-14

³⁴ See pages 18-19 of CAISO's Answer to Complaint filed in FERC Docket EL14-14

³⁵ SDGE Exhibit 1.3R page 6 *generally*

³⁶ See pages 19 of CAISO's Answer to Complaint filed in FERC Docket EL14-14.

³⁷ FRONTLINES Exhibit 400.1C FN 17 which states: "FRONTLINES Data Request 3 to CAISO asked: 'Other than the loss of SDGE's South Orange County load, what (if any) significant impacts would occur on the CAISO-controlled interconnected transmission grid system if all 138 kV service provided to South Orange County by SDGE's Talega substation were interrupted?' CAISO's response was 'SDGE's South Orange County 138 kV transmission system serves several cities and over 400 MW of load, so the potential for major impacts on this system due to an unreliable transmission system are considerable. However, beyond those considerable impacts, there would be no other significant impacts on the remaining ISO system.' "

³⁸ See pages 19 of CAISO's Answer to Complaint filed in FERC Docket EL14-14.

³⁹ FRONTLINES Exhibit 400.1C FN 17

ATTACHMENT 17 – FRONTLINES Exhibit 416.

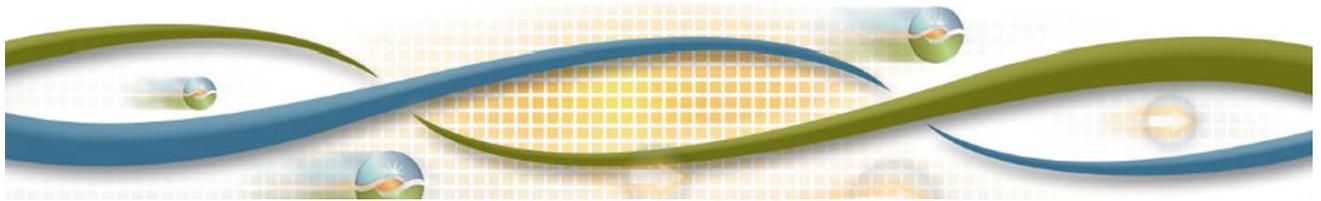


Agenda – Day 2

Tom Cuccia

Lead Stakeholder Engagement and Policy Specialist

2015-2016 Transmission Planning Process Stakeholder Meeting
September 21-22, 2015



Project Title:
HV Transmission Lines - Valley Inland
Powerlink - Resubmittal

In-Service Date:
June 2025

Project:
P15XYZ

Needs:

- Meet G-1/N-1 Planning Criteria
- Early retirement of San Onofre Nuclear Generation (SONGS)
- Loss of Once-Through Cooling (OTC) units in SoCal

Scope:

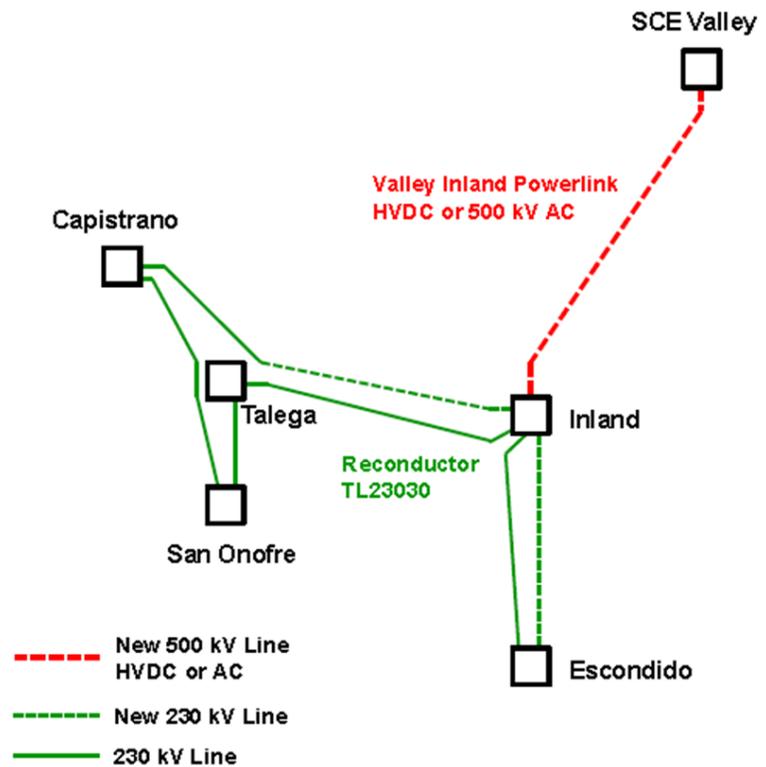
- Valley Inland Powerlink
 - New HVDC Transmission Line
- Talega-Escondido 230 kV lines
 - Reconductor and loop-in existing TL23030
 - Construct new lines between Talega and Escondido

Alternative:

- Valley Inland Powerlink – Alternative 2A
 - New 500 kV AC Line
- Talega-Escondido 230 kV lines: same scope as above

Advantages:

- Reduction of the need for in-basin generation within Southern California



Expansion Plan Summary



Project #	Project Title	ISO Status	ISD
Proposed Projects Requiring CAISO Approval			
2015-00036	Reinforcement of Southern 230 kV System	Pending	2019
2015-00020	New Miramar 230 kV Tap (MS-MRGT-PQ)	Pending	2020
2015-00036	SCR Reinforcement	Pending	2020
2015-00039	Install 3rd Miguel Class 80 Bank	Pending	2017
2015-00024	TL600: Mesa Heights Loop-In + Reconductor	Pending	2018
2015-00031	Install a new 3rd SA-ME 69kV Line	Pending	2017
2018-00013	Reconductor TL605 Silvergate– Urban	Pending	2018
2018-00034	New Capacitor at Pendleton Substation	Pending	2017
2015-00035	New Capacitor at Basilone Substation	Pending	2016
P15XYZ	Valley Inland Powerlink - Resubmittal	Pending	2025
New Distribution Substations			
Info Only	Ocean Ranch Substation - Resubmittal	-	2019

APPENDIX G: 2014 Request Window Submittals

9	Valley Inland Powerlink	SDG&E	SDG&E	Jun-2023	Alternative 1 - \$3.3-4B Alternative 2 - \$1.6 - 1.9B
10	Vine Station	SDG&E	SDG&E	Dec-2017	\$15-20M
11	STEP (Hoover-SONGS HVDC Inter-tie)	SDG&E and IID	Imperial Irrigation District (IID)	Jun-2020	\$2B
12	Alberhill - Talega HVDC	SDG&E and SCE	Edison Transmission, LLC	Mar-2022	\$622M
13	Talega-Escondido/Valley-Serrano 500 kV Interconnection Project	SDG&E and SCE	Nevada Hydro	Nov-2016	\$710M
14	Southern California Clean Energy Transmission Project (SoCal-CETP)	SDG&E and SCE	SoCal-CETP Holdings, LLC	Dec-2020	\$2.84B
15	Devers - Midway 500kV T/L	SCE and IID	SCE	Dec-2020	\$600M
16	IID Midway-Devers 500 kV Inter-tie	SCE and IID	Imperial Irrigation District (IID)	Dec-2020	\$386M
17	Buck-Colorado River-Julian Hinds 230 kV Loop-in	SCE	AltaGas Ltd	Dec-2016	\$150M
18	Laguna Bell Corridor Upgrade	SCE	SCE	Dec-2020	\$5M
19	MAP Upgrade Project	SCE	Startrans IO, LLC	Dec-2019	\$1.05B



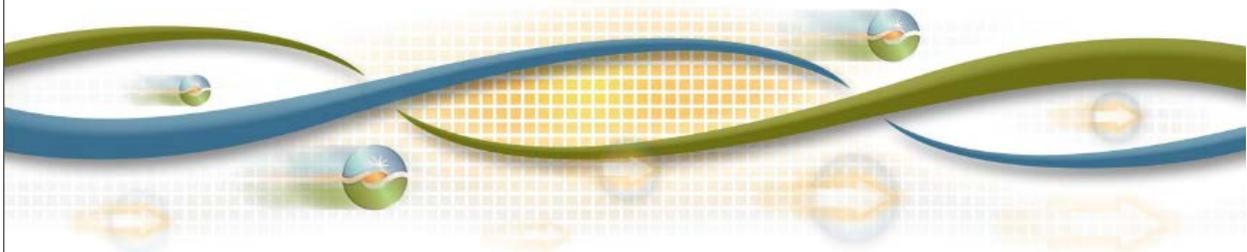
California ISO
Shaping a Renewed Future

Agenda – Day 2 Preliminary Reliability Assessment Results

Tom Cuccia

Senior Stakeholder Engagement and Policy Specialist

2013/2014 Transmission Planning Process Stakeholder Meeting
September 25-26, 2013



Proposed New HV Transmission Lines



Proposed 4 Alternatives

Alternative ¹	Technology	Approximate Length	Approximate Reduced Generation	Approximate Project Cost
1A <i>Imperial Valley Substation to a new north inland substation</i>	500 kV AC <i>Overhead</i>	145 miles	1401 MW	\$3.1B - \$3.8B
1B <i>Imperial Valley Substation to a new north inland substation</i>	HVDC ² <i>Overhead and Underground</i>	145 miles	1401 MW	\$4.7B - \$5.7B
2A <i>Valley Substation to a new north inland substation</i>	500 kV AC <i>Overhead</i>	35 miles	1450 MW	\$1.6B - \$1.9B
2B <i>Valley Substation to a new north inland substation</i>	HVDC ² <i>Underground</i>	35 miles	1450 MW	\$3.3B - \$4.0B

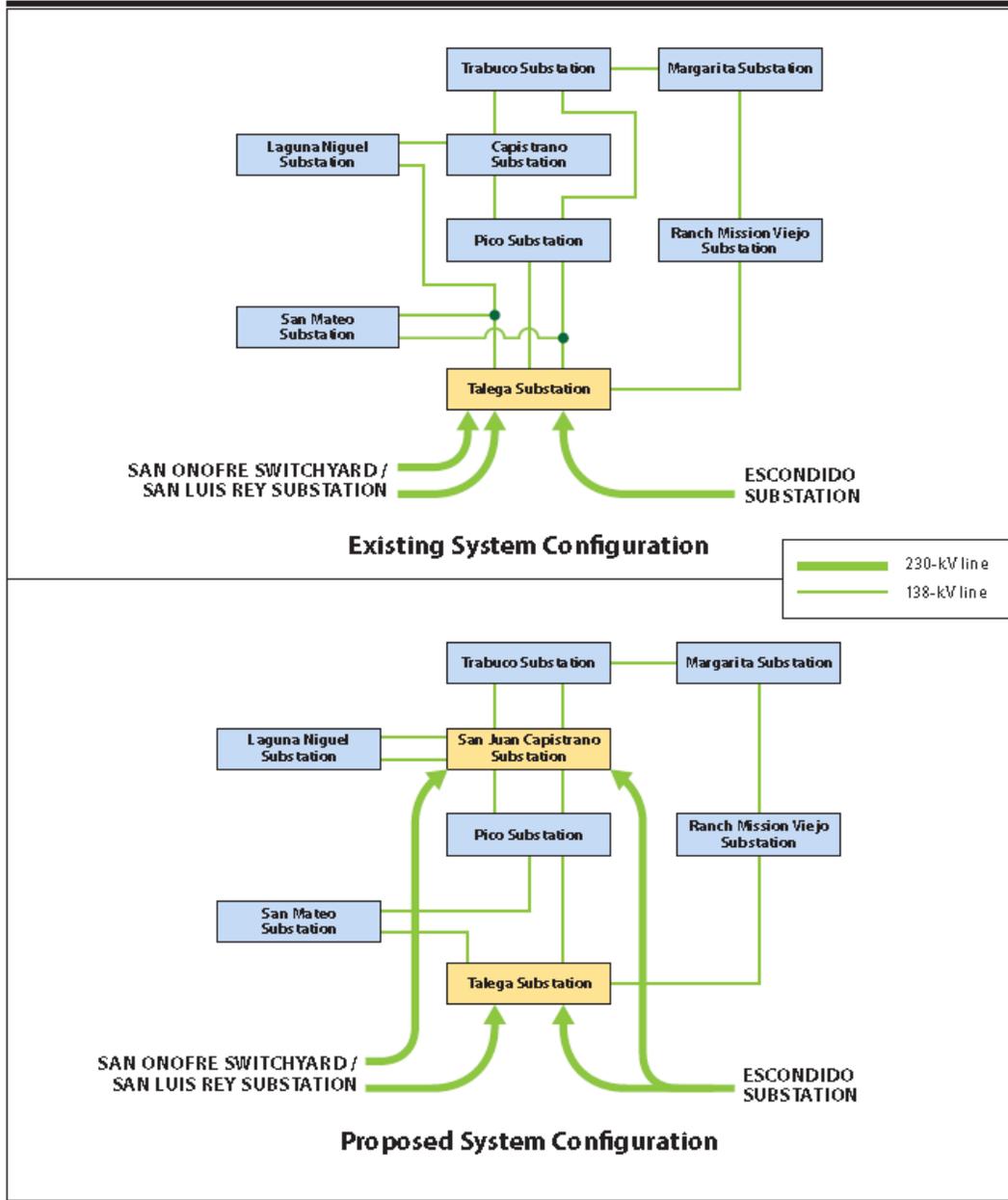
¹ Other included work within each alternative is the reconducting of TL 23030 (ES-TA) to a minimum rating of 1175/1175 MVA normal/emergency and loop-in to a new north inland substation. Construct a new 230 kV transmission line on the vacant side of the existing tower line supporting TL 23030 between Escondido and Talega substations and loop-in to the new north inland substation.

² Further analysis is required to determine final voltage level for proposed HVDC alternatives



A Sempra Energy utility

ATTACHMENT 18 – Figure 1.2 from the SOCREP Draft EIR.



FE-008279-0000-0817042.4 01/26/2015

Figure 1-2
Existing and Proposed SDG&E South Orange County 138-kV System
South Orange County Reliability Enhancement Project