As illustrated in workpapers to Schedule 10 and 16, during the period January 2015 through December 2016, SCE forecasts:

- $398 million in ISO-related non-incentive network transmission expenditures (Including $246 million in ISO Blanket expenditures),
- $645 million FERC incentive rate qualified CWIP expenditures, and
- $599 million of FERC direct capital expenditures projected to go into rate base during the upcoming Rate Year (in the period January 2016 through December 2016)

In addition to the numerous but relatively small transmission projects, there are fifteen (15) significant transmission projects (each $5 million or greater in ISO-related costs) that are projected to go into rate base during the upcoming Rate Year – seven Blankets (items 1 through 7 below), five non-incentive projects (items 8 through 12), and three incentive projects (items 13, 14 and 15). Table 1 below provides a summary of forecast FERC-jurisdictional direct capital expenditures for fifteen significant transmission projects that are projected to go into rate base in the period January 2016 through December 2016.

Table 1
FERC Direct Capital Expenditures Projected to Go into Rate Base during Rate Year[1]
($millions)

No.	PIN	Project	FERC CWIP	FERC Non-CWIP	Total
1	3364	Transmission Breakdown Maintenance Planned	0	6.863	6.863
2	5210	Substation Transformer Bank Replacement Program (AA- & A-Bank)	0	18.148	18.148
3	6428	Centralized Remedial Action Scheme (C-RAS) Program Phase	0	13.833	13.833
4	7298	Transmission Line Rating Remediation	0	60.450	60.450
5	4343	Non-Bulk Relay Replacement Program	0	7.738	7.738
6	4756	Substation Miscellaneous Equipment Additions & Betterment	0	9.971	9.971
7	4791	Engineer and construct new interconnection facilities (Network Upgrades)	0	5.000	5.000
8	6791	Lugo 500 kV Substation Breaker Installation	0	9.401	9.401
9	7645	Victor Loop-In Project	0	5.471	5.471
10	7113	El Nido 220/66 kV: Bank on Circuit Breaker Project	0	5.010	5.010
11	7518	Springville 220/66 kV Substation: Bank on Circuit Breaker Project	0	5.821	5.821
12	3138	LADWP DC electrode replacement (LAND segment)	0	24.746	24.746
13	7553	TRTP Segment 8A	331.160	0	331.160

[1] For calculation, see: "WP-Schedule 16-Summary of ISO Capital Expenditures - Non-Incentive Projects" for PINs 3364, 5210, 6428, 7298, 4343, 4756, 4791, 6791, 7645, 7113, 7518, and 3138; "WP-Schedule 10-Summary of ISO Capital Expenditures – Incentive Projects" for TRTP Segments 8A & 11 and Whirlwind Substation Expansion.

No.	PIN	Project	FERC CWIP	FERC Non-CWIP	Total
14	6442	TRTP Segment 11	11.837	0	11.837
15	7650/ 7695	Whirlwind Substation Expansion	38.822	0	38.822
16	Various	Less than $5m each	1.673	41.361	43.034
		Total	**383.492**	**215.268**	**598.760**

1. Transmission Breakdown Maintenance Planned (PIN: 3364)

Transmission Breakdown Maintenance Planned captures the costs to remove, replace, and retire asset on a programmatic basis. Planned transmission capital maintenance is driven by inspection results. In some instances, field observations lead to specific projects to address emerging issues in a particular grid, equipment or structure type. The estimated ISO-related direct capital expenditures for this program that are expected to be operational in the period January through December 2016 are $6.9 million.

2. Substation Transformer Bank Replacement Program (PIN: 5210)

AA-Bank transformers are located in major substations where they take electricity at the 500 kV transmission level and transform it down to 220 kV. The Substation Infrastructure Replacement ("SIR") program identifies and replaces AA-Bank transformers that are approaching the end of their service lives, that contain parts which are known to be seriously problematic or are no longer available, or that can no longer be cost effectively maintained. The costs of AA-Bank transformer replacement are all under FERC jurisdiction.

A-Bank transformers are located in major substations where they take electricity at the 220 kV transmission level and transform it down to a subtransmission voltage, either 115 kV or 66 kV. The SIR program identifies and replaces A-Bank transformers those are approaching the end of their service lives, that contain parts which are known to be seriously problematic or are no longer available, or that can no longer be cost-effectively maintained.

The consequences of an in-service failure of an A-Bank transformer are highly undesirable. A-Bank transformers typically supply power to large portions of SCE's distribution system servicing hundreds of thousands of customers. While redundancy is built into the A-Bank system, an in-service failure would place the system into an "N-1" condition, wherein a second failure or system disturbance could result in a massive blackout affecting significantly large areas. So severe are the

consequences of such a blackout that SCE believes that every reasonable precaution must be taken to prevent it.

Although infrequent, in-service failures of A-Bank transformers can be violent. These transformers are oil-filled and catastrophic failures and ensuing fires can endanger the safety of SCE employees and the operability of nearby equipment. Inspections are extremely helpful in identifying many incipient failures. However, because of the speed at which failure mechanisms can arise and progress, inspections cannot prevent all failures. Therefore, planned preemptive replacements under controlled conditions of transformers clearly approaching the end of their service lives are a prudent and responsible action to minimize the risk of in-service failures.

In summary, the replacement of AA- and A-Bank transformers is managed by the Substation Infrastructure Replacement program which combines engineering analysis and expert judgment to ensure that the appropriate number of AA- and A-Bank transformers is replaced each year and that those which are replaced are the most risk-significant.

In 2015 - 2016, the 3AA and 4AA-Bank replacements at Eldorado substation are under FERC jurisdiction while all the A-Bank replacements are under CPUC jurisdiction in 2015 - 2016. The estimated ISO-related direct capital expenditures for this program that are expected to be operational in the period January through December 2016 are $18.1 million.

3. Centralized Remedial Action Scheme (C-RAS) Program Phase (PIN: 6428)

After the CRAS Project Phase is completed by 2015, the CRAS Program Phase will implement new RAS using the CRAS system. These new RAS will allow for new generation interconnections, new or modified reliability based RAS, and conversion of existing RAS as required.

This project phase encompasses planning and designing new RAS, as well as procuring the relay and telecommunication equipment necessary to implement new RAS using CRAS, and to convert exiting RAS to the CRAS platform. The planning and engineering of these activities require a relatively long lead time. Therefore, before the end of the Project Phase, SCE will start planning and engineering the first new RAS that will be incorporated with CRAS. This will allow SCE to more quickly install the first CRAS protection schemes upon completion of the Project Phase.
SCE's cost forecast reflects this strategy. The estimated ISO-related direct capital expenditures for this program that are expected to be operational in the period January through December 2016 are $13.8 million.

4. Transmission Line Rating Remediation (PIN: 7298)

SCE has been performing the Transmission Line Rating Study, and has developed a remediation plan to comply with the CPUC General Order No. 95 (G.O. 95) that establishes the rules that overhead electric utility lines and equipment are governed by, effective 1942.

To identify transmission spans that are potentially in violation of G.O. 95 requirements, SCE follows a two-step process:

- First, SCE identifies potential transmission line clearance issues using Light Detection and Ranging (LiDAR) to aerially survey the transmission system; and
- Second, SCE performs site visits to validate that the violation condition still exists and develop remediation plans.

SCE has completed the first step; SCE has performed a LiDAR survey of all of SCE's CAISO-controlled transmission lines for lines built before 2005. Based on the results of the survey, SCE has prioritized the spans that may need line clearance remediation. The prioritization criteria includes line sag when operating at or below 130 degrees Fahrenheit, and potential risk to public safety and system reliability based on location of span, terrain, encroachment type, and extent of deviation from standard.

Currently, SCE has initiated remediation of the inspected line spans that did not meet G.O. 95 requirements. Transmission Line Rating Remediation (TLRR) work includes replacing towers and poles, clearing brush, replacing insulators, removing slack from lines, and other efforts to remediate line clearance issues.

The forecast of TLRR capital expenditures is based on a specific, project-based forecast. The forecast includes the costs for remediation activities, engineering and design work, and materials, by year and by priority level of the work. Most of these costs are FERC jurisdictional. The estimated ISO-related direct capital expenditures for this program that are expected to be operational in the period January through December 2016 are $60.4 million.

5. Non-Bulk Relay Replacement Program (PIN: 4343)

Relays are devices that monitor the currents and voltages for each piece of equipment in substations and actuate circuit breakers should these parameters exceed acceptable limits. Certain relays in 220/115 kV and below substations fall under FERC jurisdiction. SCE has a specific plan for replacing both its distribution protection and control equipment and its relays. The forecast includes replacement of obsolete protection and control systems, first-generation integrated systems (relays

and control computers), obsolete programmable logic controllers (PLCs), and replacement of relays to improve system reliability and safety. Examples include replacement of eight 220kV Local Breaker Failure Backup (LBFB) Relays (220kV CBs 4072, 4092, 4102, 4112, 6072, 6092, 6102, 6112) at Eldorado 500/220kV Substation. The estimated ISO-related direct capital expenditures for this program that are expected to be operational in the period January through December 2016 are $7.7 million.

6. **Substation Miscellaneous Equipment Additions & Betterment (PIN: 4756)**

   Substation Miscellaneous Equipment Additions & Betterment captures the cost to remove, replace, and retire miscellaneous assets on a reactive or programmatic basis. It does not include the costs for preemptive replacement of circuit breakers, substation transformers, substation protection and control systems. Instead, it is predominantly like-for-like replacement of miscellaneous substation equipment with limited engineering. Equipment that is identified as requiring replacement must be replaced in a timely manner because substation equipment failures may lead to prolonged outages, unsafe operating conditions, or more expensive reactive solutions. Examples include the replacement of six sets of 500 kV and four sets of 220 kV Surge Arrestors at Vincent 500/220 kV Substation. The estimated ISO-related direct capital expenditures of $10.0 million.

7. **Engineer and construct new interconnection facilities – Network Upgrades (PIN: 4791)**

   The Generation Interconnection program includes projects required to interconnect new generating plants to SCE's electrical system. These expenditures are driven by requests from generation project developers who choose to have SCE construct the facilities necessary to interconnect their projects to the SCE grid. Interconnection requests are made pursuant to SCE's Wholesale Distribution Access Tariff (WDAT) for connections to the CPUC-jurisdictional distribution system or SCE's transmission Owner (TO) Tariff for connections to the FERC jurisdictional transmission system. The estimated ISO-related direct capital expenditures for 2016 Rate Year are $5.0 million.

8. **Lugo 500 kV Substation Breaker Installation (PIN: 6791)**

   Currently, both No. 1AA and No. 2AA 500/220 kV transformer banks at Lugo substation are connected to the North and South Buses (respectively) via a bank-on-bus configuration. This configuration violates SCE's existing Transmission Planning Criteria. The proposed project scope includes relocation of the existing Lugo - Rancho Vista 500kV line from position 5 east to position 4

west bus as well as equipping position 4 with double breakers. The project scope also includes equipping position 3 with double breakers and connecting the No.1 AA bank to the position 3 east. The project will improve operational flexibility, simplify future additions, and minimize the loss of station capacity during planned outages. The proposed operating date is December 2016 with estimated ISO-related direct capital expenditures of $9.4 million in the period January through December 2016.

9. Victor Loop-in (PIN: 7645)

The purpose of this project is to eliminate system instability under outage of Victor-Lugo 220 kV #1 & #2 with Victor high load. Looping Kramer-Lugo 220 kV #1 & #2 into Victor Substation will eliminate the problem. Looping the existing Kramer-Lugo 220 kV #2 line into Victor Substation will form Kramer-Victor 220 kV #1 and Lugo-Victor 220 kV #3 lines. Looping the existing Kramer-Lugo 220 kV #2 line into Victor Substation will form Kramer-Victor 220 kV #2 and Lugo-Victor 220 kV #4 lines. The project will also include the Mojave RAS modifications. The proposed operating date is June 2016 with estimated ISO-related direct capital expenditures of $5.5 million.

10. El Nido 220/66 kV: Bank on Circuit Breaker Project (PIN: 7113)

Currently, No. 1A and 3A banks at El Nido 220/66 kV Substation are connected in bank-on-bus configuration. Equipping the banks in circuit breakers configuration would ensure compliance with current planning criteria and guidelines which would offer higher operation flexibility, simplify future additions, and minimize the loss of station capacity during planned outages. Project scope is to install 220 kV (63 kA) double breakers on No. 1A bank at position 3 and No. 3A bank at position 6. The proposed operating date is December 2016 with estimated ISO-related direct capital expenditures of $5.0 million.

11. Springville 220/66 kV Sub: Bank on Circuit Breaker Project (PIN: 7518)

In order to comply with the Line & Bus criteria that all "A" banks must be connected to a Double Breaker or a Breaker-and-a-half position, two 220 kV circuit breakers (CBs) will be installed at Springville 220/66 kV Substation. Project scope includes: redesigning of high side feed from bank on bus to double CB at 220 kV position 4 equipped with two new 3000A 220 kV CB’s and disconnects; and rebuilding of the low side at 66 kV position 20, with two new 3000A 66 kV CB’s, disconnects/ Remove and re-install the existing 1A ground bank to the new 1A ground bank. Project scope also

includes replacing the L90 relays on the Springville 220 kV Transmission line at Magunden 220 kV Substation. The proposed operating date is June 2016, with total ISO related direct capital expenditures of $5.8 million.

12. LADWP DC electrode replacement (LAND segment) (PIN: 3138)

The purpose of this project is to replace the existing underground cables with higher-rated, insulated cables that eliminates oil pressure build-up and rupturing of the external lead sheath. The existing cables carry ground return current to ocean electrodes for the Sylmar High Voltage Direct Current (HVDC) transmission system and they were installed in 1969 when the Pacific DC Intertie ("PDCI") was originally energized at +/- 400 kV, 1800 Amps, and 1440 MW. After several upgrades to the PDCI, there have been no upgrades to the electrode and numerous failures have been sustained. Current operations are at a higher rating of +/- 500 kV, 3100 Amps, and 3100 MW. To replace the underground portion of the PDCI ground return system, project scope includes 7-8 miles of underground line from Kenter Terminal Tower and installation of up to 8 new miles of concrete encased conduit bank and 120,000 feet of new cable. The proposed operating date is March 2016 with estimated ISO-related direct capital expenditures of $24.7 million, which represents SCE's 50% share of the project.

13. TRTP Segment 8A (PIN: 7553)

TRTP 500 kV Underground Project (Segment 8A)'s scope includes placing a 500 kV single-circuit transmission line underground in an approximately 3.5-mile segment of existing right-of-way (ROW) through Chino Hills. Under project's scope, SCE will also construct two new transition stations, one each on the Eastern and Western boundaries of Chino Hills to transition the overhead 500 kV transmission line to underground cable and vice versa. Project scope also includes construction of voltage control equipment, also referred to as reactive compensation, within the footprint of the Mira Loma Substation as a part of its construction of underground. The proposed operating date is October 2016 with estimated ISO-related direct capital expenditures of $331.2 million.

14. TRTP Segment 11 (PIN: 6442)

Segment 11's scope includes rebuilding approximately 18.7 miles of existing 220 kV transmission line to 500 kV standards between the existing Vincent and Gould Substations. This segment would also include the addition of a new 220 kV circuit on the vacant side of the existing double-circuit

structures of the Eagle Rock-Mesa 220 kV transmission line, between the existing Gould Substation and the existing Mesa Substation (Segment 11). During the Rate Year, remaining environmental monitoring and mitigation and construction activity are scheduled to be completed with estimated ISO-related direct capital expenditures of $11.8 million.

15. Whirlwind Substation Expansion (PINs: 7650 & 7695)

The transmission facilities that SCE proposed to build as part of the Whirlwind Substation Expansion would provide capacity for an additional 2,000 MW of new generation resources at Whirlwind and include the following: 1) expansion of the Whirlwind 220 kV Switchrack; 2) installation of two additional 500/220 kV AA transformer banks (No.'s 3&4); (3) equipping of 500 kV and 220 kV positions to terminate the two new transformer banks; 4) equipping multiple 220 kV positions to support interconnection of new generation; and 5) use of an SPS.

Installation of the second AA-bank and AA Bank N-1 SPS was completed in 2014. The second AA-bank was labelled No.3 AA bank. During the Rate Year, installation of the third AA bank is scheduled to be completed. The third AA bank will be labeled No.4 AA bank. The addition of the third AA bank will trigger the need to modify the Whirlwind AA Bank N-1 SPS. It will also trigger the need to install two GE N-60 Relays for bank monitoring for the participation in the Whirlwind AA Bank RAS and add the third bank as part of the SPS. The proposed operating date for the third AA bank is December 2016 with estimated ISO-related direct capital expenditures of $38.8 million.

For further details, please see the following workpapers: "WP-Schedule 10-Summary of ISO Capital Expenditures - Incentive Projects", "WP-Schedule 16-Summary of ISO Capital Expenditures - Non-Incentive Projects", and "WP-Schedule 10 & 16."