

As illustrated in workpapers to Schedule 10 and 16, during the period January 2013 through December 2014, SCE forecasts:

- \$361 million in ISO-related non-incentive network transmission expenditures (including \$110 million in ISO Blanket expenditures),
- \$1.075 billion FERC incentive rate qualified CWIP expenditures, and
- \$335 million of FERC direct capital expenditures projected to go into rate base during the upcoming Rate Year (in the period January 2014 through December 2014)

In addition to the numerous but relatively small transmission projects, there are nine 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 – two Blankets (items 1 and 2), five non-incentive projects (items 3 through 7 below), and two incentive projects (items 8 and 9 below). Table 1 below provides a summary of forecast FERC-jurisdictional direct capital expenditures for nine significant transmission projects that are projected to go into rate base in the period January 2014 through December 2014.

**Table 1**  
**FERC Direct Capital Expenditures Projected to Go into Rate Base during Rate Year<sup>1</sup>**  
*(\$millions)*

No.	PIN	Project	FERC CWIP	FERC Non-CWIP
1	4756	Substation Equipment, Additions & Betterment	0	9.556
2	4331	Transformer Bank Replacement Program	0	17.827
3	7117	Kramer: Equip 1A & 2A with circuit breakers	0	5.426
4	7241	Eldorado 500kV Substation	0	7.574
5	6415	Path 42 Upgrade	0	49.388
6	4956	San Joaquin Cross Valley Loop	0	179.680
7	6428	Centralized Remedial Action Scheme (C-RAS)	0	7.886
8	7067	Whirlwind 2nd and 3rd AA Bank	43.996	0
9	6438	TRTP Segment 7 (portion)	14.172	0
		<b>Total</b>	<b>58.168</b>	<b>277.337</b>

#### 1. Substation Equipment, Additions & Betterment (PIN: 4756)

Substation Equipment, Additions & Betterment and Transformer Bank Replacement Program (PIN: 4331) are part of Substation Infrastructure Replacement and they both capture the cost

<sup>1</sup> For calculation, see: “WP-Schedule 16-Summary of ISO Capital Expenditure - Non-Incentive Projects” for PINs 4756, 4331, 7117, 7241, 6415, 4956 and 6428; “WP-Schedule 10-Summary of ISO Capital Expenditure Forecast – Incentive Projects” for Incentive Projects - TRTP and Whirlwind.

to remove, replace, and retire assets on a reactive or programmatic basis. It does not include the costs for preemptive replacement of circuit breakers and substation transformers. It also does not include preemptive replacement of substation protection and control systems. Reactive replacements are initiated when substation equipment fails in-service, or when an inspection and maintenance program indicates imminent equipment failure or possible safety issues. These replacements are predominantly like-for-like replacement 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. The estimated ISO-related capital expenditures for this program that are expected to be operational in the period January through December 2014 are \$9.6 million.

**2. Transformer Bank Replacement Program (PIN: 4331)**

See item 1 above for description. The estimated ISO-related capital expenditures for this program that are expected to be operational in the period January through December 2014 are \$17.8 million.

**3. Kramer: Equip 1A & 2A with Circuit Breakers (PIN: 7117)**

Kramer Substation's No.1 and No.2 230/115 kV transformer banks are currently connected via a bank-on-bus configuration. Equipping the banks in circuit breakers configuration would ensure compliance with current planning criteria and guidelines which would offer higher operational flexibility. The proposed in-service date is December 2014 with estimated ISO-related direct capital of \$5.4 million.

**4. Eldorado 500kV Substation Breaker Installation (PIN: 7241)**

Eldorado Substation's No. 3 and No. 4 500/230 kV transformer banks are currently connected to the South and North Buses, respectively, via a bank-on-bus configuration. This configuration violates SCE's existing Transmission Planning Criteria. The proposed project adds benefits of improved operational flexibility; simplified future additions; minimization of the loss of station capacity during planned outages and improved selectivity of protection schemes. The proposed in-service date is December 2014 with estimated ISO-related capital expenditures of \$7.6 million.

**5. Path 42 Upgrade (PIN: 6415)**

This project will enable WECC's Path 42 (the sum of flows on Coachella Valley-Devers and Mirage-Ramon) to be able to transfer approximately 1,500 MW by April 30, 2014 from Imperial Irrigation District (IID) to SCE's portion of the California Independent System Operator (CAISO) controlled grid. Four transmission lines require upgrades: (1) Devers-Mirage #1 230kV T/L; (2) Devers-Mirage #2 230kV T/L; (3) Mirage-Ramon 230kV T/L (SCE-owned portion); and (4) Mirage-Coachella Valley 230kV T/L (SCE-owned portion). Additionally, this project will contribute in meeting the RPS goal of 33% of retail load by renewable resources by 2020. The proposed operating date is April 2014 with estimated ISO-related capital expenditures of \$49.4 million.

**6. San Joaquin Cross Valley Loop (PIN: 4956)**

The purpose of the San Joaquin Cross Valley Loop project is to relieve the overloading of the existing western Big Creek Corridor 230 kV transmission lines. The project consists of constructing a new 18.5 mile double-circuit 230 kV transmission line that would loop the existing Big Creek 3-Springville 230 kV transmission line into the existing 230 kV Rector substation. The ISO approved this project in 2004. The proposed operating date is March 2014 with estimated ISO-related capital expenditures of \$179.7 million.

**7. Centralized Remedial Action Scheme (C-RAS) Project (PIN: 6428)**

SCE is planning the implementation of a comprehensive Centralized Remedial Action Scheme to consolidate and centralize its existing Distributed RASs; to allow the implementation of a forecast additional RASs to interconnect new generators and to accommodate any future new RASs and RAS updates due to system configuration changes. Centralizing these schemes will enable SCE (1) to reduce the amount of equipment installed for each scheme, (2) to reduce the expected increase in travel related to maintenance and other changes, (3) to improve the debugging and resolution of communication errors, and finally, (4) to bring all existing non-compliant RAS without redundant equipment and telecommunication circuits into complete redundancy and in compliance with the new NERC/ WECC RAS Reliability Requirements. The proposed operating date is December 2014 with estimated ISO-related capital expenditures of \$7.9 million.

**8. Whirlwind Substation Expansion (PIN: 7067)**

Whirlwind Substation is located in Tehachapi. A new 500/220 kV transformer bank and special protection scheme (SPS) is needed at Whirlwind Substation to increase substation capacity and interconnect new renewable solar generation. The scope of the project includes installing a new 500/220 kV transformer bank. One position on the 500 kV switchrack and one position on the 220 kV switchrack at Whirlwind will be equipped each with two circuit breakers and four disconnect switches. Diverse telecommunication paths and terminal equipment are required at Whirlwind to support the SPS. Additional renewable generators in the Tehachapi area are expected to sign Large Generator Interconnection Agreements (LGIA) in 2013. These generators will trigger a third 500/220 kV transformer bank at Whirlwind Substation and associated circuit breakers and disconnect switches as described above. The #2AA bank operating date is December 2014 and the #3AA bank operating date is December 2016, with estimated ISO related capital expenditures of \$44.0 million.

**9. TRTP Segment 7 (PIN: 6438 )**

Segment 7 of the Vincent-Mira Loma 500 kV transmission line section between Vincent and the Mesa area will be completed by replacing the Vincent-Rio Hondo No.2 220 kV transmission line with 500 kV construction, and upgrading existing transmission near Vincent and between the city of Duarte and the Mesa area. The upgrades near Vincent involve removing five miles of the Vincent-Rio Hondo No.2 220 kV single circuit transmission line between Vincent and the Angeles National Forest and replacing it with a new five mile 500 kV single circuit transmission line. The upgrades between the city of Duarte and the Mesa area involve removal of the remaining section of existing Antelope-Mesa 220 kV and replacing it with approximately 15 miles of new double-circuit 500 kV transmission line section. In addition, in order to maximize the use of the existing transmission right-of-way, several 66 kV subtransmission lines between the Rio Hondo and Mesa areas need to be relocated to either new right-of-way or SCE franchise. During the Rate Year, New Vincent-Rio Hondo No.2 500 kV transmission line is projected to be in service with estimated ISO-related direct capital expenditures of \$14.2 million.

For further details, please see the following workpapers: “WP-Schedule 10-Summary of ISO Capital Expenditure Forecast - Incentive Projects”, “WP-Schedule 16-Summary of ISO Capital Expenditure - Non-Incentive Projects”, and “WP-Schedule 16.”