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| Docket | : | A.10-11-015 |
| Exhibit Number | : | DRA-7 |
| Commissioner | : | Simon |
| ALJ | : | Darling |
| Witness | : | Bumgardner |

**DIVISION OF RATEPAYER ADVOCATES**
**CALIFORNIA PUBLIC UTILITIES COMMISSION**

# Report on the Results of Operations for Southern California Edison Company General Rate Case Test Year 2012

Transmission and Distribution Business Unit
Capital Expenditures (Part 2 of 2)

San Francisco, California
May 11, 2011

# TABLE OF CONTENTS

# TRANSMISSION AND DISTRIBUTION BUSINESS UNIT CAPITAL EXPENDITURES (PART 2 OF 2)

## I. INTRODUCTION

This exhibit presents the analyses and recommendations of the Division of Ratepayer Advocates (DRA) regarding the forecasts of Southern California Edison Company (SCE or Edison) of certain Transmission and Distribution Business Unit (TDBU) capital expenditures for 2010, 2011, and Test Year (TY) 2012.

This exhibit only examines the six sections that constitute Part 2 of DRA's Report on the Transmission and Distribution Business Unit Capital Expenditures. Those six sections, for which SCE has proposed expending $3.616 billion over the five-year period 2010 through 2014, are made up of the following categories:

- Advanced Technology – capital expenditures associated with SCE's roadmap to building a smarter grid through technology evaluations, selected pilot trials, and field implementation. ($343.347 million)[1]
- Capital Maintenance Programs – capital expenditures necessary to inspect and maintain SCE's distribution system. ($1.212 billion)[2]
- Grid Operations – capital expenditures used to monitor the power flow throughout SCE's transmission grid, substation system, and distribution lines; to detect imminent issues, such as malfunctioning switches and line overload conditions, performing switching during planned and unplanned work to isolate the de-energized equipment in order to minimize customer impacts. ($87.342 million)[3]

[1] Exhibit SCE-03, Vol. 1, Ch. I-VI, pages 23-24, lines 1-4

[2] Exhibit SCE-03, Vol. 1, Ch. I-VI, page 26, lines 8-19

[3] Exhibit SCE-03, Vol. 1, Ch. I-VI, page 27, lines 1-10

- Distribution Construction and Maintenance – capital expenditures including the distribution crews who inspect distribution facilities, perform repairs, and construct new facilities. ($1.379 billion)[4]
- Substation Construction and Maintenance – capital expenditures for inspection and maintenance of substation assets and construction and testing of facilities driven by inspections and unplanned events. ($392.297 million)[5]
- Transmission – capital expenditures used to maintain the transmission lines, structures, and access to roadways. ($201.930 million)[6]

SCE's proposals regarding its TDBU capital expenditures associated with Load Growth Programs, Infrastructure Replacement Programs, Transmission Interconnection Projects, and Customer Driven Projects are addressed in Exhibit DRA-6.

## II. SUMMARY OF RECOMMENDATIONS

The following summarizes DRA's recommendations:

- The Commission should adopt SCE's actual 2010 TDBU capital expenditures that are discussed in this report.
- The Commission should adopt SCE's revised Circuit Automation overall request of $14.2 million reallocated to recognize SCE's actual 2010 capital expenditures with the remaining balance split between 2011 and 2012 with inflation. This amount will allow SCE to accomplish what it describes as the mission of the Circuit Automation program, and levels the capitalized expenditures over the period.

[4] Exhibit SCE-03, Vol. 1, Ch. I-VI, page 27, lines 11-18

[5] Exhibit SCE-03, Vol. 1, Ch. I-VI, page 27, lines 19-25

[6] Exhibit SCE-03, Vol. 1, Ch. I-VI, page 27, lines 26-30

- The Commission should provide no ratepayer funding of SCE's Smart Distribution Transformer program at this time. This program is not required, and SCE has not demonstrated that its benefits will outweigh its costs.
- The Commission should limit SCE's recovery from ratepayers for its Distribution System Efficiency Enhancement Project in 2011 and 2012 to the 2005-2009 5-year average with inflation.
- The Commission should provide no ratepayer funding of SCE's proposed Integrated Smart Distribution program at this time. This program is not required, and SCE has not demonstrated that its benefits will outweigh its costs.
- The Commission should provide no ratepayer funding of SCE's Substation Automation program at this time. This program is not required, and SCE has not demonstrated that its benefits will outweigh its costs.
- The Commission should provide no ratepayer funding for SCE's proposed Distribution Management System program at this time. This program is not required, and SCE has not shown that the benefits outweigh the costs.
- The Commission should provide no ratepayer funding for SCE's proposed Outage Information program at this time. The program is not required, and SCE has not demonstrated that its benefits will outweigh its costs.
- The Commission should discontinue ratepayer funding of SCE's Phasor Measurement & Wide-Area Situational Awareness System program. This program is not required, SCE has not been willing to fund this program, and SCE has not shown that it will provide benefits to ratepayers that outweigh its costs.
- The Commission should discontinue ratepayer funding of SCE's Centralized Remedial Action Scheme. This program is not required by statute or regulation, SCE has been unwilling to fund this program, nor has SCE performed a cost/benefit study of it.
- The Commission should provide no ratepayer funding of SCE Smart Grid Cyber Security program at this time. This program is not required, and SCE has not shown that its benefits outweigh the costs.
- The Commission should adopt no more than $10.9 million in Advanced Technology Laboratory capital expenditures reallocated to recognize SCE's actual 2010 capital expenditure with the remaining balance split between 2011 and 2012 with inflation. This amount will allow SCE to accomplish what it describes as the

mission of the Advance Technology division, and levels the capitalized expenditures over the period.

- The Commission should limit ratepayer funding to $88.8 million with inflation for 2011 and 2012 for the first part of SCE's Capital Preventative Maintenance since these costs fluctuate.
- The Commission should find that SCE's current request for its underground structure replacement program (Capital Preventative Maintenance part 2) lacks historical support. In its next GRC, SCE will have to develop a historical record. For this GRC, the Commission should allow ratepayer funding for SCE to replace 20 underground vaults a year in 2011 and 2012 with capital expenditures of 5.6 million a year plus inflation.
- The Commission should adopt DRA's Distribution Deteriorated Wood Pole cost of $57.1 million in 2011 and 2012 based on SCE's 5-year average intrusive inspections plus inflation. This number exceeds General Order (G.O.) 165 intrusive pole inspection requirements.
- The Commission should adopt Joint Pole Credits based on the replacement of wood poles of ($8.3) million and ($8.1) million respectively in 2011 & 2012 and is based on the average of SCE's actual wood pole replacements over the past five years.
- The Commission should adopt DRA's forecast for Wood Pole Disposal of $502,900 annually in 2011 & 2012
- The Commission should adopt SCE's revised estimate of $12 million for Removal of Idle Facilities reallocated to recognize SCE's actual 2010 capital expenditure with the remaining balance split between 2011 and 2012. This amount will allow SCE to accomplish the number of idle facility removals planned by SCE over the period.
- The Commission should adopt DRA's Street Light Replacement Program capital expenditures of $10.9 million annually for 2011 & 2012 which is based on a 3-year average of SCE's actual steel street light replacements. SCE's forecast, based on a plan to replace all of its steel street lights in the next 20 years, is excessive.
- The Commission should adopt DRA's proposed Breakdown Maintenance capital expenditure of $99 million a year for 2011 & 2012. DRA's proposal reflects SCE's current price and current level of replacements.
- The Commission should adopt Tools and Work Equipment capital expenditures based on a 5-year average plus inflation.

- The Commission should use a 5-year average plus inflation capital expenditure in calculating Substation Capitalized Maintenance in 2011 & 2012.
- The Commission should use 2009 Substation Rule 20 capitalized expenditures plus inflation as the basis of 2011 & 2012 costs because costs have been decreasing during the last two year 2008 and 2009.
- The Commission should use the 5-year average plus inflation capitalized expenditures as the basis for 2011 & 2012 Substation Added Facilities costs.
- The Commission should calculate 2011 & 2012 Transmission Deteriorated Pole capital expenditures using G.O. 165 intrusive pole inspection requirements plus inflation.
- The Commission should adopt SCE's revised Transmission Maintenance request of $5.6 million annually with inflation.

Table 7-1 compares, in nominal dollars, DRA's and SCE's proposals for TDBU capital expenditures associated with Advanced Technology, Capital Maintenance Programs, Grid Operations, Distribution Construction and Maintenance, Substation Construction and Maintenance, and Transmission for the years 2010-2012:

**Table 7-1**
**TDBU Capital Expenditures (Part 2 of 2) for 2010-2012**
**(In Millions of Nominal Dollars)**

| Description | DRA Recommendated | | | SCE Proposed | | |
|---|---|---|---|---|---|---|
| | 2010 | 2011 | 2012 | 2010 | 2011 | 2012 |
| Advanced Technology | $23.3 | $15.2 | $16.3 | $41.1 | $64.5 | $71.9 |
| Capital Maintenance Programs | $231.5 | $155.1 | $159.0 | $213.0 | $220.7 | $246.6 |
| Grid Operations | $17.3 | $12.3 | $12.6 | $14.0 | $14.9 | $18.3 |
| Distribution Construction & Maintenance | $318.3 | $240.1 | $251.4 | $275.7 | $246.9 | $265.7 |
| Substation Construction & Maintenance | $59.7 | $46.3 | $47.5 | $79.3 | $80.4 | $77.8 |
| Transmission | $34.9 | $28.8 | $29.5 | $40.4 | $39.2 | $40.2 |
| Total | $685.1 | $497.8 | $516.3 | $663.4 | $666.6 | $720.4 |

DRA will accept SCE's actual 2010 Transmission and Distribution Business Unit capital expenditures that are covered in this report.

All tables after this point use 2009 constant dollars. By using 2009 constant dollars, the impact of inflation has been removed, and all dollars between years are directly comparable. In addition, all numbers comparing SCE and DRA's recommended and proposed numbers are also in 2009 constant dollars. If the reader wants to see DRA's recommended capital expenditures in nominal dollars use Table 7-1.

## III. DISCUSSION / ANALYSIS OF ADVANCED TECHNOLOGY

According to SCE, its Advanced Technology group was created in 2009 by bringing together the experience and talents of personnel from diverse groups within SCE. These groups were; the engineering advancement group from the Transmission and Distribution Unit; the Electric Transportation group from the Customer Service Business Unit; and the home-area-network and advanced customer applications teams from the Edison SmartConnect$^{tm}$ program. SCE says the primary mission of the Advanced Technology group is to identify, develop, demonstrate, and evaluate an evolving portfolio of new technologies to create a smarter, more robust, resilient and efficient power grid. SCE feels that it is essential for it to integrate these technologies into its existing electricity infrastructure if it is to balance the rapidly changing and diverse environmental and energy policy objectives with satisfying its customer's energy needs and expectations for reasonable rate impacts.[7]

### A. Overview of SCE's Request

Table 7-2 shows SCE's recorded 2005-2009 capital expenditures for its Advanced Technology organization in constant dollars.

[7] Exhibit SCE-03, Vol. 2, page 5, lines 2-20

**Table 7-2**
**Advanced Technology**
**2005-2009 Recorded**
**(In Millions of 2009 Dollars)**

| Description | 2005 | 2006 | 2007 | 2008 | 2009 |
|---|---|---|---|---|---|
| Circuit Automation | $5.1 | $7.7 | $5.2 | $5.5 | $6.7 |
| Capacitor Automation | $1.3 | $1.8 | $1.3 | $1.1 | $1.2 |
| Smart Distribution Transformers | $0.0 | $0.0 | $0.0 | $0.0 | $0.0 |
| Distribution System Efficiency Enhancement Project (DSEEP) | $4.6 | $5.0 | $4.1 | $4.1 | $3.9 |
| Integrated Smart Distribution | $0.0 | $0.0 | $0.0 | $0.0 | $0.0 |
| Substation Automation Integrating IEC 61850 | $0.0 | $0.0 | $0.0 | $0.0 | $0.0 |
| Distribution Management System | $0.0 | $0.0 | $0.0 | $0.0 | $0.0 |
| Outage Information | $0.0 | $0.0 | $0.0 | $0.0 | $0.0 |
| Grid Dispatch | $0.6 | $0.1 | $0.1 | $0.2 | $0.6 |
| Online Transformer Monitoring | $0.0 | $0.0 | $0.0 | $0.0 | $7.0 |
| Phasor Measurement & Wide-Area Situational Awaremess | $0.0 | $0.0 | $0.0 | $0.0 | $2.2 |
| Centralized Remedial Action Schemes (C-RAS) | $0.0 | $0.0 | $0.1 | $0.1 | ($0.0) |
| Smart Grid Cyber Security | $0.0 | $0.0 | $0.0 | $0.0 | $0.0 |
| Advanced Technology Laboratories | $1.0 | $1.6 | $0.8 | $0.7 | $3.7 |
| Total | $12.6 | $16.1 | $11.5 | $11.7 | $25.3 |

SCE's historical costs went up in 2006, 2008 and 2009, but down in 2007. The lowest amount SCE spent was $11.5 million in 2007, the middle year of the historical data period, and the highest year was 2009 at $25.3 million. No other year was even close to the capital expense booked in 2009, and during 2010, costs went down to $22.9 million (see Table 7-3). During 2009, when SCE capitalized $25.3 million, it was authorized to recover in rates a return on $53.4 million. Thus, SCE earned a return on $28.2 million of capitalized expenditures it did not invest in Advanced Technology programs.

Table 7-3 shows DRA's recommended Advanced Technology 2010-2012 capitalized expenditures compared to SCE's requested capitalized expenditures.

**Table 7-3**
**Advanced Technology**
**2010-2012 DRA Recommended and SCE Requested**
**(In Millions of 2009 Dollars)**

| Description | DRA Recommendated | | | SCE Proposed | | |
|---|---|---|---|---|---|---|
| | 2010 | 2011 | 2012 | 2010 | 2011 | 2012 |
| Circuit Automation | $11.5 | $1.4 | $1.4 | $3.8 | $3.8 | $6.6 |
| Capacitor Automation | ($0.1) | $0.6 | $1.3 | $0.6 | $0.6 | $1.3 |
| Smart Distribution Transformers | $0.0 | $0.0 | $0.0 | $0.0 | $0.0 | $0.3 |
| Distribution System Efficiency Enhancement Project (DSEEP) | $4.4 | $4.3 | $4.3 | $4.9 | $4.9 | $4.9 |
| Integrated Smart Distribution | $0.0 | $0.0 | $0.0 | $0.0 | $0.0 | $15.1 |
| Substation Automation Integrating IEC 61850 | $0.0 | $0.0 | $0.0 | $0.0 | $0.0 | $2.8 |
| Distribution Management System | $0.0 | $0.0 | $0.0 | $3.9 | $10.6 | $7.5 |
| Outage Information | $0.0 | $0.0 | $0.0 | $0.0 | $0.0 | $0.0 |
| Grid Dispatch | $0.7 | $0.5 | $0.5 | $0.5 | $0.5 | $0.5 |
| Online Transformer Monitoring | $1.2 | $4.7 | $4.8 | $5.4 | $4.7 | $4.8 |
| Phasor Measurement & Wide-Area Situational Awaremess | $0.3 | $0.0 | $0.0 | $12.2 | $18.4 | $10.3 |
| Centralized Remedial Action Schemes (C-RAS) | $0.4 | $0.0 | $0.0 | $6.6 | $16.0 | $0.0 |
| Smart Grid Cyber Security | $0.0 | $0.0 | $0.0 | $0.0 | $0.0 | $7.5 |
| Advanced Technology Laboratories | $4.6 | $3.2 | $3.2 | $2.3 | $2.6 | $6.0 |
| Total | $22.9 | $14.7 | $15.4 | $40.3 | $62.2 | $67.6 |

In 2010, while SCE recorded $22.9 million in Advanced Technology capital expenditures, SCE had forecasted Advanced Technology capital expenditures of $40.3 million. SCE is seeking a return on over $60 million a year of Advanced Technology capital expenditures in 2011 and 2012 even though the Advanced Technology historical capital expenditures only exceeded $12.6 million twice during the years 2005-2009 (2006 & 2009), and Advanced Technology's capitalized expenditures went down in 2010.

DRA's recommendations in Advanced Technology capital expenditures can be broken into three areas. In the first area are those SCE expenditure forecasts that DRA accepts. In the second area are forecasts for projects that the Commission authorized for SCE in its last GRC, but SCE did not fund, and which DRA recommends the Commission reject in this GRC. The last area includes forecasts which SCE fails to justify adequately and which DRA recommends be rejected. The items DRA recommends be rejected are discussed in the following sections.

## B. Circuit Automation

SCE discusses its Circuit Automation Program capital expenditure request in Exhibit SCE-03, Volume 2, at pages 36-41. The supporting workpapers are included in the Workpapers Transmission & Distribution, Advanced Technology SCE-03, Volume 2, Part 1 of 2, at pages 147-160.

SCE says the primary purpose of its Circuit Automation Program is to automatically restore power to customers after outages caused by faults.[8]

SCE modified its original filing in a data response to DRA. SCE's revised 2009 constant Circuit Automation Program projections are $3.8 million, $3.8 million, $6.6 million, $6.6 million and $6.6 million for 2010-2014 respectively.[9]

SCE is seeking a return on $14.2 million in Circuit Automation capital expenditures over the period 2010-2012. DRA is recommending that SCE's requested amount be allowed. DRA accepts SCE's actual 2010 capital expenditures. Since the recorded 2010 Circuit Automation expenditures are so much higher than those projected by SCE, DRA has allocated the remaining balance split between 2011 & 2012. This will still allow SCE to perform the same work planned in this area, since SCE will recover what it had requested over the 2010-2012 period, i.e., SCE requested recovery of $14.2 million ($3.8 million + $3.8 million + $6.6 million) while DRA recommends $14.2 million ($11.5 million + $1.35 million + $1.35 million).

## C. Smart Distribution Transformers

SCE discusses its Smart Distribution Transformers capital expenditure request in Exhibit SCE-03, Volume 2, at pages 45-48. The supporting workpapers are included in the Workpapers Transmission & Distribution Advanced Technology SCE-03, Volume 2, Part 1 of 2, at pages 175-178.

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[8] Exhibit SCE-03, Vol. 2, page 36, lines 18-20

[9] Data Response to DRA-SCE-103-MKB Q. 5, Attachment 1 of 25

According to SCE, starting in 2012, it will begin a new Smart Distribution Transformer program to proactively manage its fleet of approximately 700,000 distribution transformers. Currently, SCE has a very limited ability to accurately predict failure and can only estimate failure based upon a transformer's age. Generally, SCE normally replaces transformers after failure occurs. With the Smart Distribution Transformer, SCE will include a temperature monitor and communication device with new equipment. SCE hopes that the temperature data gathered will help calculate the remaining service life of transformers more accurately.[10]

It should be noted that this program is not required by statute or regulation.[11]

DRA requested a copy of any cost/benefit study in SCE's possession regarding its Smart Distribution Transformer program.[12] In response, SCE did not provide any studies. In SCE's last GRC, SCE did not specifically request funding for its Smart Distribution Transformers,[13] and during the period 2005-2010, SCE has had no capital expenditures for them (see Tables 7-2 and 7-3).

DRA recommends no ratepayer funding of SCE's Smart Distribution Transformer program at this time. The program is not required, and SCE has not demonstrated that its benefits will outweigh its costs. Prior to receiving funding for any program, good management practice and procedures require businesses to perform a cost/benefit study, or run a test program to find out the actual costs and benefits. SCE has failed to take even these basic steps and has not justified making ratepayers fund such a program.

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[10] Exhibit SCE-003, Vol. 2, page 45, lines 1-11

[11] Data Response to Data Request DRA-SCE-212-MKB Question 3.c

[12] Data Response to Data Request DRA-SCE-170-MKB Question 7

[13] Data Response to Data Request DRA-SCE-170-MKB Question 1

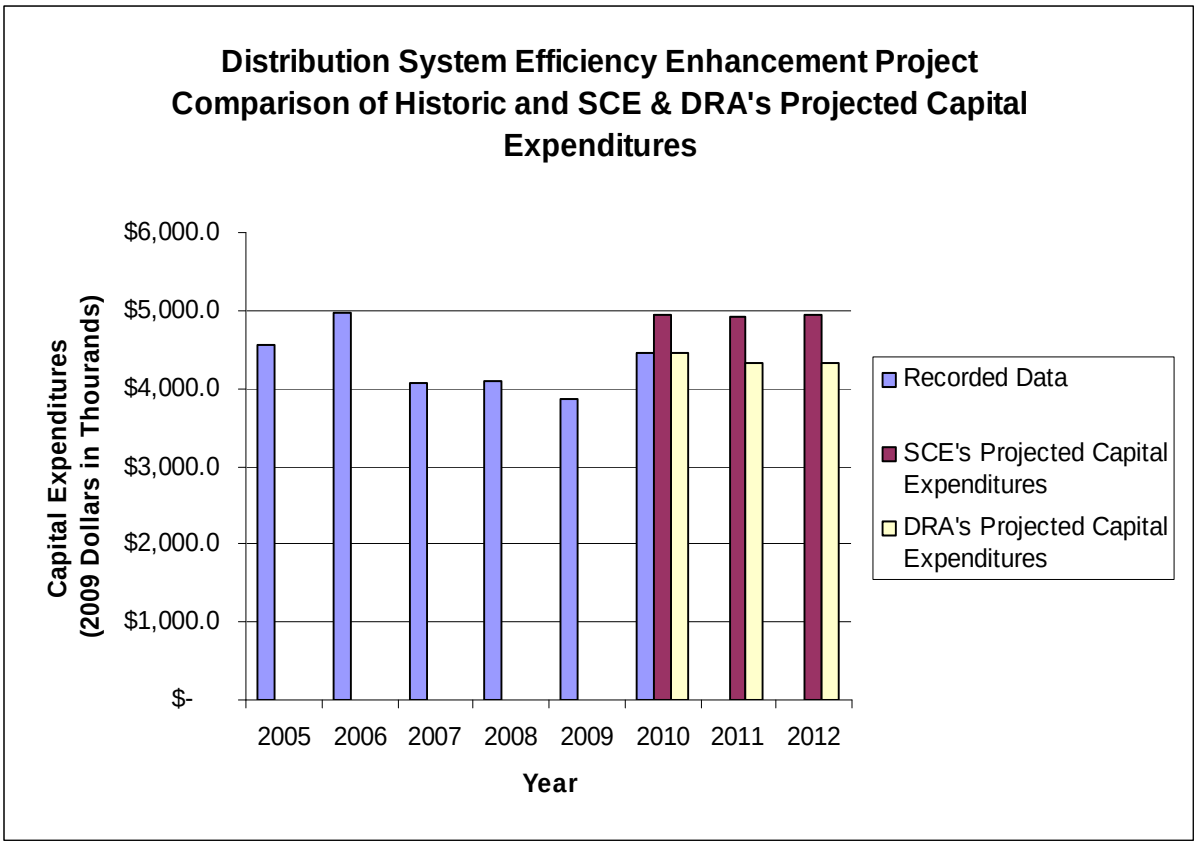
## D. Distribution System Efficiency Enhancement Project

SCE discusses its Distribution System Efficiency Enhancement program capital expenditure request in Exhibit SCE-03, Vol. 2, at pages 48-50. The supporting workpapers are included in the Workpapers Transmission & Distribution Advanced Technology SCE-03, Volume 2, Part 1 of 2, at pages 179-182.

SCE says its Distribution System Efficiency Enhancement program consists of servicing and expanding the NETCOMM wireless communication system. The NETCOMM system provides the radio communication infrastructure to remotely monitor and control SCE's distribution automation devices.[14]

SCE is projecting substantial increases in this area; however, as can be seen in the following graph, SCE's actual costs in this area have been coming down.

**Graph 7-1**




[14] Exhibit SCE-03, Vol. 2, page 48, lines 3-8

SCE's highest capital expenditures occurred in 2006, and it's lowest in 2009. In 2009, SCE spent approximately $3.9 million for the Distribution System Efficiency Enhancement Project; however, SCE received a return on $4.9 million in this area.[15] SCE did not capitalize what it was authorized in this area in 2009. DRA recommends that the Commission limit SCE's recovery from ratepayers in 2011 and 2012 to the 2005 through 2009 5-year average, which is $4.3 million.

## E. Integrated Smart Distribution

SCE discusses its Integrated Smart Distribution capital expenditure request in Exhibit SCE-03, Volume 2, at pages 50-60. The supporting workpapers are included in the Workpapers Transmission & Distribution Advanced Technology SCE-03, Volume 2, Part 1 of 2, at pages 183-254.

Starting in 2012, SCE says it will begin deploying an Integrated Smart Distribution program. SCE says the new program will have three main sub-projects (1) a new circuit design that will serve as the foundation of a self-healing distribution grid; (2) a new project that will address intermittent resources like wind and solar; and, (3) large distribution support devices (including energy storage).[16] SCE is seeking to receive a return on its projected $15.1 million in capital expenditures associated with this program in TY 2012 (see Table 7-3).

This program is not required by statute or regulation.[17] DRA requested a copy of any cost/benefit study in SCE's possession regarding its integrated smart distribution program.[18] In response, SCE did not provide any studies.

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[15] Data Response to DRA-SCE-171-MKB Question 1

[16] Exhibit SCE-03, Vol. 2, pages 50-51, lines 1-15

[17] Data Response to DRA-SCE-212-MKB Question 3.e

[18] Data Response to DRA-SCE-172-MKB Question 7

In SCE's last GRC, SCE did not specifically request funding for this Integrated Smart Distribution program,[19] and during the period 2005-2010, SCE has had no capital expenditures for the program (see Tables 7-2 and 7-3).

DRA recommends no ratepayer funding of SCE's proposed Integrated Smart Distribution program at this time. This program is not required, and SCE has not demonstrated that its benefits will outweigh its costs. Prior to receiving funding for any program, good management practice and procedures require businesses to perform a cost/benefit study, or run a test program to find out the actual costs and benefits. SCE has failed to take even these basic steps and has not justified making ratepayers fund such a program.

## F. Substation Automation

SCE discusses its Substation Automation capital expenditure request in Exhibit SCE-03, Volume 2, at pages 60-66. The supporting workpapers are included in the Workpapers Transmission & Distribution Advanced Technology SCE-03, Volume 2, Part 1 of 2, at pages 255-258.

Starting in 2012, SCE says it will begin deploying the proposed advanced substation automation program it calls "Substation Automation-3." Substation Automation-3 will involve replacing and upgrading substation networking and communication equipment to support the International Electrotechnical Commission (IEC) Communication protocol. According to SCE, this protocol will become the industry standard for distribution and substation automation, and will be critical in bringing about a completely automated distribution system.[20] SCE is seeking to receive a return on its projected $2.8 million in capital expenditures associated with this program in TY 2012 (see Table 7-3). In response to a data request asking for the justification for this proposal, SCE stated that its "Engineering/ Procurement/ Design allocations [are] based on engineering judgment," and the "Quantity based

[19] Data Response to DRA-SCE-172-MKB Question 1

[20] Exhibit SCE-03, Vol. 2, pages 60-61, lines 1-5

on project management estimates." These statements were made for both A/AA & B sub stations.[21] When SCE identifies a quantity or price being based on engineering or management judgment or estimates that is where the supporting documentation trail ends.

This program is not required by statute or regulation.[22] DRA requested a copy of any cost/benefit study in SCE's possession regarding its Integrated Smart Distribution program.[23] In response, SCE did not provide any studies.

In SCE's last GRC, SCE did not specifically request funding for its Substation Automation program[24] and during the period 2005-2010, SCE has had no capital expenditures for the program (see Tables 7-2 and 7-3).

DRA recommends no ratepayer funding of SCE's Substation Automation program at this time. This program is not required, and SCE has not demonstrated that its benefits will outweigh its costs. Prior to receiving funding for any program, good management practice and procedures require businesses to perform a cost/benefit study, or run a test program to find out the actual costs and benefits. SCE has failed to take even these basic steps and has not justified making ratepayers fund such a program.

### G. Distribution Management System

SCE discusses its Distribution Management System capital expenditure request in Exhibit SCE-03, Volume 2, pages 66-71. The supporting workpapers are included in the Workpapers Transmission & Distribution Advanced Technology SCE-03, Volume 2, Part 1 of 2, at pages 259-264.

SCE says that, under the Advanced Technology programs it described in SCE-03, Vol. 2, a wide range of field devices will be equipped with communication

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[21] Data Response to Data Request DRA-Verbal-064, dated 03/14/2011

[22] Data Response to DRA-SCE-212-MKB Question 3.f

[23] Data Response to Data Request DRA-SCE-173-MKB Question 7

[24] Data Response to DRA-SCE-173-MKB Question 1

and automated control and operational capacity. According to SCE, a functional smart distribution grid is needed that integrates operation of these devices. The Distribution Management System is SCE's answer to the centralized computing system necessary to gather data from these various distribution automating programs, and facilitate automated operation and control of the distribution system.[25] SCE is seeking to receive a return on its projected $3.9 million, $10.6 million, and $7.5 million in capital expenditures associated with this program in 2010 through TY 2012 respectively[26] (see Table 7-3). In response to a data request, SCE stated that the unit cost basis for "Labor, PAMM IM Charges, [and] Budgeted OH" were estimated "based on management judgment."[27] When SCE claims a quantity or price is based on engineering or management judgment or an estimate that is where the supporting documentation trail ends.

This program is not required by statute or regulation,[28] and SCE has not prepared any cost benefit study for it.[29] In SCE's last GRC, SCE requested and received $3.0 million in funding specifically requested for a distribution management system program.[30] While SCE was authorized to recover $3.0 million in 2009 for its distribution management system and projected capital expenditures of $3.9 million in 2010, during the period 2005-2010, SCE had no capital expenditures for the program (see Tables 7-2 and 7-3).

DRA recommends no ratepayer funding for SCE's proposed Distribution Management System program at this time. This program is not required, and SCE

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[25] Exhibit SCE-03, Vol. 2, page 66, lines 1-8

[26] Exhibit SCE-03, Vol. 2, page 71, Figure IV-17

[27] Data Response to Data Request DRA-Verbal-064, dated 03/14/2011

[28] Data Response to DRA-SCE-212-MKB Question 3.g

[29] Data Response to Data Request DRA-SCE-174-MKB Question 7

[30] Data Response to Data Request DRA-SCE-174-MKB Question 1

has not shown that the benefits outweigh the costs. In light of the funding SCE has already received for this project in the past, and SCE's failure to spend any of the funding specifically designated for the purpose, there is no justification for any additional ratepayer funding in this rate case.

### H. Outage Information

SCE discusses its Outage Information project capital expenditure request in Exhibit SCE-03, Volume 2, at pages 71-73. The supporting workpapers are included in the Workpapers Transmission & Distribution Advanced Technology SCE-03, Volume 2, Part 1 of 2, at pages 265-306.

SCE says its Outage Information project is a new program that will take advantage of existing capabilities of SCE's SmartConnect$^{tm}$ program to provide enhanced information about customers' outages to SCE's service crews and dispatchers.[31] In response to a data request SCE stated that its "Internal cost estimate [is] based on engineering judgment."[32] When SCE identifies a quantity or price as being based on engineering or management judgment or estimates that is where the supporting documentation trail ends.

This program is not required by statute or regulation.[33] DRA requested a copy of any cost/benefit study in SCE's possession regarding its Outage Information project.[34] In response, SCE did not provide any studies.

In SCE's last GRC, SCE did not specifically request funding for an Outage Information program,[35] and during the period 2005-2010, SCE has had no capital expenditures for it (see Tables 7-2 and 7-3).

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[31] Exhibit SCE-003, Vol. 2, page 71, lines 3-6

[32] Data Response to DRA-Verbal-064, dated 03/14/2011

[33] Data Response to DRA-SCE-212-MKB Question 3.h

[34] Data Response to DRA-SCE-175-MKB Question 7

[35] Data Response to DRA-SCE-175-MKB Question 1

DRA recommends no ratepayer funding for SCE's proposed Outage Information program at this time. The program is not required, and SCE has not demonstrated that its benefits will outweigh its costs. Prior to receiving funding for any program, good management practice and procedures require businesses to perform a cost/benefit study, or run a test program to find out the actual costs and benefits. SCE has failed to taken even these basic steps and has not justified making ratepayers fund such a program.

## I. Phasor Measurement & Wide-Area Situational Awareness

SCE discusses its Phasor Measurement & Wide-Area Situational Awareness program request in Exhibit SCE-03, Volume 2, at pages 81-88. The supporting workpapers are included in the Workpapers Transmission & Distribution Advanced Technology starting at SCE-03, Volume 2, Part 1 of 2, at page 391 and ending in SCE-03, Volume 2, Part 2 of 2, at page 296.

SCE says the primary purpose of its Phasor Measurement & Wide-Area Situational Awareness System program is to provide electric system operators with previously unavailable information about the operating status of the bulk power system. According to SCE, this information will allow operators to better manage the region's transmission system and make the critical decisions necessary for pre-empting catastrophic electric system failures.[36] In response to a data request SCE stated that the unit cost basis of "30 terabyte (TB) storage. . .WASAS Operation software applications. . .WASAS Analytic reporting software applications. . . WASAS application server. . ." were at least based in part on engineering judgment and estimates. In addition, the quantity basis for "Storage. . . Trunk. . . Directors. . . Data Servers. . . [and] Application Servers. . ." were based in part on engineering judgment and estimates.[37] When SCE identifies a quantity or price as being based

[36] Exhibit SCE-03, Vol. 2, pages 81-82, lines 7-2

[37] Data Response to Data Request DRA-Verbal-064, dated 03/14/2011

on engineering or management judgment or estimates that is where the supporting documentation trail ends.

This program is not required by statute or regulation.[38] DRA requested a copy of any cost/benefit study in SCE's possession regarding this program.[39] In response, SCE did not provide any studies.

In SCE's last GRC, SCE requested $34.0 million over the period 2009-2011 for a Phasor Measurement & Wide-Area Situational Awareness System program. Of that, SCE said $13.0 million was "… applicable to 2009 to implement a system that will give its system operators a direct indication of transmission system stress, and how close to the margins SCE is operating from system instability and potential system failure."[40]

In the TY 2009 GRC, DRA recommended no funding for the project because, among other reasons, SCE could not identify what equipment was the basis of its estimates and or explain the potential vendors' knowledge of Phase Measurement and Grid Stability Systems. The Commission, however, found SCE's 2009 $13.0 million forecast reasonable and adopted it.[41]

DRA recommends that, in this GRC, the Commission discontinue ratepayer funding of SCE's Phasor Measurement & Wide-Area Situational Awareness System program. This program is not required, and SCE has not shown that it will provide benefits to ratepayers that outweigh its costs. Moreover, the Commission authorized SCE to receive a return on the 2009 capital expenditures of $13.0 million during the last GRC. In response SCE capitalized only $2.5 million. The result is SCE's ratepayers have been paying for a service that SCE chose not to provide.

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[38] Data Response to DRA-SCE-212-MKB Question 3.k

[39] Data Response to Data Request DRA-SCE-178-MKB Question 6

[40] D.09-03-025, Section 8.3.6.1, mimeo, page 222

[41] D. 09-03-025, Section 8.3.6.1.,mimeo, page 222

Prior to receiving funding for any program, good management practice and procedures require businesses to perform a cost/benefit study, run a test program to find out the actual costs and benefits, and for SCE to document the proven/documented savings and benefits versus the costs of the program before this Commission. SCE has taken none of these steps.

## J. Centralized Remedial Action Schemes (C-RAS)

SCE discusses its Centralized Remedial Action Schemes capital expenditure request in Exhibit SCE-03, Volume 2, at pages 88-96. The supporting workpapers are included in the Workpapers Transmission & Distribution Advanced Technology SCE-03, Volume 2, Part 2 of 2, at pages 297-362.

According to SCE, the Centralized Remedial Action Schemes project "…will centralize control and operations of SCE's …. critical protection systems that help avoid cascading outages and wide-spread system disruptions." SCE says that Remedial Action Schemes use automated programs that protect transmission equipment and ensure the stability of the transmission system in the event of transmission line outages, overload or other disturbances. The programs respond to these disturbances by disconnecting generation, customer load, or a combination of both.[42] In response to a data request SCE stated that "The labor amounts and equipment quantities noted in workpapers were developed from the SCE's project management experience and engineering judgment."[43] When SCE identifies a quantity or price being based on engineering or management judgment or estimates that is where the supporting documentation trail ends.

It should be noted that this program is not required by statute or regulation.[44]

DRA requested a copy of any cost/benefit study in SCE's possession regarding its centralized remedial action schemes program. In SCE's confidential

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[42] Exhibit SCE-003, Vol. 2, page 88, lines 1-8

[43] Data Response to DRA-Verbal-064, dated 03/14/2011

[44] Data Response to DRA-SCE-212-MKB Question 3.l

response, SCE did not provide any studies (A copy is not attached because SCE classified its response as confidential).

In SCE's last GRC, SCE requested $112.2 million over the period 2007-2011 for its Centralized Remedial Action Scheme, of which $54.1 million was allocated to FERC. The Commission authorized SCE to install equipment and earn a return on the CPUC portion of $58.1 million of capital expenditures associated with this program.[45]

Despite being authorized $58.1 million for capital expenditures for the Centralized Remedial Action Scheme project, during the period 2005-2010, SCE spent only $0.6 million (see Table 7-2 and Table 7-3, $0.0 million 2005, $0.0 million 2006, $0.1 million 2007, $0.1 million in 2008, ($0.0) million 2009 and $0.4 million 2010).

DRA recommends that the Commission discontinue ratepayer funding of SCE's Centralized Remedial Action Scheme in 2011 and TY 2012. As noted in SCE's data response quoted above, this program is not required by statute or regulation, nor has SCE performed a cost/benefit study of it. Moreover, the Commission authorized SCE to receive a return on the CPUC jurisdictional portion of $58.1 million during the last GRC. In response SCE capitalized only $0.6 million. The result is the SCE's ratepayers have been paying for a service that SCE chose not to provide. Therefore, this program should not be funded in this GRC.

## K. Smart Grid Cyber Security

SCE discusses its Smart Grid Cyber Security capital expenditure request in Exhibit SCE-03, Volume 2, at pages 97-103. The supporting workpapers are included in the Workpapers Transmission & Distribution Advanced Technology SCE-03, Volume 2, Part 2 of 2, at pages 363-370.

According to SCE, starting in 2012, SCE will begin implementing a centralized, comprehensive smart grid cyber security solution to manage threats

[45] D. 09-03-025, Section 8.3.6.6., pages 225-226

posed by the deployment of smart grid systems.[46] In response to a data request SCE stated that the unit cost basis for "Key Management. . . Cryptographic Services . . . Security Configuration Management . . . Audit and Reporting Management . . ." design and specifications were based on engineering judgment. And the quantity basis was based on "SCE's engineering judgment."[47] When SCE identifies a quantity or price being based on engineering or management judgment or estimates that is where the supporting documentation trail ends.

This program is not required by statute or regulation.[48] DRA requested a copy of any cost/benefit study in SCE's possession regarding the program, but SCE did not provide any.[49] In SCE's last GRC, SCE did not specifically request funding for its smart grid cyber security program,[50] and during the period 2005-2010, SCE has had no capital expenditures for this program (see Tables 7-2 and 7-3.

DRA recommends no ratepayer funding of SCE Smart Grid Cyber Security program at this time. This program is not required, and SCE has not shown that its benefits outweigh the costs. Prior to receiving funding for any program, good management practice and procedures require businesses to perform a cost/benefit study, or initiate a test program to find out the actual costs and benefits. SCE has failed to take even these basic steps and has not justified requiring ratepayers to fund the Smart Grid Cyber Security program.

## L. Advanced Technology Laboratories

SCE discusses its Advanced Technology Laboratories capital expenditure request in Exhibit SCE-03, Vol. 2, at pages 103-109. The supporting workpapers

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[46] Exhibit SCE-003, Vol. 2, page 98, lines 1-3

[47] Data Response to DRA-Verbal-064, dated 03/14/2011

[48] Data Response to DRA-SCE-212-MKB Question 3.m

[49] Data Response to DRA-SCE-180-MKB Question 6

[50] Data Response to DRA-SCE-180-MKB Question 1

are included in the Workpapers Transmission & Distribution Advanced Technology SCE-03, Volume 2, Part 2 of 2, at pages 371-401.

SCE says it formed its Advanced Technology Laboratories division to centralize its efforts to evaluate and plan future deployments of smart grid technologies.[51]

SCE is seeking a return on $10.9 million in advanced technology laboratory capital expenditures over the period 2010 to 2012 ($2.3 million in 2010, $2.6 million in 2011 and $6.0 million in 2012). DRA is recommending that SCE receive its requested amount of $10.9 million reallocated over this period to reflect SCE's actual capital expenditures during 2010 ($4.6 million in 2010, $3.2 million in 2011 and $3.2 million in 2012). This amount will allow SCE to accomplish what it describes as the mission of the Advance Technology division, and levels the capitalized expenditures over the period. DRA's proposal will also allow SCE's ratepayers to benefit from the new 2010 tax law that will be able to deduct 100% of 2011 investments from SCE's 2011 taxes via the bonus depreciation provision of the new tax law.

## IV. DISCUSSION / ANALYSIS OF CAPITAL MAINTENANCE PROGRAMS

According to SCE, Capital Maintenance programs refer to the inspection driven replacement of major pieces of SCE's equipment, such as poles, transformers, switches, and underground structures. Inspection driven replacements are based on equipment condition or inspection findings. These conditions can be identified during G. O. 165 mandated inspections or during the normal course of business. SCE says it prioritizes maintenance work based on relative safety, and significance to reliability.[52]

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[51] Exhibit SCE-03, Vol. 2, page 103, lines 1-3

[52] Exhibit SCE-03, Vol. 4, Part 01 & 02, Ch. I-II, page 89, lines 1-11

## A. Overview of SCE's Request

Table 7-4 shows SCE's recorded 2005-2009 capitalized expenditures for its Capital Maintenance program in constant dollars.

**Table 7-4**
**Capital Maintenance Programs**
**2005-2009 Recorded**
**(In Millions of 2009 Dollars)**

| Description | 2005 | 2006 | 2007 | 2008 | 2009 |
|---|---|---|---|---|---|
| Capital Preventive Maintenance | $91.6 | $147.9 | $114.0 | $87.2 | $111.7 |
| Wood Pole Replacements | $155.3 | $126.8 | $83.8 | $91.7 | $93.0 |
| Emergency Pole Replacement | $4.3 | $5.6 | $3.6 | $6.6 | $2.0 |
| Joint Pole Credits | ($10.4) | ($11.7) | ($15.2) | ($10.3) | ($13.7) |
| Wood Pole Disposal | $1.7 | $1.8 | $2.1 | $1.4 | $1.5 |
| Removal of Idle Facilities | $3.5 | $4.4 | $4.2 | $4.1 | $8.8 |
| Total | $246.0 | $274.7 | $192.6 | $180.7 | $203.2 |

SCE's historical capital expenditures went up in 2006 and 2009, but down in 2007 and 2008. The highest amount SCE spent was $274.7 million in 2006, and the lowest amount was $180.7 million in 2008.

Table 7-5 shows DRA's recommendations for Capital Maintenance program 2010-2012 capital expenditures compared with SCE's request.

**Table 7-5**
**Capital Maintenance Programs**
**2010-2012 DRA Recommended and SCE Requested**
**(In Millions of 2009 Dollars)**

| Description | DRA Recommendated | | | SCE Proposed | | |
|---|---|---|---|---|---|---|
| | 2010 | 2011 | 2012 | 2010 | 2011 | 2012 |
| Capital Preventive Maintenance | $134.4 | $94.3 | $94.3 | $147.2 | $116.2 | $126.7 |
| Wood Pole Replacements | $89.8 | $57.1 | $57.1 | $63.2 | $97.8 | $109.7 |
| Emergency Pole Replacement | $1.3 | $4.4 | $4.4 | $4.4 | $4.4 | $4.4 |
| Joint Pole Credits | ($9.1) | ($8.3) | ($8.1) | ($11.2) | ($11.4) | ($14.6) |
| Wood Pole Disposal | $1.9 | $0.5 | $0.5 | $1.2 | $1.6 | $1.8 |
| Removal of Idle Facilities | $9.0 | $1.5 | $1.5 | $4.0 | $4.0 | $4.0 |
| Total | $227.4 | $149.6 | $149.8 | $208.8 | $212.6 | $232.0 |

## B. Capital Preventive Maintenance

SCE discusses its Capital Preventive Maintenance capital expenditures request in Exhibit SCE-03, Volume 4, Part 01 & 02, Chapters I-II, at pages 90-93. The supporting workpapers are included in the Workpapers Transmission &

Distribution, Inspection & Maintenance SCE-03, Volume 4, Part 2, Chapter II, at pages 195-215.

SCE says that Capital Preventative Maintenance includes the replacements of: (1) underground cables; (2) overhead conductors; (3) overhead transformers; (4) underground transformers; (5) transformer bank replacement program; and, (6) underground structure replacement programs.[53]

SCE's forecast is in three areas. Area 1 covers asset based preventative maintenance includes overhead conductors, underground cable, overhead transformers, and underground transformers; Area 2 covers SCE's transformer bank replacement program; Area 3 includes SCE's underground structure replacement programs. The following table shows the historical Capital Preventative Maintenance Expenses along with SCE's forecast for 2010-2012

**Table 7-6**
**Capital Preventative Maintenance-Total**
**Historical Recorded and SCE Forecast**
**(In Thousands of 2009 Dollars)**

| Summary of Capital Preventive Maintenance Expenses | | | | | | | <- Forecast -> | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
| | Asset Based Preventive Maintenance (Constant $) | 89,830 | 147,488 | 113,989 | 86,956 | 90,255 | 93,992 | 106,465 | 112,800 |
| | Transformer Bank Replacement Program (Constant $) | 0 | 0 | 0 | 0 | 18,672 | 39,278 | 0 | 0 |
| | Underground Structure Replacement (Constant $) | 1,816 | 383 | 90 | 287 | 2,780 | 8,896 | 9,730 | 13,900 |
| | **Total Capital Preventive Maintenance (Constant $)** | **$91,646** | **$147,871** | **$114,079** | **$87,243** | **$111,706** | **$147,166** | **$116,195** | **$126,700** |

For the three areas of Capital Preventive Maintenance combined, SCE forecast is $126.7 in TY 2012 million. SCE generally projected out the number of replacement units for the years 2010-2014 and multiplied the replacement units by the 5-year average price to install each replacement unit. In its workpapers, SCE states that generally "Total preventative maintenance costs = Asset unit costs * Total assets * Asset replacement rate"[54] The bottom line is SCE is calculating its assets replaced based on its total assets.

[53] Exhibit SCE-03, Vol. 04, Part 01 & 02, Ch. I-II, page 90, lines 4-7

[54] Workpaper Transmission & Distribution, Inspection & Maintenance, Exhibit SCE-03, Vol.

(Continued on next page)

## 1. Asset Based Preventative Maintenance

SCE calculated Asset Based Preventative Maintenance in the following table.

**Table 7-7**
**Capital Preventative Maintenance-Asset Based**
**Historical Recorded and SCE Forecast**
**(In Thousands of 2009 Dollars)**

| Asset Based Capital Preventive Maintenance | | | | | | | <-- Forecast --> | | |
|---|---|---|---|---|---|---|---|---|---|
| Recreation of Table II-26 (Page 91 of testimony) | | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
| | Miles of Overhead Conductor | 531 | 804 | 196 | 99 | 108 | 108 | 108 | 108 |
| | Cost-per-mile (OH Conductor) | 60 | 71 | 75 | 64 | 64 | 67 | 67 | 67 |
| | Total Overhead Conductor Costs | $32,098 | $57,296 | $14,664 | $6,382 | $6,962 | $7,242 | $7,242 | $7,242 |
| | | | | | | | | | |
| | Miles of Underground Cable | 54 | 71 | 66 | 64 | 61 | 64 | 66 | 69 |
| | Cost-per-mile (UG Conductor) | 194 | 228 | 239 | 203 | 203 | 213 | 213 | 213 |
| | Total Underground Conductor Costs | $10,507 | $16,297 | $15,720 | $12,957 | $12,324 | $13,632 | $14,058 | $14,697 |
| | | | | | | | | | |
| | Number of Overhead Transformers | 3,414 | 4,277 | 4,568 | 4,400 | 4,600 | 5,096 | 5,600 | 6,060 |
| | Cost-per-transformer | 7 | 8 | 9 | 7 | 7 | 8 | 8 | 8 |
| | Total Overhead Transformer Cost | $23,895 | $34,870 | $40,351 | $32,244 | $33,671 | $39,372 | $43,266 | $46,820 |
| | | | | | | | | | |
| | Number of Underground Transformers | 2,200 | 3,122 | 3,298 | 3,200 | 3,375 | 3,338 | 3,577 | 3,804 |
| | Cost-per-transformer | 11 | 13 | 13 | 11 | 11 | 12 | 12 | 12 |
| | Total Underground Transformer Cost | $23,330 | $39,025 | $43,204 | $35,363 | $37,297 | $38,746 | $41,899 | $44,041 |
| | | | | | | | | | |
| | Total Asset Based Prev. Maint. (2009 Constant $) | **89,830** | **147,488** | **113,939** | **86,956** | **90,255** | **98,992** | **106,465** | **112,800** |

The high is in 2006 and the low is in 2008, there is a substantial increase in 2006 and a minor increase in 2009, but there are also decreases in 2007 and 2008. The low in 2008 is lower than the capital expenditures in 2005.

DRA obtained the supporting documentation from SCE regarding its calculations. DRA then calculated the correlation co-efficient between the total assets and the failure rate, the failure rate and the replacement units, and the total assets and the replacement units using the seven years of data SCE provided. The table below shows DRA's results.

(Continued from previous page)
04, Part 02, Ch. II, page 197

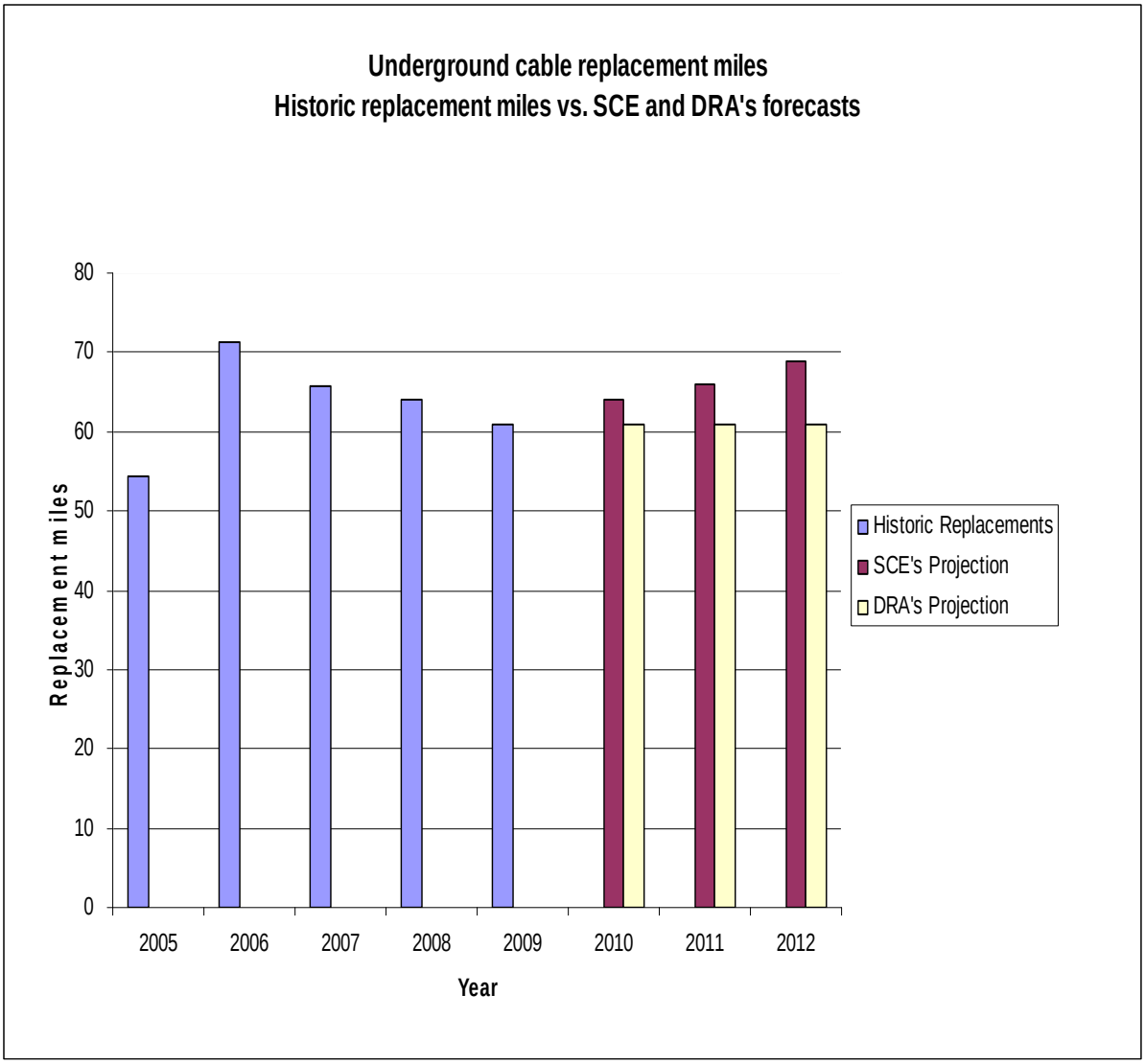
**Table 7-8**
**Correlation Co-efficient**

| | Correlation Coefficient Total Plant to Replacement Rate | Correlation Coefficient Replacement Rate to Replacement Units | Correlation Coefficient Total Assets to Replacement Units |
|---|---|---|---|
| Overhead conductor | 0.4181473 | 0.9999884 | 0.4222467 |
| Underground Cable | 0.2727180 | 0.9522108 | 0.5527319 |
| Overhead transformers | 0.9574809 | 0.9999976 | 0.9580998 |
| Underground Transformers | 0.6616173 | 0.9702205 | 0.8232861 |

The correlation co-efficient between total assets and replacements units for three of the four groups' range from 0.4222467 to 0.8232861. These rates are too low for any legitimate forecast. An acceptable correlation co-efficient should be above 0.95 and analysts prefer to see sample sizes that are greater than 30, SCE used a sample size no larger than 7.

Overhead conductor replacement units went down in 2007 and 2008, up in 2006 and 2009. Underground cable replacement units went down in 2007, 2008 and 2009, and went up only in 2006. Overhead transformer replacement units went down in 2008, and went up 2006, 2007 and 2009. Overhead transformer replacement units did the same thing as overhead transformers; they went down in 2008 and up in 2006, 2007 and 2009. The following graph compares SCE's historic underground cable replacement miles with SCE's and DRA's projections.

**Graph 7-2**




Graph 7-2 shows that underground replacement miles have been decreasing since 2006, yet SCE forecasts growth during 2010-2012.

SCE also uses the 5-year average unit cost to determine the cost of each replacement unit. The cost data which SCE uses is higher than SCE's replacement costs in 2008 and 2009. Actual costs have come down during the last two years. It should also be noted that SCE's method of determining unit replacement costs is not consistent. In determining the unit costs in the section on breakdown maintenance SCE used the 2009 unit cost, not the 5-year average unit cost.[55]

The following table shows DRA's recommendations for the unit of Capital Preventative Maintenance capitalized expenditures.

**Table 7-9**
**Capital Preventative Maintenance**
**2011-2012 DRA Recommended**
**(In Thousands of 2009 Dollars)**

| | 2007 units | 2008 units | 2009 units | 3-year average units | Last year units | 2009 unit cost | Annual Costs |
|---|---|---|---|---|---|---|---|
| Overhead conductor | 196 | 99 | 108 | | 108 | $64.463 | $ 6,962 |
| Underground Cable | 66 | 64 | 61 | | 61 | $202.606 | $ 12,324 |
| Overhead transformers | 4,568 | 4,400 | 4,600 | 4,523 | | $7.320 | $ 33,105 |
| Underground Transformers | 3,298 | 3,200 | 3,375 | 3,291 | | $11.051 | $ 36,369 |
| | | | | | | | $ 88,760 |

SCE's forecast for overhead conductors is based on the number of units replaced in 2009 (108 units). Considering 2007 units are almost double 2008 or 2009 units, DRA does not take issue with this approach.

For underground cable, DRA recommends using the 2009 replacement units because the replacement units have been decreasing during the last four years. For overhead transformers and underground transformers, DRA used a three year average of units replaced. As can be seen in the 2007-2009 data, the units appear to be leveling out with a dip in 2008. DRA used 2009 unit costs since costs have been coming down.

### 2. Transformer Bank Replacement

SCE used two other elements in determining its total Capital Preventative Maintenance capitalized expenditures. SCE added a capital expenditure for its

[55] Workpapers Transmission & Distribution, Distribution Construction & Maintenance, SCE-03, Volume 4, Part 6, Ch. II, pages 45-46

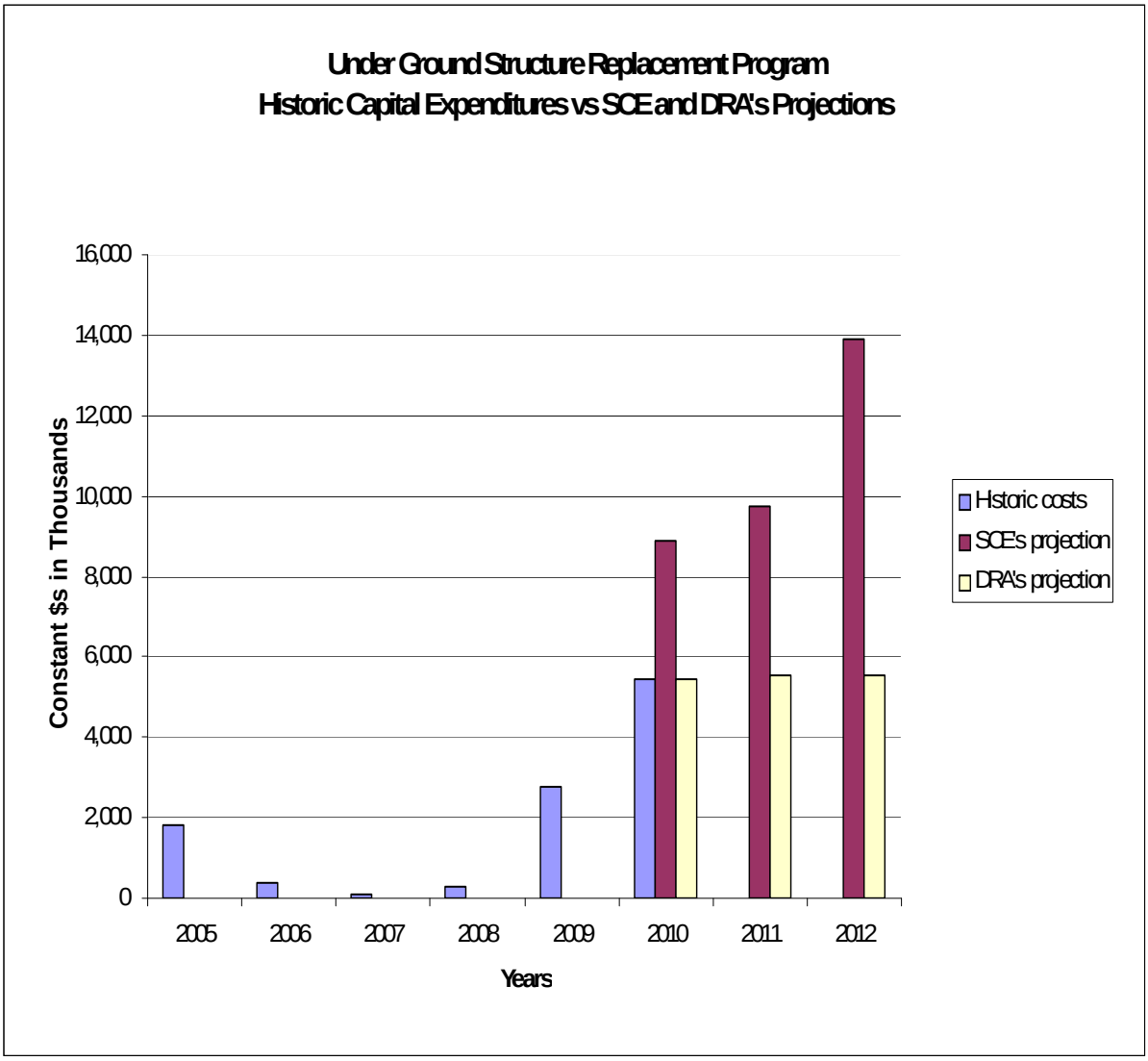
transformer banks replacement program and the capital expenditures for its underground structure replacement program. Since SCE forecasts zero ratepayer funding in 2011 and 2012 in its transformer banks replacement program, DRA does not discuss this program because these capital expenditures they are buried in the historic 2010 costs.

### 3. Underground Structures

However, SCE projects large increases in its underground structure replacement program. Under the Distribution Inspection and Maintenance Program, SCE began using a new process for identifying, tracking, and evaluating underground structures. According to SCE, beginning in 2009, "…when concrete structures are identified to be significantly deteriorated during the underground detail inspection, they are scheduled for re-inspection by a licensed civil engineer who determines whether the structure can be repaired or must be replaced."[56] SCE's historic costs range in amount from $90,000 in 2007 to $2.8 million in 2009.

[56] Exhibit SCE-03, Vol. 4, Part 1 & 2, page 92, lines 9-13

**Graph 7-3**




SCE wants ratepayers to fund increased capitalized expenditures for this program in amounts up to $13.9 million in 2012. SCE says it has identified a total number of 43 underground concrete structures that need replacement and that it expects to replace 217 underground structures from 2010 to 2014.[57] In 2010 SCE projected capital expense for under ground structure replacement of $8.9 million; it actually spent $5.4 million.

[57] Exhibit SCE-03, Vol. 4, Part 1 &2, page 92, lines 14-20

SCE's current request for its underground structure replacement program lacks historic support. For the period 2010-2012, SCE is asking for a number that is six and a half times greater than the last five years' capital expense. This is too excessive for a brand new program without sufficient support. In its next GRC, SCE will or should have developed a historical record. For this GRC, however, DRA recommends that the Commission allow sufficient ratepayer funding for SCE to replace 20 underground vaults in 2011 and 2012. SCE estimates that it will find 20 vaults that need replacement in 2012.[58] This results in underground replacement program costs of $5.6 million in 2011 and 2012, which matches the amount spent by SCE in 2010. The annual number recommended by DRA exceeds the total cost for all underground structure replacements for the 5-year period 2005-2009 ($4.9 million), on an overall basis.

### 4. Total Capital Preventative Maintenance

The following table shows DRA's forecasted Capital Preventative Maintenance capital expenditure for 2011 and 2012.

**Table 7-10**
**Capital Preventative Maintenance-Total**
**Historical Recorded and SCE Forecast**
**(In Thousands of 2009 Dollars)**

| Summary of Capital Preventive Maintenance Expenses | <-- Forecast --> | |
|---|---|---|
| | 2011 | 2012 |
| Asset Based Preventive Maintenance (Constant $) | 88,760 | 88,760 |
| Transformer Bank Replacement Program (Constant $) | 0 | 0 |
| Underground Structure Replacement (Constant $) | 5,560 | 5,560 |
| **Total Capital Preventive Maintenance (Constant $)** | **$94,320** | **$94,320** |

In 2011 and 2012, DRA recommends combined Capital Preventative Maintenance capital expenditures of $94.3 million.

[58] Workpapers Transmission & Distribution, Distribution Construction & Maintenance, SCE-03, Volume 4, Part 6, Ch. II, page 206

## C. Wood Pole Replacements

SCE discusses its Distribution Wood Pole Replacement request in Exhibit SCE-03, Volume 04, Part 01 & 02, Chapters I-II, at pages 93-95. The supporting workpapers are included in the Workpapers Transmission & Distribution SCE-03, Volume 4, Part 2, Chapter II, at pages 207-215.

According to SCE, it manages approximately 1.5 million wood poles in its system. Poles are routinely assessed through intrusive inspection and detailed inspections, as required by G. O. 165. Intrusive inspections involve drilling into each pole's interior to measure the extent of any internal decay. Poles with deterioration are identified for repair or replacement. Pole repairs and replacements are prioritized for repair or replacement based on safety significance and to meet the strength requirement of G. O. 95.[59] SCE says "Going forward, beginning in 2012, SCE expects to perform approximately 130,000 grid based intrusive pole inspections per year through the rate case cycle."[60] This is approximately double what the inspections have been during the last 5 years.

Between 1998 and 2007, SCE performed intrusive pole inspections in accordance with the first cycle of GO 165. This cycle required SCE to perform an intrusive pole inspection on all wood transmission and distribution poles over a ten year cycle. In the second cycle, 2008-2017, all wood distribution and transmission poles which are 25 years old (installed before 1993) are required to have an intrusive pole inspection performed over the next 20 years, and all poles installed between 1993 and 2002, will need to have an intrusive pole inspection during the second cycle which will end in 2017.[61]

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[59] Exhibit SCE-03, Vol. 04, Part 01 & 02, Ch. I-II, page 93, lines 1-8

[60] Exhibit SCE-03, Vol. 04, Part 01 & 02, Ch. I-II, page 78, lines 7-8

[61] General Order 165

During the first cycle, SCE experienced a failure rate of 7.7% (for every 1,000 poles inspected, SCE needed to replace 77 poles).[62] SCE's experience during the second cycle is that it is failing only 3.3% of the poles.[63] This decreased failure rate would decrease SCE's costs by about half if SCE used the same number of intrusive pole inspections.

Besides the poles being replaced because they failed the intrusive inspection, SCE says poles will also be identified for replacement for reasons that "...can include those identified by local Districts as being unsuitable for climbing, insufficiently strong to support new equipment or poles initially identified for repair but later concluded to be too deteriorated."[64]

DRA rejected SCE's forecast calculations after comparing them to SCE's G.O. 165 intrusive inspection requirements. SCE's projections do not follow the intrusive inspection schedule set forth in G.O. 165, nor does it match what SCE has been doing over the last 5 years. SCE's 2010-2014 projection results in 20,658 intrusive inspection replacements verses the 5-year average 12,760 (2,552 * 5) replacements. This results in SCE inflating its 5 year costs by $96 million. Table 7-11 shows DRA's Wood Pole Replacement calculation.

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[62] Data Response to Data Request DRA-SCE-198-MKB, Q. 2

[63] Data Response to Data Request DRA-SCE-198-MKB, Q. 3

[64] Exhibit SCE-03, Vol. 4, Part 01 & 02, Ch. I-II, pages 93-94, lines 18-2. In its Workpapers, SCE refers to Workpapers Transmission & Distribution, Inspection & Maintenance SCE-03, Volume 4, Part 2, Ch. II, page 219

**Table 7-11**
**Wood Pole Replacement**
**2011-2012 DRA Recommended**
**(In Thousands of 2009 Dollars)**

| | Year | 2011 | 2012 |
|---|---|---|---|
| | | | |
| | 5-Yeat Average Intrusive Pole Inspections | 77,327 | 77,327 |
| | Phase II Failure Rate (DRA-SCE-198-MKB Q. 3) | 3.30% | 3.30% |
| | | | |
| **A** | 5-year average annual distribution wood pole replacements | 2,552 | 2,552 |
| | Estimated Repaired Pole Inspections | 249 | 249 |
| | Estimated District Requests | 734 | 734 |
| | Estimated based on Others | 1,165 | 1,165 |
| | Adjusted Poles Replaced | 4,700 | 4,700 |
| **B** | Cost per Pole | $12.15 | $12.15 |
| **C** | Total Cost (Constant 2009 $, Figure II-45 in testimony) | $ 57,108.7 | $ 57,108.7 |
| | | | |

DRA prepared its own estimate of the 2011 & 2012 expenditures necessary to replace distribution wood poles annually by: (1) after calculating the required GO 165 intrusive inspections (65,650) DRA's Capital and O&M witness decided to use a 5-year average intrusive inspection number of 77,327 multiplied by SCE's second cycle failure rate 3.3% this equals a 5-year average annual distribution wood pole replacements of 2,552; (2) adding SCE's 2010 repaired pole inspections replacements of 249; (3) adding SCE's estimated 2010 district distribution wood pole replacement requests of 734; (4) adding SCE's estimated 2010 other distribution wood pole replacement requests 1,165; and (5) multiplying the total distribution wood replacements (4,700) by SCE's 2009 average cost of installing a transmission wood pole ($12.15). This results in distribution wood pole replacement costs in 2011 and 2012 of $57.1 million annually.

The Commission should adopt DRA's Distribution Deteriorated Wood Pole cost of $57.1 million in 2011 and 2012. DRA's forecasts are consistent with SCE's 5-year average of intrusive inspections and provide SCE funding beyond that which it needs to perform the number of intrusive inspections required by G.O. 165.

**D. Joint Pole Credits**

SCE discusses its Joint Pole Credit request in Exhibit SCE-03, Volume 04, Part 01 & 02, Chapters I-II, at pages 96-97.

When SCE installs a new or replacement distribution or transmission pole, it recovers some of the cost from the other utilities that also use the pole. These other utilities have typically purchased partial ownership in the pole. The forecast reflects the payments SCE receives from other parties.[65]

The primary difference between SCE and DRA's projections is the 5-year average intrusive pole inspection for the distribution and transmission pole replacements vs. SCE's doubling of historic intrusive pole inspections. As an example, SCE planned to have 130,000 intrusive inspections of its distribution poles annually. The 5-year average only requires approximately half of these intrusive inspections, or 77,327. SCE's estimated credits are excessive because they are based on a projection that is almost double the intrusive pole inspections SCE has actually done on average over the past 5-years. DRA's adjustments are discussed in more detail in Sections IV.C., Wood Pole Replacements, and VIII.B., Transmission Deteriorated Poles.

The following table shows DRA's calculation of Joint Pole Credits for 2011 and 2012.

[65] Exhibit SCE-03, Vol. 04, Part 01 & 02, Ch. I-II, page 96, lines 6-10

**Table 7-12**
**Joint Pole Credits**
**2011-2012 DRA Recommended**
**(In Thousands of 2009 Dollars)**

| | Year | 2009 | 2010 | 2011 | 2012 |
|---|---|---|---|---|---|
| **A** | Count of Distribution Poles Replaced | 6,768 | 4,700 | 4,700 | 4,700 |
| **B** | Two year average of Distribution Poles Replaced | | 5,734 | 4,700 | 4,700 |
| **C** | Joint Pole Credits per Distribution Pole | | (1.65) | (1.65) | (1.65) |
| **D** | Distributuion Joint Pole Credits | | ($9,442) | ($7,739) | ($7,740) |
| | | | | | |
| **E** | Count of Transmission Poles Replaced | 683 | 653 | 293 | 293 |
| **F** | Two year average of Transmission Poles Replaced | | 668 | 473 | 293 |
| **G** | Joint Pole Credits per Transmission Pole | | (1.09) | (1.09) | (1.09) |
| **H** | Distributuion Joint Pole Credits | | ($729) | ($516) | ($319) |
| | | | | | |
| **I** | **Total Joint Pole Credits (Constant 2009 $, Figure II-47)** | | $ (10,170.6) | $ (8,254.7) | $ (8,059.2) |

DRA recommends that the Commission adopt DRA's recommended Joint Pole Credits for 2011 and 2012 of ($8.3) million and ($8.1) million respectively.

## E. Wood Pole Disposal

SCE discusses its Wood Pole Disposal request in Exhibit SCE-03, Volume 04, Part 01 & 02, Chapter I-II, at pages 98-99. The supporting workpapers are included in the Workpapers Transmission & Distribution SCE-03, Volume 4, Part 2, Chapter II, at page 253.

When wood poles are removed from service, SCE must take special care in disposing of its poles properly because all of the poles have been treated with chemical preservatives and are considered hazardous waste.[66] Nonetheless, SCE's forecast is excessive because it is based on a projection that is almost double the intrusive pole inspections required by GO 165. For example, SCE says it plans to have 130,000 intrusive inspections of its distribution poles annually. Using a 5-year average intrusive pole inspection of 77,327 is consistent with SCE's past practices and with the requirements of G.O. 165.

[66] Exhibit SCE-03, Vol. 04, Part 01 & 02, Ch. I-II, page 98, lines 1-4

Using a 5-year average intrusive inspection level also leads to a forecast for Wood Poles Disposal that is significantly less than SCE's. DRA's adjustments are discussed in more detail in Sections IV.C., Wood Pole Replacements, and VIII.B. Transmission Deteriorated Poles.

The following table shows DRA calculation of Wood Pole Disposal for 2011 and 2012.

**Table 7-13**
**Wood Pole Disposal**
**2011-2012 DRA Recommended**
**(In Thousands of 2009 Dollars)**

| | Year | 2010 | 2011 | 2012 |
|---|---|---|---|---|
| | Distribution wood pole replacements | 2,552 | 2,552 | 2,552 |
| | Emergency wood poll replacements | 304 | 304 | 304 |
| | Transmission wood pole replacements | 653 | 293 | 293 |
| A | Number of Wood Pole Replacements | 3,509 | 3,149 | 3,149 |
| B | Removal Cost per Pole | 0.160 | 0.160 | 0.160 |
| C | **Total Costs (Constatnt 2009 $, Figure II-48 and Table I-30)** | $ 560.4 | $ 502.9 | $ 502.9 |

DRA recommends that the Commission adopt DRA's recommended Wood Pole disposal recommendations for 2011 and 2012 of $502,900 annually.

## F. Removal of Idle Facilities

SCE discusses Removal of Idle Facilities request in Exhibit SCE-03, Volume 04, Part 01 & 02, Chapter I-II, at pages 99-100. The supporting workpapers are included in the Workpapers Transmission & Distribution SCE-03, Volume 4, Part 2, Chapter II, at pages 254-260.

When facilities are no longer used and useful, SCE removes those facilities from its rate base.[67] SCE modified its request in a data response to DRA. SCE's revised 2009 constant dollar amount for Removal of Idle Facilities projections is $4.0 million for 2010-2014.[68]

[67] Exhibit SCE-03, Vol. 04, Part 01 & 02, Ch. I-II, pages 99-100, lines 1-1

[68] Data response DRA-SCE-104-MKB Q. 5, Attachment 8 of 9

SCE is seeking a return on $12 million in Removal of Idle Facilities capital expenditures over the period 2010-2012. DRA is recommending that SCE's requested amount be allowed. DRA accepts SCE's actual 2010 capital expenditures. Since the recorded 2010 Removal of Idle Facilities expenditures are much higher than those projected by SCE, DRA has allocated the remaining balance split between 2011 & 2012. This will still allow SCE to perform the same work planned in this area, since SCE will recover what it had requested over the 2010-2012 period, i.e., SCE requested recovery of $12 million ($4 million + $4 million + $4 million) while DRA recommends $12 million ($9 million + $1.5 million + $1.5 million).

## V. DISCUSSION / ANALYSIS OF GRID OPERATIONS

Most of SCE's capital request for the Grid Operations organization relates to the operation and maintenance of the street light system. This capital can be broken down into three types of activities: (1) steel street light pole replacement; (2) the need to make simple replacements and repairs to street light fixtures; and (3) the need to make complicated repairs to street lights.[69]

### A. Overview of SCE's Request

Table 7-14 shows SCE's recorded 2005-2009 capital expenditures for its grid operation in constant dollars.

**Table 7-14**
**Grid Operation**
**2005-2009 Recorded**
**(In Millions of 2009 Dollars)**

| Description | 2005 | 2006 | 2007 | 2008 | 2009 |
|---|---|---|---|---|---|
| Street Light Replacement Program | $13.6 | $22.4 | $11.4 | $8.1 | $13.1 |
| Facilities Operational | $1.6 | $1.2 | $2.2 | $1.6 | $0.9 |
| Valley Substation Capital Expenditure | $0.0 | $0.0 | $0.0 | $0.0 | $1.1 |
| Total | $15.2 | $23.6 | $13.6 | $9.7 | $15.2 |

[69] Exhibit SCE-03, Vol. 04, Part 05 & 06, Ch. I-II, page 55, lines 3-11

Table 7-15 shows DRA's recommended grid operation 2010-2012 capital expenditures compared with SCE's projected capital expenditures for the same years.

**Table 7-15**
**Grid Operation**
**2010-2012 DRA Recommended and SCE Requested**
**(In Millions of 2009 Dollars)**

| Description | DRA Recommendated | | | SCE Proposed | | |
|---|---|---|---|---|---|---|
| | 2010 | 2011 | 2012 | 2010 | 2011 | 2012 |
| Street Light Replacement Program | $11.1 | $10.9 | $10.9 | $10.0 | $13.4 | $16.4 |
| Facilities Operational | $1.7 | $0.9 | $0.9 | $0.9 | $0.9 | $0.9 |
| Valley Substation Capital Expenditure | $4.2 | $0.0 | $0.0 | $2.8 | $0.0 | $0.0 |
| Total | $17.0 | $11.9 | $11.9 | $13.7 | $14.4 | $17.3 |

DRA recommends the Commission adopt SCE's actual 2010 Grid Operations capital expenditures, rather than its 2010 projections. For 2011 and 2012 Grid Operations capital expenditures, DRA only takes issue with SCE's cost projections for its Street Light Replacement program.

## B. Street Light Replacement Program

SCE discusses its Street Light Replacement request in Exhibit SCE-03, Volume 04, Part 05 & 06, Chapter I-II, at pages 55-58. The supporting workpapers are included in the Workpapers Transmission & Distribution Grid Operations SCE-03, Volume 4, Part 5, Chapter I, at pages 269-274.

SCE primarily projected out its 2010-2014 Street Light Replacement program capital expenditures for each of the program's four components; (1) steel pole replacements; (2) street light fixtures; (3) overhead conductor; and, (4) underground cable.

Table 7-16 shows SCE's recorded 2005-2009 capitalized expenditures for its grid operation in constant dollars.

**Table 7-16**
**Street Light Replacement Program**
**2005-2009 Recorded**
**(In Millions of 2009 Dollars)**

| | Historic Costs | | | | | SCE's Forecast Costs | | |
|---|---|---|---|---|---|---|---|---|
| **Steel Pole Replacement** | **2005** | **2006** | **2007** | **2008** | **2009** | **2010** | **2011** | **2012** |
| Number of Steel Pole Replacements | 840 | 3,135 | 2,473 | 742 | 2,849 | 1,360 | 2,836 | 4,000 |
| *times: Cost Per Steel Pole Replacement* | $1.863 | $2.389 | $2.375 | $2.317 | $2.258 | $2.200 | $2.200 | $2.200 |
| **equals: Street Light Fixture Capital Expenditure** | **$1,565** | **$7,490** | **$5,873** | **$1,719** | **$6,434** | **$2,993** | **$6,239** | **$8,800** |
| | | | | | | | | |
| **Street Light Fixtures** | **2005** | **2006** | **2007** | **2008** | **2009** | **2010** | **2011** | **2012** |
| Number of Street Lights (or Electrcliers) | 608,515 | 621,002 | 633,386 | 638,386 | 640,929 | 642,929 | 644,929 | 646,929 |
| *times: Street Light Fixture Failure Rate* | 3.8% | 5.8% | 4.2% | 4.6% | 4.6% | 4.6% | 4.6% | 4.6% |
| *equals: Street Light Fixtures Per Year* | 23,243 | 35,942 | 26,676 | 29,406 | 29,523 | 29,615 | 29,708 | 29,800 |
| | | | | | | | | |
| Units of Work (Selected value for the forecast period)[1] | 23,243 | 35,942 | 26,676 | 29,406 | 29,523 | 29,600 | 29,700 | 30,000 |
| *times: Cost per Unit* | $0.356 | $0.289 | $0.135 | $0.140 | $0.145 | $0.150 | $0.150 | $0.150 |
| **equals: Street Light Fixture Capital Expenditure** | **$8,267** | **$10,376** | **$3,612** | **$4,125** | **$4,285** | **$4,440** | **$4,455** | **$4,500** |
| | | | | | | | | |
| **Overhead Conductor** | **2005** | **2006** | **2007** | **2008** | **2009** | **2010** | **2011** | **2012** |
| Number of Street Lights (or Electrcliers) | 608,515 | 621,002 | 633,386 | 638,386 | 640,929 | 642,929 | 644,929 | 646,929 |
| *times: Feet Replaced Per Street Light* | 0.75 | 0.97 | 0.97 | 1.11 | 1.20 | 1.30 | 1.39 | 1.49 |
| *equals: Street Light Fixtures Per Year* | 458,086 | 603,552 | 617,233 | 707,012 | 770,333 | 833,429 | 896,903 | 960,754 |
| | | | | | | | | |
| Units of Work (Selected value for the forecast period)[1] | 458,086 | 603,552 | 617,233 | 707,012 | 770,333 | 833,400 | 905,000 | 1,018,400 |
| *times: Cost per Unit* | $0.005 | $0.004 | $0.002 | $0.002 | $0.002 | $0.002 | $0.002 | $0.002 |
| **equals: Street Light Fixture Capital Expenditure** | **$2,456** | **$2,626** | **$1,260** | **$1,457** | **$1,603** | **$1,750** | **$1,901** | **$2,139** |
| | | | | | | | | |
| **Underground Conductor** | **2005** | **2006** | **2007** | **2008** | **2009** | **2010** | **2011** | **2012** |
| Number of Street Lights (or Electrcliers) | 608,515 | 621,002 | 633,386 | 638,386 | 640,929 | 642,929 | 644,929 | 646,929 |
| *times: Feet Replaced Per Street Light* | 0.11 | 0.19 | 0.15 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 |
| *equals: Street Light Fixtures Per Year* | 64,349 | 116,797 | 91,946 | 108,526 | 108,958 | 109,298 | 109,638 | 109,978 |
| | | | | | | | | |
| Units of Work (Selected value for the forecast period)[1] | 64,349 | 116,797 | 91,946 | 108,526 | 108,958 | 109,300 | 110,000 | 120,000 |
| *times: Cost per Unit* | $0.020 | $0.016 | $0.008 | $0.008 | $0.008 | $0.008 | $0.008 | $0.008 |
| **equals: Street Light Fixture Capital Expenditure** | **$1,273** | **$1,876** | **$693** | **$820** | **$826** | **$831** | **$836** | **$912** |
| | | | | | | | | |
| | | | | | | | | |
| **Total Capital (Constant 2009 $)[2]** | **$13,561** | **$22,368** | **$11,437** | **$8,120** | **$13,147** | **$10,014** | **$13,430** | **$16,351** |

SCE's historical costs went up in 2006 and 2009, but down in 2007 and 2008. The highest recorded amount is in 2006, and the lowest recorded amount is in 2008. A least squares projection of this data shows a downward trend. In fact, SCE's 2010 constant capital expenditures are lower than its 2007 constant street light replacement program capitalized expenditures.

The largest component of SCE's proposed Street Light Replacement program is its request for funding for steel street light pole replacements. SCE wants to increase the number of steel street light pole replacements to 4,000 in 2012.[70] According to SCE, this will allow the company to replace all of its steel poles over the next 20 years.[71] SCE claims that the aging of its steel street light poles and the continuing corrosion of these assets "...leads to an ongoing and urgent need to replace steel street light poles."[72] SCE also claims that its steel street light poles suffer from corrosion which can be quicker in areas close to the ocean.[73] However, according to SCE's depreciation workpapers, the remaining life on FERC Account 373-Street Lighting and Signal System is almost 31 years.

SCE's testimony does not substantiate any such "urgent" need. SCE has not provided the Commission with any documentation that shows the ages of its steel street light poles, their condition or their locations and climate. Nor does SCE's recent spending history demonstrate any sense of urgency. In fact, SCE's highest year of steel street light pole replacements was in 2006 when SCE replaced 3,135 steel street lights.

The following graph compares SCE's historic steel pole replacement with its proposed capital expenditures.

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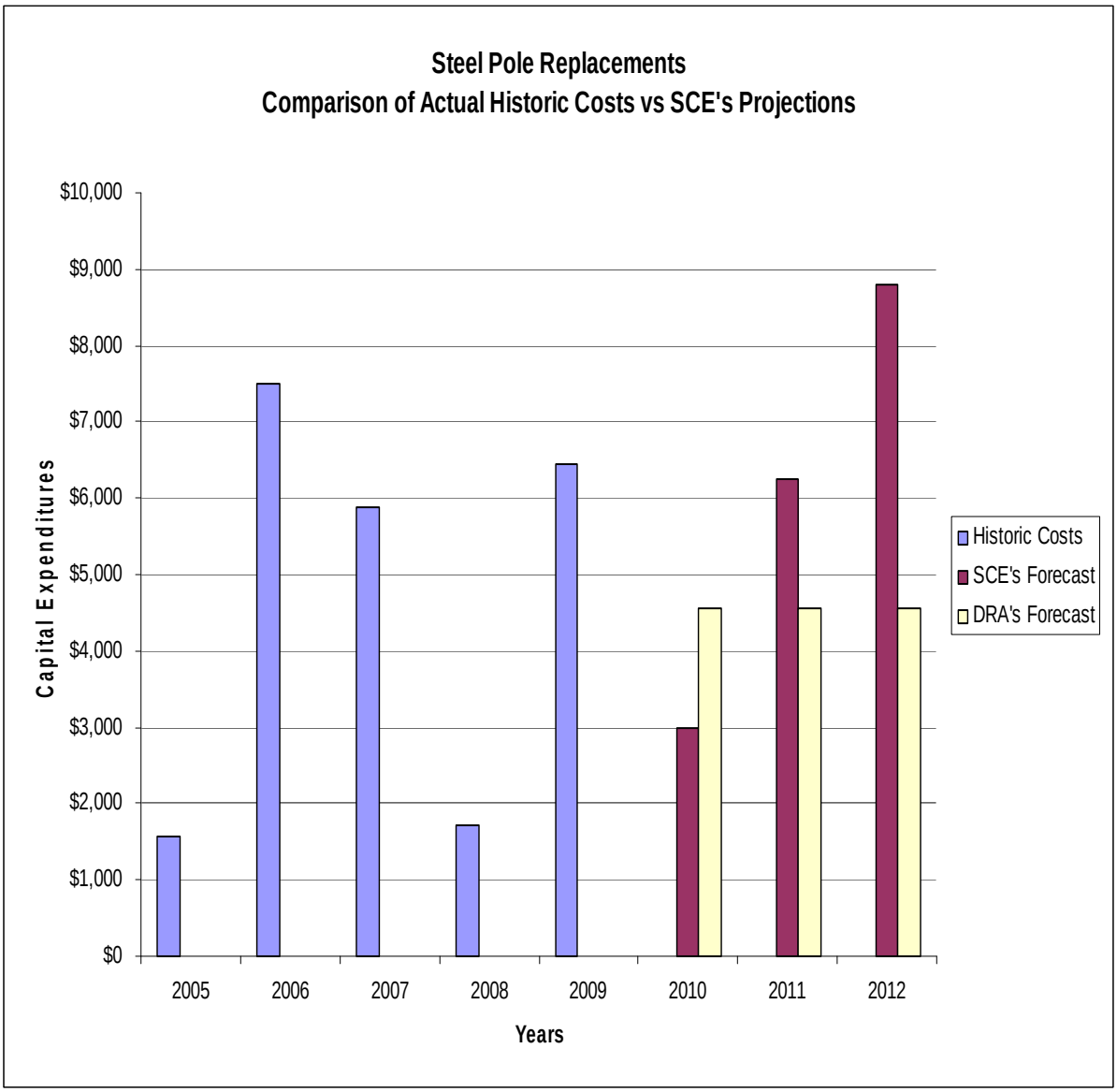
[70] Data Response to DRA-SCE-141-MKB, Q. 5a

[71] Exhibit SCE-03, Vol. 04, Part 05 & 06, Ch. I-II, page 57

[72] Exhibit SCE-03, Vol. 04, Part 05 & 06, Ch. I-II, page57

[73] Exhibit SCE-03, Vol. 04, Part 05 & 06, Ch. I-II, page57

**Graph 7-4**
**(In Thousands of 2009 Dollars)**




As SCE's own data shows, historically, SCE has not been replacing 4,000 steel street light poles a year. In fact, during the last five years, SCE has never replaced 4,000 steel street light poles in any one year calendar. In both 2005 and 2008, SCE replaced less than 1,000 steel street light poles.[74]

[74] Data Response to DRA-SCE-141-MKB, Q. 4a

In any event, SCE does not need to replace 4,000 steel street light poles to replace all of its poles in 20 years. In 2009, SCE had 72,250 steel street light poles,[75] dividing this number by 20 years results in a need to replace only 3,613 a year. However, during the last 5 years SCE has replaced 10,039.[76] Subtracting out the five years of poles SCE has already replaced reduces the annual replacement number to 3,115.

Generally, steel poles can be engineered to have a design life of 60-70 years. If all of the steel street light poles that SCE added in the last 20 years were removed, SCE's forecast should be even lower than DRA's forecast of 2,021 steel street light poles annual replacements.

DRA's forecast of 2,021 steel street light pole replacements annually is based on an historical 3-year average of units for the four categories used by SCE, and the 2009 unit cost provided by SCE. Table 7-17 shows DRA's calculation.

**Table 7-17**
**Street Light Replacement Program**
**2011-2012 DRA Recommended**
**(In Thousands of 2009 Dollars)**

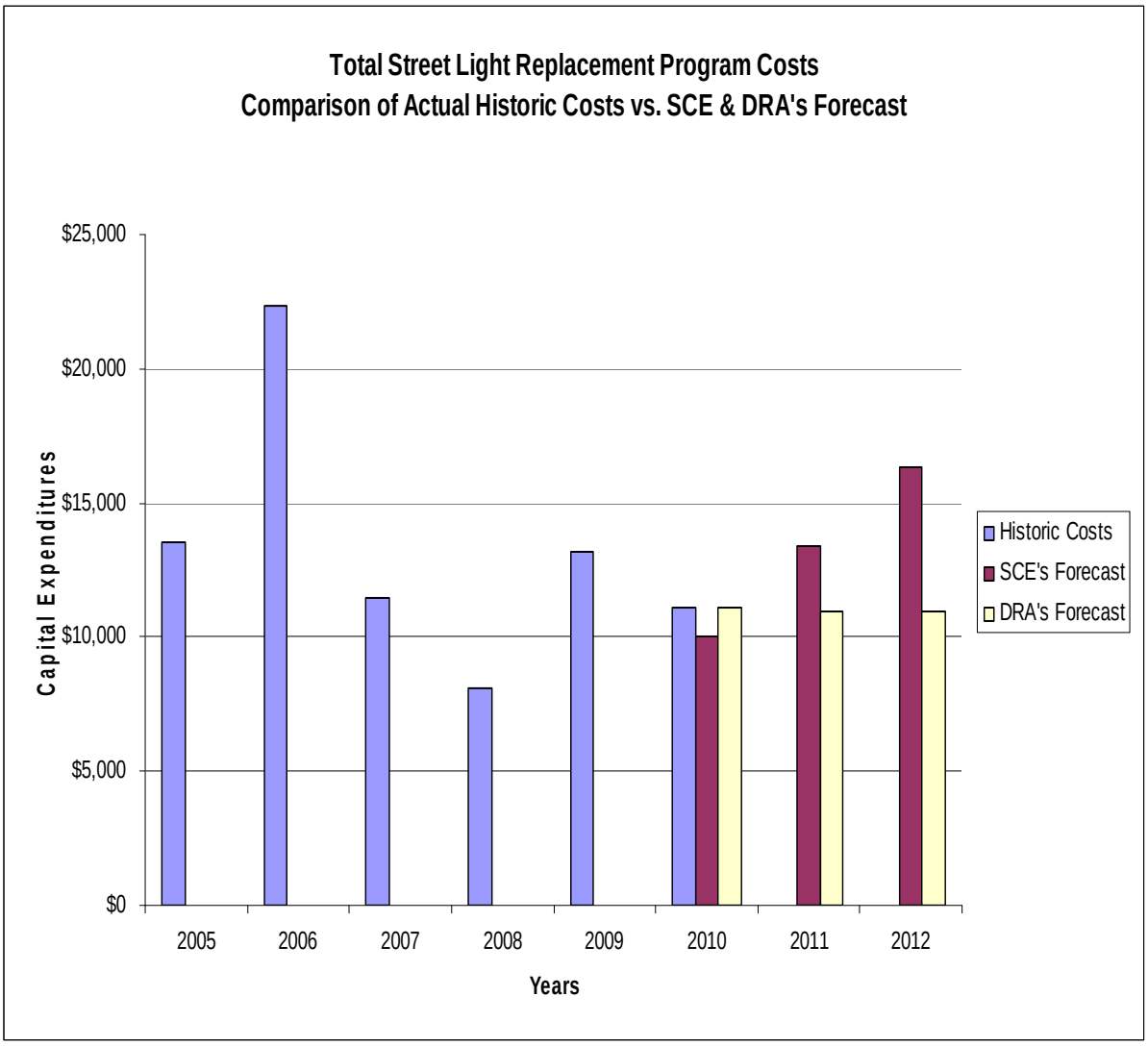
| | 2007 units | 2008 units | 2009 units | 3-year average units | 2009 unit cost | Annual Costs |
|---|---|---|---|---|---|---|
| Steel Pole Replacement | 2,473 | 742 | 2,849 | 2,021 | $2.258 | $ 4,565 |
| Street Light Fixtures | 26,676 | 29,406 | 29,523 | 28,535 | $0.145 | $ 4,141 |
| Overhead Conductor | 617,233 | 707,012 | 770,333 | 698,193 | $0.002 | $ 1,452 |
| Underground Conductor | 91,946 | 108,526 | 108,958 | 103,143 | $0.008 | $ 782 |
| | | | | | | $ 10,940 |

Graph 7-5 shows a comparison of SCE's and DRA's forecasted numbers compared to the Actual Historic Street Light Replacement Program capital expenditures.

[75] Exhibit SCE-03, Vol. 04, Part 05 & 06, Ch. I-II, page 57, Table I-7

[76] Data Response to DRA-SCE-141-MKB, Q. 4a

**Graph 7-5**
**(In Thousands of 2009 Dollars)**




While SCE complains about the condition of its steel street light poles and seeks a massive increase in capital expenditures ostensibly to address it, SCE's spending over the past five years shows no strategic plan to replace steel street light poles. In short, SCE has not supported its request, and during this GRC cycle, this Commission should limit ratepayer funding of the Street Light Replacement program capital expenditures to $10.9 million for 2011 and test year 2012.

# VI. DISCUSSION / ANALYSIS OF DISTRIBUTION CONSTRUCTION AND MAINTENANCE

SCE's Distribution Construction and Maintenance organization is responsible for constructing and maintaining all facilities related to voltage below 66 kV. The responsibilities include the inspection, maintenance, removal, and installation of all equipment in SCE's distribution system which covers 50,000 square miles and serves 4.9 million customers.[77]

SCE categorizes its distribution construction and maintenance work as either planned or unplanned. Planned work falls into four categories (1) customer requests, (2) routine inspection and maintenance, (3) circuit upgrades, and (4) infrastructure improvements. Unplanned work is categorized as: (1) breakdown maintenance, (2) distribution equipment damaged by storms, and (3) distribution equipment damaged by third parties.[78]

## A. Overview of SCE's Request

Table 7-18 shows SCE's recorded 2005-2009 capitalized expenditures for its Distribution Construction and Maintenance organization in constant dollars.

**Table 7-18**
**Distribution Construction and Maintenance**
**2005-2009 Recorded**
**(In Millions of 2009 Dollars)**

| Description | 2005 | 2006 | 2007 | 2008 | 2009 |
|---|---|---|---|---|---|
| Prefabrication District Stores | $22.8 | $22.7 | $22.2 | $18.8 | $18.1 |
| Storm Damage | $38.1 | $39.6 | $43.0 | $33.3 | $33.4 |
| Claims Damage | $16.3 | $19.2 | $22.4 | $19.1 | $22.0 |
| Transformers | $70.8 | $61.5 | $71.9 | $76.8 | $100.4 |
| Breakdown Maintenance | $78.8 | $84.4 | $95.9 | $107.4 | $99.0 |
| Tools And Work Equipment | $2.2 | $1.9 | $1.5 | $1.7 | $3.1 |
| Total | $229.0 | $229.3 | $256.8 | $257.1 | $276.0 |

SCE's historical costs show minor increases in 2006 and 2008, and more substantial increases in 2007 and 2009.

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[77] Exhibit SCE-03, Vol. 04, Part 05 & 06, Ch. I-II, Summary page, first four lines

[78] Exhibit SCE-03, Vol.04, Part 05 & 06, Ch. I-II, pages 76-77, lines 25-4

Table 7-19 presents DRA's recommended Distribution Construction and Maintenance capital expenditures compared to SCE's proposed capital expenditures for the same years.

**Table 7-19**
**Distribution Construction and Maintenance Capital Expenditures**
**2010-2012 DRA Recommended and SCE Requested**
**(In Millions of 2009 Dollars)**

| Description | DRA Recommendated | | | SCE Proposed | | |
|---|---|---|---|---|---|---|
| | 2010 | 2011 | 2012 | 2010 | 2011 | 2012 |
| Prefabrication District Stores | $16.1 | $18.1 | $18.1 | $18.1 | $18.1 | $18.1 |
| Storm Damage | $65.5 | $37.5 | $37.5 | $37.5 | $37.5 | $37.5 |
| Claims Damage | $16.7 | $19.8 | $19.8 | $19.8 | $19.8 | $19.8 |
| Transformers | $100.2 | $55.1 | $60.4 | $93.3 | $55.1 | $60.4 |
| Breakdown Maintenance | $109.8 | $99.0 | $99.0 | $99.0 | $104.6 | $111.4 |
| Tools And Work Equipment | $4.2 | $2.1 | $2.1 | $3.1 | $3.1 | $3.1 |
| Total | $312.5 | $231.6 | $236.9 | $270.7 | $238.2 | $250.3 |

DRA's recommendations use SCE's actual distribution construction and maintenance capital expenditures in 2010. DRA disputes SCE's 2011 and 2012 projections for Breakdown Maintenance, and Tools and Work Equipment. These areas are discussed in the following sections.

## B. Breakdown Maintenance

SCE discusses its Breakdown Maintenance capitalized expenditures request in Exhibit SCE-03, Volume 04, Part 05 & 06, Chapter I-II, at pages 99-102. The supporting workpapers are included in the Workpapers Transmission & Distribution SCE-03, Volume 4, Part 6, Chapter II, at pages 34-42.

As discussed above, maintenance is either classified as either planned, which is driven by SCE's overhead and underground inspection programs, or unplanned, which SCE gives the label "breakdown." Breakdown Maintenance in this section includes any capital equipment replaced as the result of equipment failure which has experienced a fault and can no longer carry current. SCE distinguishes this type of breakdown from storm and claim work in that it is driven by factors typically related to the condition of the existing equipment or an operating event that results in the

failure, rather than some external event disruptive to the distribution system, such as rain, or a car hitting a pole.[79]

SCE separates its cost calculation into four groups: (1) overhead conductors; (2) underground cable; (3) overhead transformers; and, (4) underground transformers. SCE projected out the number of replacement units for the years 2010-2014 and multiplied the replacement units by the recorded 2009 average price to install each replacement unit. To predict how many of these assets will be replaced per year, SCE uses the following equation: "Assets Replaced = Total Assets * Failure Rate."[80] The bottom line is that SCE is calculating its assets replaced based on its total assets.

DRA obtained the supporting documentation from SCE regarding its calculations and did its own calculation of the correlation co-efficient between the total assets and the failure rate, the failure rate and the replacement units, and the total assets and the replacement units using the seven years of data SCE provided. The table below shows DRA's results.

**Table 7-20**
**Correlation Co-efficient**

| | Correlation Coefficient Total Plant to Replacement Rate | Correlation Coefficient Replacement Rate to Replacement Units | Correlation Coefficient Total Assets to Replacement Units |
|---|---|---|---|
| Overhead Conductor | 0.3612501 | 0.9968046 | 0.4344876 |
| Underground Cable | 0.8960091 | 0.9958226 | 0.9296427 |
| Overhead Transformer | 0.6010696 | 0.9999837 | 0.6056005 |
| Underground Transformer | (0.3828364) | 0.5182921 | 0.5904715 |

The correlation co-efficient between total assets and replacements units for three of the four groups' ranges from 0.4344876 to 0.6056005. These rates are too low for any legitimate forecast. An acceptable correlation co-efficient should be

[79] Exhibit SCE-03, Vol. 04, Part 05 & 06, Ch. I-II, page 99, lines 1-9

[80] Exhibit SCE-03, Vol. 04, Part 05 & 06, Ch. I-II, page 101, line 11

above 0.95 and analysts prefer to see sample sizes that are greater than 30. SCE used a sample size of 7 years of data.

The following table shows SCE's historical and SCE's projected Breakdown Maintenance Capital Expenditures.

**Table 7-21**
**Breakdown Maintenance**
**Recorded and SCE Projected Capital Expenditures**
**(In Thousands of 2009 Dollars)**

| Breakdown Maintenance | | 2009 Constant $000 | | | | | SCE's Projected Capital Expenditures | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
| Overhead Conductor | Miles of Conductor | 92 | 90 | 98 | 102 | 92 | 91 | 91 | 91 |
| | Cost-per-mile, $(000) | $ 145.24 | $ 154.13 | $ 172.65 | $ 159.00 | $ 159.00 | $ 159.00 | $ 159.00 | $ 159.00 |
| | Total Costs (2009 Constant $000) | $ 13,403 | $ 13,888 | $ 16,926 | $ 16,218 | $ 14,596 | $ 14,469 | $ 14,469 | $ 14,469 |
| | | | | | | | | | |
| Underground Cable | Miles of Cable | 235 | 214 | 236 | 308 | 284 | 281 | 308 | 343 |
| | Cost-per-mile, $(000) | $ 139.75 | $ 148.30 | $ 166.13 | $ 155.00 | $ 155.00 | $ 155.00 | $ 155.00 | $ 155.00 |
| | Total Costs (2009 Constant $000) | $ 32,811 | $ 31,687 | $ 39,254 | $ 47,817 | $ 44,093 | $ 43,521 | $ 47,783 | $ 53,220 |
| | | | | | | | | | |
| Overhead Transformer | Number of Transformers | 2,470 | 2,726 | 2,486 | 3,320 | 2,885 | 3,041 | 3,178 | 3,312 |
| | Cost-per-transformer, $(000) | $ 8.23 | $ 9.10 | $ 9.83 | $ 8.44 | $ 9.04 | $ 9.00 | $ 9.00 | $ 9.00 |
| | Total Costs (2009 Constant $000) | $ 20,326 | $ 24,808 | $ 24,447 | $ 28,016 | $ 26,065 | $ 27,369 | $ 28,602 | $ 29,808 |
| | | | | | | | | | |
| Underground Transformer | Number of Transformers | 1,159 | 1,253 | 1,211 | 1,326 | 1,224 | 1,172 | 1,185 | 1,202 |
| | Cost-per-transformer, $(000) | $ 10.58 | $ 11.23 | $ 12.58 | $ 11.60 | $ 11.60 | $ 11.60 | $ 11.60 | $ 11.60 |
| | Total Costs (2009 Constant $000) | $ 12,267 | $ 14,074 | $ 15,237 | $ 15,382 | $ 14,198 | $ 13,595 | $ 13,746 | $ 13,943 |
| | | | | | | | | | |
| | Total Costs (2009 Constant $000) | $ 78,807 | $ 84,406 | $ 95,864 | $ 107,433 | $ 98,953 | $ 98,954 | $104,600 | $111,440 |

SCE's historical data shows that overhead conductor replacement units went down in two years, 2006 and 2009, and up in two years, 2007 and 2008. Underground cable replacement units went down in two years, 2006 and 2009, and up in two years, 2007 and 2008. Overhead transformer replacement units went down in two years, 2007 and 2009, and up in two years, 2006 and 2008. Overhead transformer replacement units went down in two years, 2007 and 2009, and up in two years, 2006 and 2008. In addition, 2009 does not have the highest number of replacement units and all costs in 2009 are lower than the costs in 2007.

Table 7-22 shows DRA's 2011 & 2012 breakdown maintenance capital expenditures.

**Table 7-22**
**Breakdown Maintenance**
**2011-2012 DRA Recommended**
**(In Thousands of 2009 Dollars)**

| | 2007 units | 2008 units | 2009 units | 3-year average units | 2009 unit cost | Annual Costs |
|---|---|---|---|---|---|---|
| Overhead Conductor | 98 | 102 | 92 | 97 | $159.000 | $ 15,467 |
| Underground Cable | 236 | 308 | 284 | 276 | $155.000 | $ 42,845 |
| Overhead Transformer | 2,486 | 3,320 | 2,885 | 2,897 | $9.036 | $ 26,176 |
| Underground Transformer | 1,211 | 1,326 | 1,224 | 1,254 | $11.600 | $ 14,543 |
| | | | | | | $ 99,030 |

DRA used the last three recorded years of data in SCE's filing (2007-2009) to determine the average replacement units and multiplied the 2009 recorded unit costs to arrive at its 2011 and 2012 breakdown maintenance capital expenditures.

Virtually all units went up in 2008 but went down in 2009. For the overhead conductors, the final units in 2009 are lower than 2007, and for underground transformers, the 2009 units are very close to the number replaced in 2007. When something breaks down SCE has very little control over it. The variability in the replacement units demonstrates that. Nonetheless, SCE has not demonstrated that its method provides a legitimate forecasting method. DRA recommends that the Commission adopt DRA's three-year replacement unit formula in determining SCE's 2011 and 2012 breakdown maintenance capitalized expenditures in this GRC which amounts to $99.0 million in 2011 and TY 2012.

## C. Tools and Work Equipment

SCE discusses its Tool and Work Equipment capitalized expenditures request in Exhibit SCE-03, Volume 04, Part 05 & 06, Chapter I-II, at pages 102-104. The supporting workpapers are included in the Workpapers Transmission & Distribution SCE-03, Volume 4, Part 6, Chapter II, at pages 52-53.

Tool and Work Equipment includes costs for acquisition and retirement of portable tools and work equipment that cost more than $1,000. Replacement tools

and equipment that increase efficiency or technological improvements are also included.[81]

SCE claims that in 2009 it increased expenditures on tool purchases and replacements as part of its focus on safety and because of increased wear and tear resulting from an increase in work.[82] SCE used its 2009 historic capitalized expenditures as its 2010-2014 tools and work equipment forecast.

As can be seen in Table 7-18, SCE's Tools and Work Equipment capitalized expenditures went down in 2006 and 2007, and up in 2008 and 2009. SCE provided no documentation to show that this variability was due to purchases to improve safety or because of increased wear and tear on existing tools and work equipment.

DRA accepts the actual 2010 expenditures of $4.2 million. Given the historical fluctuations in this account, DRA recommends the Commission grant Tool and Work Equipment capitalized expenditures for 2011 & 2012 based on SCE's historic (2005-2009) 5-year average of $2.1 million.

## VII. DISCUSSION / ANALYSIS OF SUBSTATION CONSTRUCTION AND MAINTENANCE

SCE's Substation Construction & Maintenance organization is responsible for all construction activities associated with replacement and installation of substation equipment.[83]

### A. Overview of SCE's Request

Table 7-23 shows SCE's recorded capitalized expenditures for Substation Construction and Maintenance in constant dollars for the years 2005-2009.

[81] Exhibit SCE-03, Vol. 04, Part 05 & 06, Ch. I-II, page 102, lines 1-9

[82] Exhibit SCE-03, Vol. 04, Part 05 & 06, Ch. I-II, page 103. lines 7-9

[83] Exhibit SCE-03, Vol. 04, Part 07 & 08, Ch. I-II, page 2, lines 3 & 4

**Table 7-23**
**Substation Construction and Maintenance**
**2005-2009 Recorded**
**(In Millions of 2009 Dollars)**

| Description | 2005 | 2006 | 2007 | 2008 | 2009 |
|---|---|---|---|---|---|
| Substation Capital Maintenance | $29.0 | $36.7 | $39.8 | $27.4 | $33.1 |
| Substation Storm Capital | $2.1 | $0.8 | $0.5 | $0.1 | $0.3 |
| Substation Claims | $0.2 | $0.0 | $0.6 | $1.3 | $0.2 |
| Substation Rule 20 B/C Circuit Breakers | $0.4 | $0.5 | $1.0 | $0.4 | $0.2 |
| Substation Added Facilities-SCE Funded | $1.0 | $8.8 | $11.4 | $2.0 | $2.3 |
| Substation Added Facilities-Customer Funded | $1.5 | $3.2 | $3.0 | $9.7 | $7.3 |
| Total | $34.1 | $50.1 | $56.2 | $40.9 | $43.5 |

SCE's historical capitalized expenditures went up in 2006, 2007 and 2009, and down in 2008. The highest year for Substation Construction and Maintenance capitalized expenditures is 2007, and the lowest year is 2005. Capitalized expenditures for the years 2006 and 2007 were higher than 2009.

Table 7-24 shows DRA's recommended capitalized expenditures for Substation Construction and Maintenance for 2010-2012 and SCE's proposed capitalized expenditures.

**Table 7-24**
**Substation Construction and Maintenance Capital Expenditures**
**2010-2012 DRA Recommended and SCE Requested**
**(In Millions of 2009 Dollars)**

| Description | DRA Recommendated | | | SCE Proposed | | |
|---|---|---|---|---|---|---|
| | 2010 | 2011 | 2012 | 2010 | 2011 | 2012 |
| Substation Capital Maintenance | $32.9 | $33.2 | $33.2 | $30.7 | $40.5 | $40.4 |
| Substation Storm Capital | $0.5 | $0.8 | $0.8 | $0.8 | $0.8 | $0.8 |
| Substation Claims | $0.1 | $0.5 | $0.5 | $0.5 | $0.5 | $0.5 |
| Substation Rule 20 B/C Circuit Breakers | $0.0 | $0.2 | $0.2 | $0.5 | $0.5 | $0.5 |
| Substation Added Facilities-SCE Funded | $8.6 | $5.1 | $5.1 | $12.3 | $13.9 | $13.5 |
| Substation Added Facilities-Customer Funded | $16.5 | $4.9 | $4.9 | $33.2 | $21.6 | $17.6 |
| Total | $58.7 | $44.7 | $44.7 | $77.9 | $77.6 | $73.2 |

While SCE's historical capitalized expenditures for 2008 and 2009 have been in the $40 million range, SCE is asking for capitalized expenditures in the mid to high $70 million range even though the closest historic capitalized expenditures have gotten to that level is the mid $50 million range in 2007. DRA used actual 2010 capital expenditures. Other differences are discussed in the following sections.

## B. Substation Capitalized Maintenance

SCE discusses its Substation Capitalized Maintenance capital expenditures request in Exhibit SCE-03, Volume 04, Part 07 & 08, Chapter I-II, at pages 44-46. The supporting workpapers are included in the Workpapers Transmission & Distribution SCE-03, Volume 4, Part 7, Chapter I, pages 169-187.

The Substation Capitalized Maintenance capitalized expenditures are associated with removal, replacement, and retirement of assets on a reactive basis. These replacements are driven by SCE's Substation Preventive Maintenance program, where imminent equipment failures or safety issues are detected. According to SCE, "Substation capital maintenance replacements predominantly involve like-for-like replacement."[84]

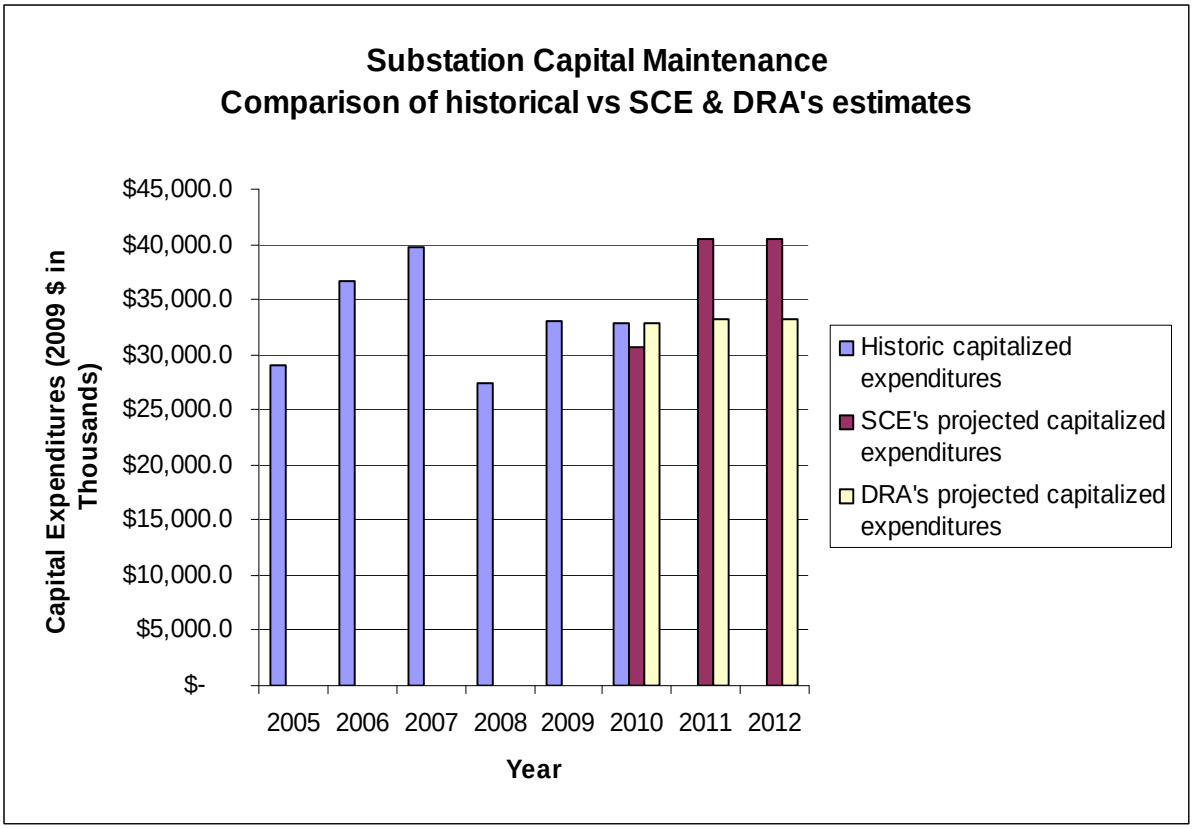
In SCE's request for substation capitalized maintenance miscellaneous equipment, SCE's 2011 forecast of $40.5 million jumps approximately $9.8 million over its 2010 estimate of $30.7 million. SCE's justification in a data response for this $9.8 million increase in miscellaneous equipment is ". . .to get back to 2007 level of spending, which was $16.506 million (page 46, line 11 of testimony.) . . ."[85]

Graph 7-6 compares Substation Capital Maintenance historic costs with SCE and DRA's projections.

[84] Exhibit SCE-03, Vol. 04, Part 07 & 08, Ch. I-II, page 44, lines 11-16

[85] Data Response to DRA-SCE-157-MKB, Q. 3a

**Graph 7-6**




Neither SCE's testimony, nor its workpapers nor its data responses justify its proposed increase. SCE's annual budget for 2010 miscellaneous equipment reflects capitalized expenditures of only $6 million. SCE's historical Substation Capital Maintenance capitalized expenditures range from a high of $39.8 million in 2007 to a low of $27.4 million in 2008. Because of the lack of documentation to support this requested increase, DRA is recommending that in 2011 and 2012, SCE be authorized recovery of its 5-year average Substation Capital Maintenance capital expenditures of $33.2 million. It should be noted that DRA's 2011 & 2012 forecast exceeds SCE's actual capital expenditures in 2010 of $32.9 million before DRA's numbers are escalated.

### C. Substation Rule 20

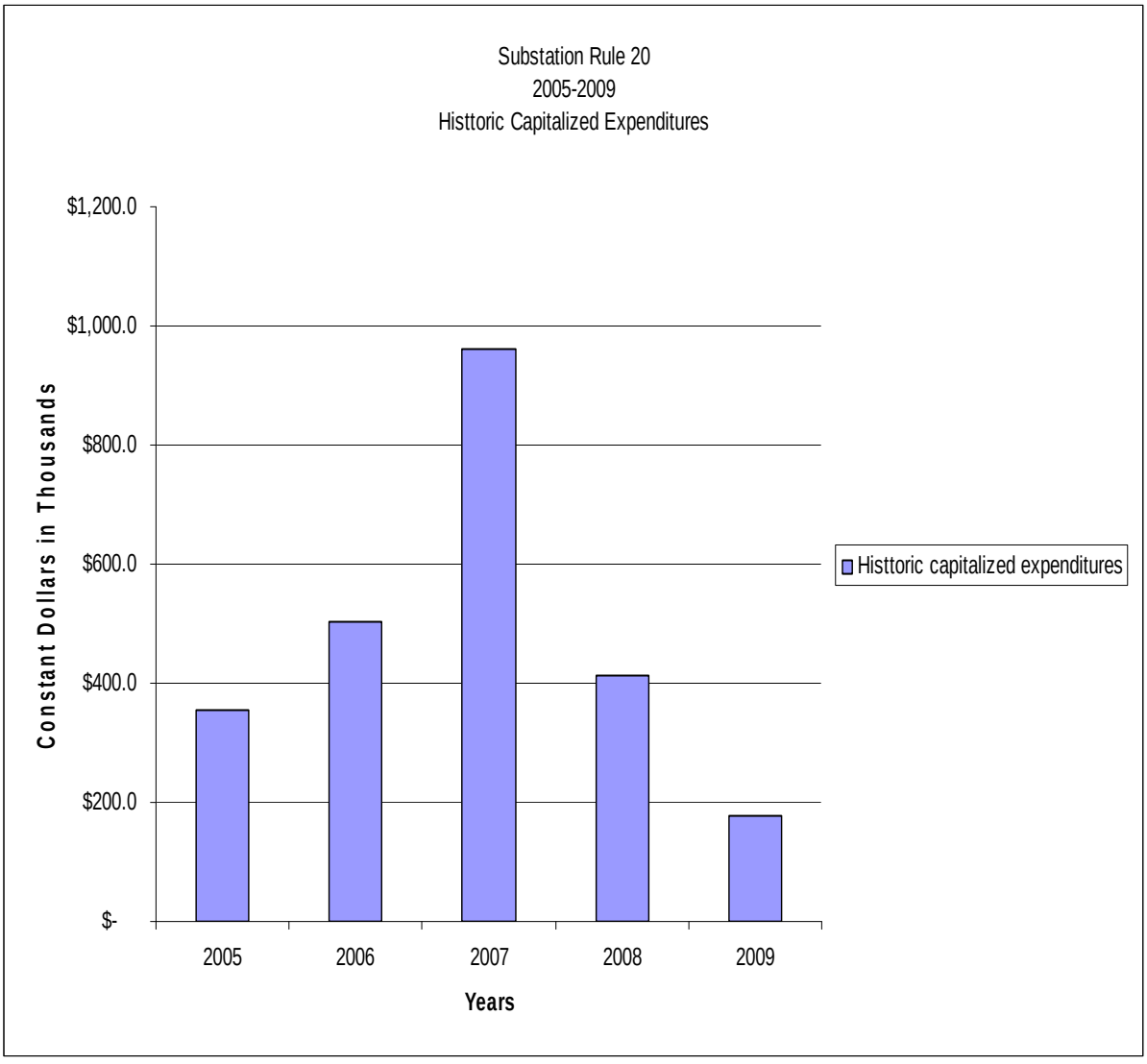
SCE discusses its Substation Rule 20 capitalized expenditures request in Exhibit SCE-03, Volume 04, Part 07 & 08, Chapter I-II, at page 48. The supporting

workpapers are included in the Workpapers Transmission & Distribution SCE-03, Volume 4, Part 7, Chapter I, at pages 192-193.

Rule 20b and Rule 20c are tariffs that provide for the replacement of overhead facilities with underground equipment when requested by customers.[86]

The following graph shows SCE's historical Substation Rule 20 capital expenditures for 2005-2009.

**Graph 7-7**




[86] Exhibit SCE-03, Vol. 04, Part 07 & 08, Ch. I-II, page 48, lines 1-3

SCE projected out Substation Rule 20b and 20c capital expenditures using a 5-year average. Since 2007, SCE's Substation Rule 20b and 20c capitalized expenditures have been declining. To take into account the recent changes in the California's economy, DRA recommends using the 2009 level of capital expenditures of $178,000 for 2011 and 2012 Substation Rule 20 b and 20c capitalized expenditures. It should be noted that 2010 actual Substation Rule 20b and 20c capital expenditures ($2,000) are substantially lower than SCE's 2009 capital expenditures.

### D. Substation Added Facilities

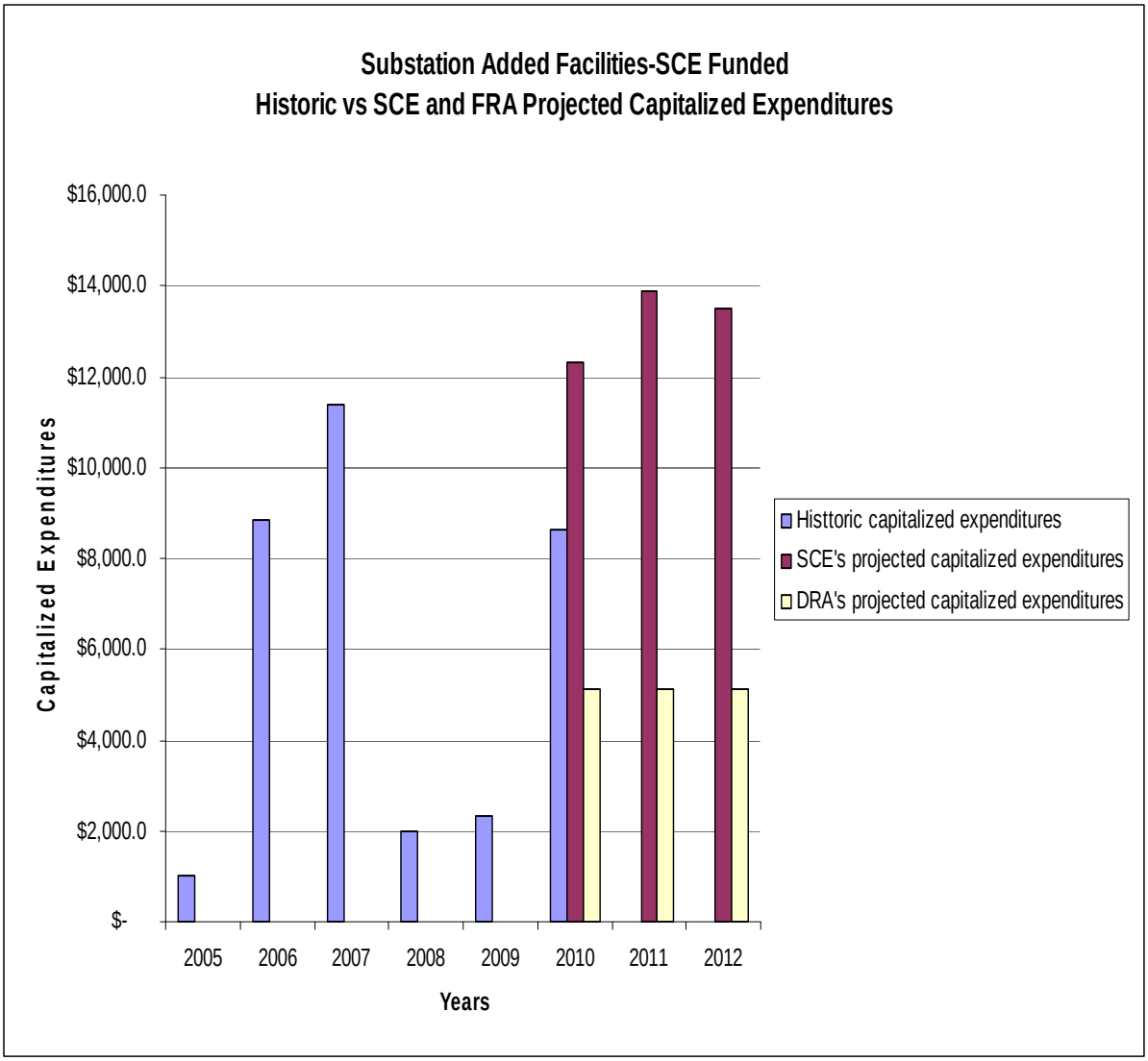
SCE discusses its Substation Added Facilities capitalized expenditures request in Exhibit SCE-03, Volume 04, Part 07 & 08, Chapter I-II, at pages 49-52. The supporting workpapers are included in the Workpapers Transmission & Distribution SCE-03, Volume 4, Part 7, Chapter I, at pages 194-800.

Substation Added Facilities are facilities requested by an applicant which are in addition to or in substitution for standard facilities which would normally be provided by SCE. At the customer's request, SCE provides additional facilities materials and equipment for additional reliability enhancements, beyond the meter services, requests for services at higher voltage levels, and to interconnect customer owned generation to SCE's distribution system.[87]

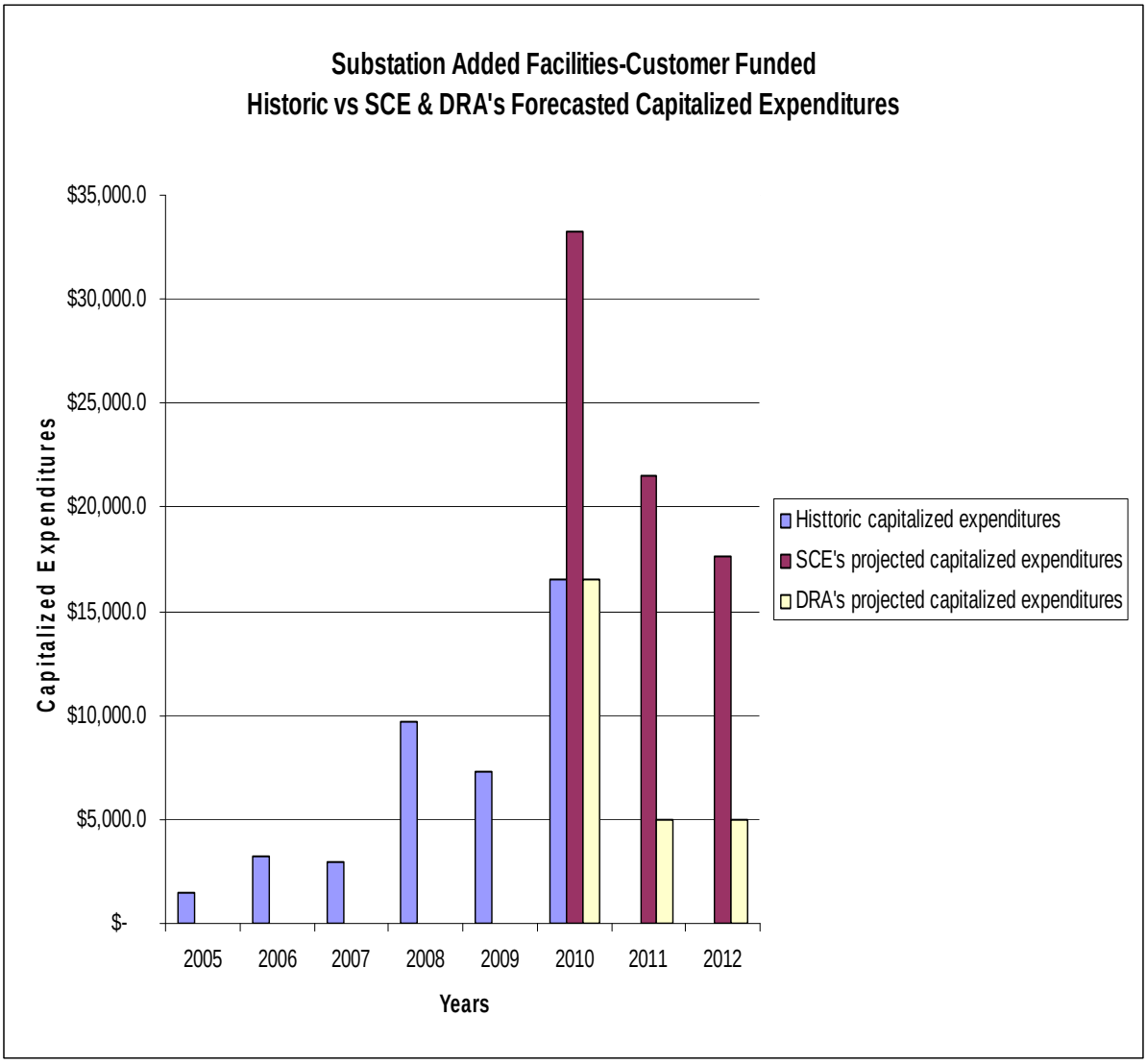
SCE has broken these capitalized expenditures into two sections: SCE-Funded, and Customer-Funded. The following graphs show SCE's historical, and SCE's and DRA's projected capitalized expenditures.

[87] Exhibit SCE-03, Vol. 04, Part 07 & 08, Ch. I-II, page 49, line 1-11

**Graph 7-8**


Substation Added Facilities-SCE Funded
Historic vs SCE and FRA Projected Capitalized Expenditures
$16,000.0
$14,000.0
$12,000.0
$10,000.0
$8,000.0
$6,000.0
$4,000.0
$2,000.0
$-
Capitalized Expenditures
2005
2006
2007
2008
2009
2010
2011
2012
Years
Histtoric capitalized expenditures
SCE's projected capitalized expenditures
DRA's projected capitalized expenditures

**Graph 7-9**




In D. 89-12-057, the Commission stated that if expenses in an account have significant fluctuations in recorded expenses from year to year, or are influenced by weather or other external forces beyond the control of the utility, an average of recorded expenses over a period of time is a reasonable base expense for estimate.[88] As can be seen in the two above graphs, there are significant fluctuations in the recorded years. Capital expenditures went up in 2006 and 2008,

[88] D. 89-12-057, page 405, finding of fact number 20

and down in 2007 and 2009. Also, the activity in these accounts is driven by when customers want additional facilities, which is outside SCE's control. Therefore DRA recommends the use of a 5-year average for SCE's Substation Facilities Added, SCE provided & customer provided for 2011 and 2012 which amounts to $5.1 million a year for SCE Funded and $4.9 million a year for Customer Funded.

## VIII. DISCUSSION / ANALYSIS OF TRANSMISSION

SCE's Transmission organization's work involves constructing new lines, relocating existing facilities, and inspecting and maintaining existing transmission facilities.[89]

### A. Overview of SCE's Request

Table 7-25 shows SCE's recorded 2005-2009 Transmission capital expenditures in 2009 constant dollars.

**Table 7-25**
**Transmission Capitalized Expenditures**
**2005-2009 Recorded**
**(In Millions of 2009 Dollars)**

| Description | 2005 | 2006 | 2007 | 2008 | 2009 |
|---|---|---|---|---|---|
| Transmission Deteriorated Poles | $13.1 | $15.3 | $9.6 | $11.3 | $12.0 |
| Transmission Maintenance | $1.9 | $2.2 | $5.0 | $11.2 | $7.8 |
| Transmission Claims | $2.2 | $1.5 | $2.1 | $1.6 | $2.4 |
| Transmission Relocations | $9.4 | $9.1 | $8.9 | $5.8 | $8.3 |
| Transmission Rule 20B/C | $7.6 | $7.2 | $6.0 | $3.6 | $1.2 |
| Transmission Storms | $9.6 | $5.9 | $5.2 | $3.6 | $3.7 |
| Total | $43.7 | $41.3 | $36.9 | $37.1 | $35.3 |

SCE's historical Transmission capitalized expenditures went down in 2006, 2007, and 2009. Capital expenditures went up only in 2008. The highest year for Transmission capitalized expenditures was the first year of data, 2005, and the lowest year was 2009. The historic data shows a downward slope.

[89] Exh SCE-03, Vol. 04, Part 07 & 08, Ch. I-II, page 81, line 17-21

Table 7-26 compares the forecast period Transmission capital expenditures for DRA and SCE for the period 2010-2012. DRA used recorded 2010 capital expenditures and differs with SCE with only one set of data for the years 2011 and 2012, Transmission Deteriorated Poles.

**Table 7-26**
**Transmission Capital Expenditures**
**2010-2012 DRA Recommended and SCE Requested**
**(In Millions of 2009 Dollars)**

| Description | DRA Recommendated | | | SCE Proposed | | |
|---|---|---|---|---|---|---|
| | 2010 | 2011 | 2012 | 2010 | 2011 | 2012 |
| Transmission Deteriorated Poles | $9.7 | $5.2 | $5.2 | $11.5 | $14.1 | $14.1 |
| Transmission Maintenance | $6.9 | $5.6 | $5.6 | $5.6 | $5.6 | $5.6 |
| Transmission Claims | $2.0 | $2.0 | $2.0 | $2.0 | $2.0 | $2.0 |
| Transmission Relocations | $11.1 | $8.3 | $8.3 | $8.3 | $8.3 | $8.3 |
| Transmission Rule 20B/C | $2.4 | $1.2 | $1.2 | $1.2 | $1.2 | $1.2 |
| Transmission Storms | $2.1 | $5.6 | $5.6 | $5.6 | $5.6 | $5.6 |
| Total | $34.3 | $27.8 | $27.8 | $34.1 | $36.7 | $36.7 |

DRA used actual recorded 2010 numbers. DRA's adjustment to SCE's Transmission Deteriorated Poles is discussed in the following section.

## B. Transmission Deteriorated Poles

SCE discusses its Transmission Deteriorated Pole request in Exhibit SCE-03, Volume 04, Part 07 & 08, Chapter I-II, at pages 110-112. The supporting workpapers are included in the Workpapers Transmission & Distribution SCE-03, Volume 4, Part 8, Chapter II, at pages 144-157.

The Transmission organization replaces transmission poles identified either through intrusive pole inspections, during annual overhead line patrols, or at the request of employees in the field.[90]

[90] Exhibit SCE-03, Vol. 04, Part 07 & 08, Ch. I-II, page 110, lines 1-6

Between 1998 and 2007, SCE performed intrusive pole inspections in accordance with the first cycle of G.O. 165. This cycle required SCE to perform an intrusive pole inspection on all wood transmission and distribution poles over a ten year cycle. In the second cycle, 2008-2017, all wood distribution and transmission poles which are 25 years old are (installed before 1993) are required to have an intrusive pole inspection performed over the next 20 years, and all poles installed between 1993 and 2003, will need to have an intrusive pole inspection in the second cycle which will end in 2017.[91]

During the first cycle, SCE experienced a failure rate of 7.7% (for every 1,000 poles inspected, SCE needed to replace 77 poles).[92] SCE's experience during the second cycle is that it is failing only 3.3% of the poles.[93] Besides the poles being replaced because they failed the intrusive inspection, SCE has also estimated a number of transmission poles being replaced because of district requests, and poles being replaced based on others.[94]

Because SCE's estimate differed from what is required by G. O. 165, DRA prepared its own estimate of the number of transmission wood poles that need to be replaced annually.

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[91] General Order 165

[92] Data Response DRA-SCE-198-MKB, Q. 2

[93] Data Response DRA-SCE-198-MKB, Q. 3

[94] Workpapers Transmission & Distribution, SCE-03, Volume 4, Part 8, Ch. II, page 157

**Table 7-27**
**Transmission Deteriorated Poles**
**2011-2012 DRA Recommended**
**(In Thousands of 2009 Dollars)**

| | Total Transmission Poles | Annual Inspectios Required by G. O. 165 |
|---|---|---|
| SCE Transmission Poles installed in 1993 and before | 108,871 | $ 5,443.55 |
| SCE Transmission Poles instaled between 1994 & 2003 | 11,559 | $ 1,155.90 |
| Total | | 6,599 |
| Phase II failure rate | | 3.30% |
| Intrusive Inspection Replacements | | 217.8 |
| Estimated district requests | | 52.0 |
| Estimated based on Others | | 23.0 |
| # of Poles Replaced | | 292.8 |
| Cost to replace deteriated transmission poles ($ in thousands) | | $ 17.59 |
| | | $ 5,150.49 |

DRA made its estimate by: (1) calculating the required GO 165 intrusive inspections and multiplying SCE's second cycle failure rate (217.8); (2) adding SCE's estimated 2010 district transmission wood pole replacement requests (52); (3) adding SCE's estimated 2010 other transmission wood pole replacement requests (23); and (4) multiplying the total transmission wood replacements (292.8) by SCE's 2009 average cost of installing a transmission wood pole ($17.59). This results in Transmission Deteriorated Pole costs in 2011 and 2012 of $ 5.2 million annually.

SCE's projections do not follow the intrusive inspection schedule set forth in G.O. 165. SCE's 2010-2014 projection results in 2,685 intrusive inspection replacements verses the G.O. 165 method of 1,089 (217.8 * 5) replacements. This results in SCE inflating its 5 year costs by $28 million.

The Commission should adopt DRA's Transmission Deteriorated Pole cost of $5.2 million in 2011 & 2012, which is consistent with the Commission G.O. 165 instructions.

### C. Transmission Maintenance

SCE discusses its transmission maintenance request in Exhibit SCE-03, Volume 04, Part 07 & 08, Chapter I-II, at pages 112-113. The supporting workpapers are included in the Workpapers Transmission & Distribution SCE-03, Volume 4, Part 8, Chapter II, at pages 158-169.

The Transmission organization, besides replacing transmission poles, also replaces equipment that fails in service.[95]

SCE made an error in its original filing which was corrected in response to a data response to DRA. SCE's corrected 2009 constant dollar Transmission Maintenance projection is $5.6 million for 2010-2014.[96] DRA does not dispute this forecast.

[95] Exhibit SCE-03, Vol. 04, Part 07 & 08, Ch. I-II, page 112, lines 4-7

[96] Data response DRA-SCE-105-MKB Q. 5