

*Southern California Edison*  
**Presidential Substation Project A.08-12-023**

**DATA REQUEST SET Presidential ED-11**

**To:** ENERGY DIVISION  
**Prepared by:** Jack Haggemiller  
**Title:** Field Engineering Project Manager  
**Dated:** 06/07/2013

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**Question Q.01:**

Provide the 2013-2022 DSP Peak Demand Forecast for the Electrical Needs Area including operational load rolling.

**Response to Question Q.01:**

**THIS DATA REQUEST CONTAINS PROTECTED MATERIAL - CONTAINS  
CRITICAL ENERGY INFRASTRUCTURE INFORMATION.**

Please see the attached files for the 2013 - 2022 Peak Demand Forecast as depicted in the 2013 - 2022 DSP Substation Status Sheets for the Electrical Needs Area substations.

**Southern California Edison  
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**DATA REQUEST SET Presidential ED-11**

**To: ENERGY DIVISION  
Prepared by: Kashif Siddiqi  
Title: Senior Engineer  
Dated: 06/07/2013**

**Received Date: 06/03/2013  
REDACTED VERSION**

**Question Q.02:**

2. System Alternative A which was eliminated from consideration in the Draft and Final EIRs was comprised of the following actions:

“Upgrade Potrero Substation and Royal Substation by replacing existing transformers and 16 kV station capacitor banks with higher capacity equipment, and adding additional 16 kV circuits. Thousand Oaks Substation is presently at full build-out and cannot accommodate additional transformers.”

The FEIR described System Alternative A as follows:

“Upgrades at Potrero Substation would include:

- The replacement of two 22.4 MVA transformers with two 28 MVA transformers. The upgrade of two 3 MVAR 16 kV station capacitor banks to two 4.8 MVAR 16 kV station capacitor banks.
- The installation of one new 16 kV circuit that would extend approximately 1 mile.

Upgrades at Royal Substation would include:

- The replacement of one 22.4 MVA transformer with a 28 MVA transformer.
- The replacement and relocation of two 16 kV capacitor banks (4.8 and 6.0 MVAR) with three new 4.8 MVAR 16 kV capacitor banks.
- The extension of the 16 kV operating and transfer buses and rack.
- The installation of two new 16 kV circuits that would extend approximately 6.5 miles in length.”

Assuming the transformer replacements described in the System Alternative A are with units of matched impedance and other substation equipment such as breakers and switches etc. are upgraded/replaced as necessary the following substation PLL ratings should be achievable under System Alternative A:

- Royal 142.6 MVA
- Thousand Oaks 144.0 MVA
- Potrero 145.6 MVA
- Total ENA 432.2 MVA

Describe any technical/engineering constraints related to upgrading the three ENA substations as described and achieving the PLL ratings shown above. If PLL ratings would be reduced from the values presented above, describe the technical reasons for the reduction, and present the highest achievable PLL rating based on upgrading the Potrero and Royal substations.

### **Response to Question Q.02:**

After replacing the 22.4 MVA transformer with a 28 MVA transformer at Royal Substation in the No. 1 Transformer Bank, and removing current constraints at Potrero Substation by replacing type U bushings on the No. 1 Transformer Bank and related 16 kV Disconnect Switches using SCE standards, it is anticipated that a PLL of [REDACTED] MVA could be achieved at Royal Substation and a PLL of [REDACTED] MVA at Potrero Substation. [REDACTED] Thousand Oak Substation is currently at capacity of [REDACTED] MVA. The anticipated total ENA would be 432.2 MVA.

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**Question Q.03A:**

Update previous SCE responses to Data Request Set Presidential ED-10 based on the 2013-2022 DSP Peak Demand Forecast (in place of the 2012-21 forecast) under System Alternative A assuming a Presidential Substation would not be built (Original Data Request Set Presidential ED-10, Question 1 stated as follows below):

Southern California Edison (SCE) in response to data inquiries has noted that the implementation of a System Alternative A (per its most recent iteration as described below) would require SCE to take other actions external to the ENA to meet the projected 2021 loads. To more fully understand and assess the impacts of the proposed System Alternative A (see the proposed description of this alternative below), the following data is requested. In replying to the questions please assume that Alternative A is implemented and the rolling of load into the ENA would be limited by the capacities of the ENA substations (Royal, Thousand Oaks, and Potrero) following the completion of all identified upgrades. The CPUC would not impose operational load rolling restrictions under this alternative.

System Alternative A – Upgrade Existing Substations Using Standard SCE Equipment and Transformers

*Description*

Increase capacity at two of the existing ENA Substations: Upgrade Potrero Substation and Royal Substation by replacing the existing transformers and 16 kV station capacitor banks with higher capacity equipment, and adding additional 16 kV circuits. The Thousand Oaks Substation is not capable of supporting an upgrade. The upgrades would consist of:

Potrero Substation Upgrades

- Replace two 22.4 MVA transformers with two 28 MVA transformers;
- The upgrade of two 3 MVAR 16 kV station capacitor banks to two 4.8 MVAR 16 kV station capacitor banks;
- Upgrade the existing transformer breakers and leads (work internal at the

substation); and

- Install one new 16 kV circuit approximately 1-mile long.

#### Royal Substation

- Replace one 22.4 MVA transformer with a 28 MVA transformer;
- Replace and relocate two 16 kV capacitor banks (4.8 and 6.0 MVAR) with three new 4.8 MVAR 16 kV capacitor banks;
- Extend the 16 kV operating and transfer buses and rack; and
- Install two new 16 kV circuits approximately 6.5 miles long.

What additional upgrades would be required outside the ENA at the following substations:

- a. Newbury, (Note: the SCE 2/6/12 rebuttal from Alicia Lopez, indicated that 11.2MVA could be added to the substation although there may be potential issues with circuit ties.) Please describe the nature of any problems associated with the circuit ties.
- b. Oak Park, and (Note: the SCE 2/6/12 rebuttal from Alicia Lopez, indicated that an additional 28 MVA transformer and / or the two existing 14 MVA transformers could be replaced with 28 MVA units, again although there may be limitations with circuits and other infrastructure.) Please describe the nature of any problems associated with the circuits or other infrastructure. Would one be correct in assuming the 28 MVA transformers would carry a PLL rating of approximately 36.4 MVA?
- c. Santa Susana. (Note: no indications were given in the SCE 2/6/12 rebuttal from Alicia Lopez, as to whether or not upgrades are possible at this substation.)

### **Response to Question Q.03A:**

Using the 2013 - 2022 Peak Demand Forecast, the scenario that both 1) System Alternative A – Upgrade Existing Potrero and Royal Substations Using Standard SCE Equipment and Transformers and SCE standard design (in 2019) and 2) being able to roll load in accordance with existing SCE practices are implemented. Please note each of the answers below is based on only a desktop analysis and neither a job walk analysis nor engineering has been completed to detail all necessary work elements:

- a. SCE would not need to upgrade the transformers at Newbury Substation, but would require an additional distribution circuit\* in 2022 under the scenario in this Data Request #11.
- b. The typical PLL of a 28 MVA nameplate rated transformer with a heat run study would be 36.4 MVA. If banked with another 28 MVA nameplate rated transformer with a heat run study of the same impedance and no other limiting factors, then that transformer would also be rated at

36.4 MVA. A new 16 kV distribution circuit\* would be needed at Oak Park Substation in 2018 under this scenario. The current footprint of the existing substation does not allow for the installation of the wrap-a-round bus without removing trees, grading, and expanding the wall/fence of the substation.

c. There is no work required at Santa Susana Substation as a result of this scenario.

\*Denotes work already identified in SCE's 2013 – 2022 Peak Demand Forecast but needed in the ten year planning horizon for this System Alternative A scenario (including the additional work identified in this data request set) as well.

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**Dated:** 06/07/2013

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**Question Q.03B:**

Q.03B Update previous SCE responses to Data Request Set Presidential ED-10 based on the 2013-2022 DSP Peak Demand Forecast (in place of the 2012-21 forecast) under System Alternative A assuming a Presidential Substation would not be built (Original Data Request Set Presidential ED-10, Question 2 stated as follows below):

Southern California Edison (SCE) in response to data inquiries has noted that the implementation of a System Alternative A (per its most recent iteration as described below) would require SCE to take other actions external to the ENA to meet the projected 2021 loads. To more fully understand and assess the impacts of the proposed System Alternative A (see the proposed description of this alternative below), the following data is requested. In replying to the questions please assume that Alternative A is implemented and the rolling of load into the ENA would be limited by the capacities of the ENA substations (Royal, Thousand Oaks, and Potrero) following the completion of all identified upgrades. The CPUC would not impose operational load rolling restrictions under this alternative.

System Alternative A – Upgrade Existing Substations Using Standard SCE Equipment and Transformers

*Description*

Increase capacity at two of the existing ENA Substations: Upgrade Potrero Substation and Royal Substation by replacing the existing transformers and 16 kV station capacitor banks with higher capacity equipment, and adding additional 16 kV circuits. The Thousand Oaks Substation is not capable of supporting an upgrade. The upgrades would consist of:

Potrero Substation Upgrades

- Replace two 22.4 MVA transformers with two 28 MVA transformers;
- The upgrade of two 3 MVAR 16 kV station capacitor banks to two 4.8 MVAR 16 kV station capacitor banks;
- Upgrade the existing transformer breakers and leads (work internal at the

substation); and

- Install one new 16 kV circuit approximately 1-mile long.

#### Royal Substation

- Replace one 22.4 MVA transformer with a 28 MVA transformer;
- Replace and relocate two 16 kV capacitor banks (4.8 and 6.0 MVAR) with three new 4.8 MVAR 16 kV capacitor banks;
- Extend the 16 kV operating and transfer buses and rack; and
- Install two new 16 kV circuits approximately 6.5 miles long.

What additional external capacity (Top rating and PLL) would be achieved as a result of these substation upgrades outside the ENA?

#### **Response to Question Q.03B:**

No capacity upgrades would be required at Santa Susana and Oak Park substations, and therefore, no additional external capacity would be achieved at substations outside the ENA.

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**Question Q.03C:**

Update previous SCE responses to Data Request Set Presidential ED-10 based on the 2013-2022 DSP Peak Demand Forecast (in place of the 2012-21 forecast) under System Alternative A assuming a Presidential Substation would not be built (Original Data Request Set Presidential ED-10, Question 3 stated as follows below):

Southern California Edison (SCE) in response to data inquiries has noted that the implementation of a System Alternative A (per its most recent iteration as described below) would require SCE to take other actions external to the ENA to meet the projected 2021 loads. To more fully understand and assess the impacts of the proposed System Alternative A (see the proposed description of this alternative below), the following data is requested. In replying to the questions please assume that Alternative A is implemented and the rolling of load into the ENA would be limited by the capacities of the ENA substations (Royal, Thousand Oaks, and Potrero) following the completion of all identified upgrades. The CPUC would not impose operational load rolling restrictions under this alternative.

System Alternative A – Upgrade Existing Substations Using Standard SCE Equipment and Transformers

*Description*

Increase capacity at two of the existing ENA Substations: Upgrade Potrero Substation and Royal Substation by replacing the existing transformers and 16 kV station capacitor banks with higher capacity equipment, and adding additional 16 kV circuits. The Thousand Oaks Substation is not capable of supporting an upgrade. The upgrades would consist of:

Potrero Substation Upgrades

- Replace two 22.4 MVA transformers with two 28 MVA transformers;
- The upgrade of two 3 MVAR 16 kV station capacitor banks to two 4.8 MVAR 16 kV station capacitor banks;
- Upgrade the existing transformer breakers and leads (work internal at the substation);  
and

- Install one new 16 kV circuit approximately 1-mile long.

#### Royal Substation

- Replace one 22.4 MVA transformer with a 28 MVA transformer;
- Replace and relocate two 16 kV capacitor banks (4.8 and 6.0 MVAR) with three new 4.8 MVAR 16 kV capacitor banks;
- Extend the 16 kV operating and transfer buses and rack; and
- Install two new 16 kV circuits approximately 6.5 miles long.

Describe how these combined upgrades would affect the operational flexibility of the SCE system within and external to the ENA. What are likely operational constraints and limitations, etc.?

#### **Response to Question Q.03C:**

The operating constraints or limitations associated with System Alternative A increase as the need for Presidential Substation in 2024 - 2025 draws closer. While System Alternative A and the additional work identified in this data request provide additional transformer capacity and additional circuits, Royal Substation, Thousand Oaks Substation, and Potrero Substation would all be built to their ultimate capacities. If Presidential Substation is not constructed and load continues to grow, it is estimated that by 2024 - 2025, Royal Substation would be loaded to its 95% capacity, creating increased risk of load dropping for the loss of any transformer. Circuit restoration for unplanned outages would also be limited because of the lack of adjacent substation capacity. Lastly, the introduction of any unanticipated new large customers not accounted for in SCE's forecast would then result in either the need to accelerate the construction of Presidential Substation, the creation of some other project (e.g. new substation or subtransmission line), or a situation where SCE may fail to meet its obligation to serve a new customer in a timely manner.

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**Title:** Field Engineering Project Manager

**Dated:** 06/07/2013

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**Question Q.03D:**

Update previous SCE responses to Data Request Set Presidential ED-10 based on the 2013-2022 DSP Peak Demand Forecast (in place of the 2012-21 forecast) under System Alternative A assuming a Presidential Substation would not be built (Original Data Request Set Presidential ED-10, Question 4 stated as follows):

Southern California Edison (SCE) in response to data inquiries has noted that the implementation of a System Alternative A (per its most recent iteration as described below) would require SCE to take other actions external to the ENA to meet the projected 2021 loads. To more fully understand and assess the impacts of the proposed System Alternative A (see the proposed description of this alternative below), the following data is requested. In replying to the questions please assume that Alternative A is implemented and the rolling of load into the ENA would be limited by the capacities of the ENA substations (Royal, Thousand Oaks, and Potrero) following the completion of all identified upgrades. The CPUC would not impose operational load rolling restrictions under this alternative.

System Alternative A – Upgrade Existing Substations Using Standard SCE Equipment and Transformers

*Description*

Increase capacity at two of the existing ENA Substations: Upgrade Potrero Substation and Royal Substation by replacing the existing transformers and 16 kV station capacitor banks with higher capacity equipment, and adding additional 16 kV circuits. The Thousand Oaks Substation is not capable of supporting an upgrade. The upgrades would consist of:

Potrero Substation Upgrades

- Replace two 22.4 MVA transformers with two 28 MVA transformers;
- The upgrade of two 3 MVAR 16 kV station capacitor banks to two 4.8 MVAR 16 kV station capacitor banks;
- Upgrade the existing transformer breakers and leads (work internal at the substation); and

- Install one new 16 kV circuit approximately 1-mile long.

#### Royal Substation

- Replace one 22.4 MVA transformer with a 28 MVA transformer;
- Replace and relocate two 16 kV capacitor banks (4.8 and 6.0 MVAR) with three new 4.8 MVAR 16 kV capacitor banks;
- Extend the 16 kV operating and transfer buses and rack; and
- Install two new 16 kV circuits approximately 6.5 miles long.

Would new 66 kV line(s) be required to serve any of these substations? If additional 66 kV line(s) is/are needed, what would the conceptual beginning, endpoint, and route(s) be?

#### **Response to Question Q.03D:**

Using data from the 2013 - 2022 Peak Demand Forecast, SCE has analyzed the scenario described above. For purposes of this analysis, SCE has assumed that all projects (except Presidential Substation) within the current 2013 - 2022 Peak Demand Forecast and the 2013 - 2022 Transmission Substation Plan with need dates identified before 2019 (when System Alternative A would be constructed) would be implemented. Under this scenario, the following additional 66 kV subtransmission projects would be needed:

- 1) Construct a new 66 kV capacitor bank at Malibu Substation in 2019.
- 2) Construct a new Moorpark - Valdez 66 kV Subtransmission Line from Moorpark Substation to Valdez Substation in 2020. SCE would likely propose this new 66 kV subtransmission line to follow the route of the existing Moorpark - Royal No. 1 66 kV Subtransmission Line from Moorpark Substation to Royal Substation (approximately 8.5 miles). New conductor and facilities would be installed or existing idle conductor would be reused along the portion of the existing Moorpark - Royal No. 2 66 kV Subtransmission Line from Royal Substation to Royal Avenue (approximately 1 mile). New conductor and facilities would be installed along the existing Moorpark - Shellline - Valdez 66 kV Subtransmission Line (approximately 16 miles) from Royal Avenue to Valdez Substation.

This new Moorpark Valdez 66 kV Subtransmission Line would leave Moorpark Substation, travel north on Gabbert Road, east on Poindexter Road, north near Moorpark Road, east near Charles Street, and follow the north side of SR-118, and somewhat follow Los Angeles Avenue southeast until Cochran Street where it would proceed east to Royal Substation. As the new 66 kV subtransmission line passed Royal Substation, it would proceed south on First Street until Royal Avenue, and then east on Royal Avenue until reaching the existing SCE right of way. From this location, the 66 kV

subtransmission line would proceed southeast to SR-101 where it would proceed east on the south side of the freeway near Calabasas Road. The 66 kV subtransmission line would continue proceeding southeast after crossing Park Granada, and follow the path between Park Sorrento and Valmar Road until reaching Valdez Substation in Calabasas.

3) Reconstructor a portion of the existing Moorpark – Royal No. 2 66 kV Subtransmission Line in 2020 (the same year that the new Moorpark - Valdez 66 kV Subtransmission Line is constructed). The portion of this line to be reconducted is located along First Street from Los Angeles Avenue to Royal Substation and is approximately 3,000 feet in length.

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**Dated:** 06/07/2013

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**Question Q.03E:**

Update previous SCE responses to Data Request Set Presidential ED-10 based on the 2013-2022 DSP Peak Demand Forecast (in place of the 2012-21 forecast) under System Alternative A assuming a Presidential Substation would not be built (Original Data Request Set Presidential ED-10, Question 5 stated as follows):

Southern California Edison (SCE) in response to data inquiries has noted that the implementation of a System Alternative A (per its most recent iteration as described below) would require SCE to take other actions external to the ENA to meet the projected 2021 loads. To more fully understand and assess the impacts of the proposed System Alternative A (see the proposed description of this alternative below), the following data is requested. In replying to the questions please assume that Alternative A is implemented and the rolling of load into the ENA would be limited by the capacities of the ENA substations (Royal, Thousand Oaks, and Potrero) following the completion of all identified upgrades. The CPUC would not impose operational load rolling restrictions under this alternative.

System Alternative A – Upgrade Existing Substations Using Standard SCE Equipment and Transformers

*Description*

Increase capacity at two of the existing ENA Substations: Upgrade Potrero Substation and Royal Substation by replacing the existing transformers and 16 kV station capacitor banks with higher capacity equipment, and adding additional 16 kV circuits. The Thousand Oaks Substation is not capable of supporting an upgrade. The upgrades would consist of:

Potrero Substation Upgrades

- Replace two 22.4 MVA transformers with two 28 MVA transformers;
- The upgrade of two 3 MVAR 16 kV station capacitor banks to two 4.8 MVAR 16 kV station capacitor banks;
- Upgrade the existing transformer breakers and leads (work internal at the substation); and

- Install one new 16 kV circuit approximately 1-mile long.

#### Royal Substation

- Replace one 22.4 MVA transformer with a 28 MVA transformer;
- Replace and relocate two 16 kV capacitor banks (4.8 and 6.0 MVAR) with three new 4.8 MVAR 16 kV capacitor banks;
- Extend the 16 kV operating and transfer buses and rack; and
- Install two new 16 kV circuits approximately 6.5 miles long.

In addition to those described in items 1-4 above, what other upgrades external the ENA may be needed under an implementation of System Alternative A scenario?

#### **Response to Question Q.03E:**

Using data from the 2013 - 2022 Peak Demand Forecast and the scenario described above, please see as follows below. For purposes of this analysis, SCE has assumed that all projects within the current 2013 - 2022 Peak Demand Forecast and the 2013 - 2022 Transmission Substation Plan with need dates identified before 2019 (when System Alternative A would be constructed ) would be implemented. Under this scenario, the following additional work would be needed:

- 1) A bank upgrade project would be needed at Malibu Substation in 2020 to add a new 28 MVA transformer, capacitor bank, and second 16 kV operating bus.
- 2) A new 16 kV distribution circuit\* would be needed emanating from Valdez Substation in 2020.
- 3) A new 66 kV capacitor would be required at Malibu Substation in 2019 if the Moorpark - Valdez 66 kV Subtransmission Line is constructed in 2020.

In addition, in order to complete the proposed Moorpark - Valdez 66 kV Subtransmission Line in 2020 as identified under this scenario, three 16 kV distribution circuits out of Valdez Substation would likely need to have existing sections of line rearranged. These include approximately 3/4 mile of existing overhead vertical configuration circuit rebuilt to horizontal configuration circuit along the south side of the Ventura Freeway (SR-101) approximately west of Ramada Boulevard extended on one circuit. In addition, approximately 1.5 miles of existing overhead horizontal configuration circuit would be needed to be rearranged as vertical configuration circuit along Calabasas Road from approximately Parkway Calabasas to approximately Crummer Ranch Road on a second circuit. On a third circuit, approximately 1 mile of existing overhead vertical configuration circuit would need to be rearranged as horizontal configuration, and approximately 1.5 miles of existing overhead vertical configuration circuit would need to

be converted to horizontal configuration, and approximately 3/4 miles of existing overhead vertical configuration would need to be converted to horizontal configuration between the Ventura Freeway (SR-101) and Calabasas Road from approximately Park Granada extended to approximately Las Virgenes Road. This work would be performed in Calabasas and Los Angeles County.

\*Denotes work already identified in SCE's 2013 – 2022 Peak Demand Forecast but needed in the ten year planning horizon for this System Alternative A scenario (including the additional work identified in this data request set) as well.

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**Question Q.04:**

Where not addressed under Question #3, provide additional information based on SCE best engineering judgment regarding what physical changes would be required to implement System Alternative A, within the ENA and outside the ENA. For the ENA substations describe any additional changes that would be required at each substation beyond the transformer, circuit breaker, and switch rack upgrades already described in the EIR if any.

**Response to Question Q.04:**

Using data from the 2013 - 2022 Peak Demand Forecast and the scenario described above, please see as follows below. For purposes of this analysis, SCE has assumed that all projects within the current 2013 - 2022 Peak Demand Forecast and the 2013 - 2022 Transmission Substation Plan with need dates identified before 2019 (when System Alternative A would be constructed ) would be implemented. Under this scenario, the following additional work not addressed in Question 3 that would be needed includes:

- 1) A new 16 kV distribution circuit would be needed emanating from Thousand Oaks Substation in 2019.
- 2) The Type U bushings on the No. 1 Transformer Bank and 16 kV Disconnect Switches at Potrero Substation would need to be replaced in 2019 in order to achieve the approximate ultimate PLL rating.