BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

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Application of Consumers Power Alliance; Public Citizen, Coalition of Energy Users; Eagle Forum of California; Neighborhood Defense League of California; Santa Barbara Tea Party; Concerned Citizens of La Quinta; Citizens Review Association; Palm Spring Patriots Coalition; Desert Valley Tea Party; Menifee Tea Party; Hemet Tea Party; Temecula Tea Party; Rove Enterprises, Inc.; Schooner Enterprises, Inc.; Eagle Forum of San Diego; Southern Californians for Wired Solutions to Smart Meters; and Burbank Action for Modification of D.08-09-039 and a Commission Order Requiring Southern California Edison Company (U338E) to File an Application for Approval of a Smart Meter Opt-Out Plan.	Application 11-07-020

SOUTHERN CALIFORNIA EDISON COMPANY'S (U 338-E) SMART METER TECHNOLOGICAL FEASIBILITY AND COST INFORMATION COMPLIANCE PROPOSAL PURSUANT TO D.11-11-006

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I.

INTRODUCTION

Pursuant to Ordering Paragraph 2 of Decision (D.) 11-11-006, Southern California Edison Company (SCE) submits this compliance proposal to provide SCE's residential customers an alternative to the installation of a digital electric smart meter that transmits customer usage data through radio transmission. This compliance proposal considers and provides analysis on the technological feasibility and cost to offer the metering alternatives listed in D.11-11-006.

A. Overview of SCE's Compliance Filing

D.11-11-006 does not order SCE to file an opt-out program application. The California Public Utilities Commission (Commission) "understand[s] that SCE may not support all the opt-out alternatives listed [in the Decision]" and recognizes that it is "most efficient to have SCE provide information on all the opt-out alternatives, not just its proposed alternative."[1] As described in D.11-11-006, this compliance proposal serves as a less time-consuming means for SCE to provide information that interveners, consumer groups, and the Division of Ratepayer Advocates (DRA) would otherwise request.[2]

In this compliance proposal, SCE evaluates the technical feasibility and potential costs of providing non-communicating smart meter residential opt-out program options including (1) smart meters with the wireless radio removed ("radio-out"), (2) analog meters, and (3) wired smart meters. SCE also evaluates the technical feasibility of remote wireless radio turn-off and turn-on to allow transmitting data only during a specific period each month.

After consideration of these options, at this time, SCE proposes to utilize a non-communicating "radio-off" meter option for residential customers with a monthly interval meter read performed by SCE's personnel. This option more closely supports California's Energy Action Plan (Updated)[3] than the other options because it provides interval billing data necessary to support time-variant rates, dynamic rates, and demand response programs. In addition, the Commission in D.11-11-006 found that "[a]n opt-out alternative should not be adopted unless it is technically feasible, can be offered at a reasonable cost to the customers opting-out and *does not impede the state's goals to deploy a Smart Grid*."[4] This option also better integrates with the Commission-authorized Edison SmartConnect™ Program[5] by leveraging the Commission-

[1] D.11-11-006 at p. 7.
[2] *Id.*
[3] Energy Action Plan, February 2008 Update, at pp. 10-11.
[4] D.11-11-006, Conclusions of Law 2 at p. 10 (emphasis added).
[5] As authorized by the Commission in D.08-09-039.

approved investments in the meter types, back office systems, and business integration processes.

While SCE submits this information and technical feasibility compliance proposal pursuant to D.11-11-006, SCE will continue to evaluate potential opportunities for a residential opt-out program that could provide lower cost options for opt-out program participants and SCE's other customers in preparation for filing its final opt-out program proposal. As such, SCE reserves the right to modify the costs and program options detailed in this compliance proposal in its opt-out program proposal.

B. Organization of This Compliance Proposal

This compliance proposal is organized into five sections. This section provides an overview of SCE's cost and feasibility information and acknowledges that SCE will continue to evaluate options that are lower cost for program participants and SCE's other customers in its final opt-out program proposal. Section II provides the regulatory background for this proceeding. Section III describes the technical feasibility and costs associated with the opt-out options as required by D.11-11-006. Section IV describes SCE's preferred, non-communicating, radio-off option and its associated estimated costs and fees. Section V provides a summary of SCE's preferred opt-out program option. The Appendix provides the worksheets that support the costs and fees described in the previous sections.

II.

REGULATORY BACKGROUND

On July 26, 2011, Joint Applicants[6] filed an Application to modify D.08-09-039 and requested the Commission order SCE to file an Application to implement a smart meter opt-out

[6] Joint Applicants include Consumers Power Alliance, Public Citizen, Coalition of Energy Users, Eagle Forum of California, Neighborhood Defense League of California, Santa Barbara Tea Party, Concerned Citizens of La Quinta, Citizens Review Association, Palm Spring Patriots Coalition, Desert Valley Tea Party, Menifee Tea Party, Hemet Tea Party, Temecula Tea Party, Rove Enterprises, Inc., Schooner Enterprises, Inc., Eagle Forum of San Diego, Southern Californians for Wired Solutions to Smart Meters, and Burbank Action

program. SCE filed a Response to the Joint Parties' Application on August 26, 2011, noting that SCE would participate in the Commission's opt-out workshop and would file an Application should the Commission find it reasonable for SCE to do so. On September 14, 2011, SCE participated in a workshop discussing the technical feasibility of various opt-out program options. On October 11, 2011, Administrative Law Judge (ALJ) Yip-Kikugawa issued a Proposed Decision (PD) granting in part the Joint Applicants' request by requiring SCE to file an opt-out proposal to provide estimated costs and technical feasibility of specific opt-out program options but denying the request to modify D.08-09-039. SCE commented on the PD, indicating that it would provide the required information for the opt-out options discussed at the September 14, 2011 workshop. The Commission issued D.11-11-006 on November 10, 2011, adopting the PD. This compliance proposal complies with the Commission's requirements in D.11-11-006.

SCE expects that this compliance filing provides sufficient cost and technical feasibility information for the Commission to order SCE to file its own application for its preferred opt-out proposal including costs and a cost recovery mechanism by the end of this year. SCE expects that such an application can be processed on an expedited basis so that SCE's preferred option can be implemented by the end of the first quarter in 2012. As such, SCE will continue to evaluate potential opportunities for a residential opt-out program that could provide a lower cost option for opt-out program participants and other SCE customers that can be included in SCE's application for a final opt-out program.

III.

REVIEW OF TECHNICAL FEASIBILITY AND COSTS FOR OPT-OUT OPTIONS

The purpose of this section is to discuss the technical feasibility and costs of the opt-out options identified in D.11-11-006. In Parts A and B, SCE describes the technical feasibility of remote turn-offs and the ability to turn-on radio frequency (RF) transmissions for the purposes of transmitting interval data only at a specified time each month. Part C describes the program

assumptions to support SCE's estimated program costs. Finally, Parts D and E describe the costs and attributes of the analog meter and radio-out meter options.

A. Technical Feasibility of Remote Turn-off Functionality

Remote turn-off functionality refers to the ability to turn off an Edison SmartConnect radio over-the-air, eliminating the need for a field visit to turn off the radio or to replace the meter with one where the radio is already disabled. This functionality is not technically feasible at this time,[7] as the radios in Edison SmartConnect meters were not designed to be remotely disabled. Adding remote turn-off functionality would require significant changes to the hardware, firmware, and software supporting the Edison SmartConnect system. In addition, SCE's meter vendors do not plan to implement remote turn-off functionality in their product offerings. SCE expects that there would be significant implementation costs to develop such functionality, as well as ongoing operating costs. Furthermore, if such functionality were required, SCE expects that it would not become available in 2012.

B. Technical Feasibility of Turning on RF Radio and Transmitting Data Only During a Specified Period Each Month

The ability to remotely turn-on the wireless radio would theoretically enable SCE to collect meter reads only at a predetermined date and time each month, eliminating the need to perform a field visit to turn-on the radio and eliminating the need for manual meter reading. This functionality, however, is not technically feasible for SCE at this time. If the radio in the Edison SmartConnect meter is disabled, both the transmit and receive functions of the radio are disabled. Thus, if the radio is turned-off, the meter cannot receive a command to turn-on and transmit data.

[7] This capability is not technologically feasible at this time for the smart meter with radio transmission turned off options identified in D.11-11-006. This capability is not applicable to the analog (electromechanical) meter option, digital meter with no radio installed option, and the wired smart meter option, because these options do not have a radio transmitter.

Similar to remote turn-off functionality previously described, the remote turn-on is not technically feasible at this time,[8] as the radios in Edison SmartConnect meters were not designed to be remotely turned on. Adding remote turn-on functionality would require significant changes to the hardware, firmware, and software supporting the Edison SmartConnect system. In addition, SCE's meter vendors do not plan to implement remote turn-on functionality in their product offerings. To accommodate the radio-on functionality the technical changes in hardware, firmware, and software would fundamentally change SCE's Edison SmartConnect back office systems and would require a detailed analysis of functional and system requirements by SCE and SCE's smart meter vendors. SCE expects that there would be significant implementation costs to develop such functionality, as well as on-going operating costs. Furthermore, if such functionality were required, SCE expects that it would not be available in 2012.

C. Current Assumptions

The purpose of this Part is to describe SCE's opt-out program assumptions used to develop the estimated costs for the required metering alternatives. The cost estimates contained in this filing represent SCE's best efforts to provide such information within the parameters provided in D.11-11-006. The alternative metering options provided in D.11-11-006 represent significant process and system changes relative to the Edison SmartConnect Program, as approved in D.08-09-039, which may result in unanticipated process or system changes that could impact the overall program costs and benefits. Significant uncertainty remains in how customers will react to such proposals and respond, or not respond, to any proposed program. SCE will continue to evaluate potential opportunities for opt-out program efficiencies that could provide lower cost options for opt-out program participants and SCE's other customers. As

[8]This capability is not technologically feasible at this time for the smart meter with radio transmission turned off options identified in D.11-11-006. This capability is not applicable to the analog (electromechanical) meter option, digital meter with no radio installed option, and the wired smart meter option, because these options do not have a radio transmitter.

such, SCE reserves the right to modify the costs and program options as detailed in this filing in its final opt-out program proposal.

In determining an appropriate assumed customer participation rate, SCE performed market research in September 2011. SCE surveyed 500 customers to determine their preferences regarding potential opt-out program participation given different customer fee options. As expected, the participation rate increased when customers were provided lower proposed customer fees. SCE also considered the number of customers on its current smart meter delay list. Based on these factors, SCE has assumed a 1.4 percent opt-out program participation rate[9] for the development of its cost estimates set forth herein. This reasonably estimated participation rate assumes that individual customers of record, not communities or cities, will be able to opt out of SCE's smart metering program.

As directed by D.11-11-006, SCE calculated the costs for each metering option (*i.e.*, analog meter, radio-out, wired smart meter and radio-off) assuming that only one opt-out metering option would be provided to customers (*i.e.*, costs for each metering option were developed on a mutually exclusive basis). If SCE were required to provide customers a choice of multiple metering options, the additional complexities imposed on SCE's systems and processes would necessarily increase the cost estimates provided in this filing. As such, if the Commission requires that SCE offer customers more than one opt-out metering choice, SCE reserves the right to modify the costs and program options described in this filing. Furthermore, for the purposes of this filing, SCE provides costs for the 2012 to 2014 time-period, which is

[9] Based on certain customer fee assumptions, SCE's market research indicates that 1.4% to 2.4% of residential customers may opt out of having a smart meter. The 1.4% participation rate results in an initial forecasted participation volume of 60,852 customers. SCE performed the survey in September 2011 and notes that customer preferences may change over time. In addition, SCE's market research indicated that 41% of residential customers expressed interest in being able to choose to have the wireless transmission turned off without consideration of customer fees. If customer fees are significantly reduced or eliminated, SCE's opt-out program participation could significantly increase from the estimated 60,852 participating customers (based on $125 initial fee, $20 monthly fee, and $125 exit fee). SCE assumed an 11% of opt-out customers would move to a new location and re-enroll in SCE's opt-out program. This assumption is consistent with the volumes of customer move-in and move-out activity in SCE's service territory. This assumption contributed to the cost estimates for customer program termination costs, which are reflected in SCE's proposed exit fee.

consistent with SCE's upcoming 2012 General Rate Case (GRC) cycle. Any opt-out related costs beyond 2014 are assumed to be reflected in SCE's 2015 GRC forecast.

Furthermore, an essential part of SCE's opt-out program is restoration of Smart Grid functionality upon termination of service by an opt-out customer. Restoration of a communicating smart meter will require a field visit to perform a meter change out, upon which the new customer will be able to participate in Smart Grid-enabled programs (*e.g.*, critical peak pricing and peak time rebate), and receive Smart Grid-enabled data (such as near-real time access to usage and pricing information). Thus, the costs to restore a communicating meter are properly included in SCE's opt-out program costs.

D. Analog Meter

An analog meter option would provide for either (1) replacing an Edison SmartConnect meter with a new analog meter (for those customers that currently have an Edison SmartConnect meter installed at their premises), or (2) leaving an existing analog meter at an opt-out customer's residence (for those customers that do not have a smart meter installed at their premises). This option would require manual meter reading and the procurement of analog meters for those residential customers who currently have a smart meter installed at their premises.

This option would prohibit customer participation in time-variant rates (i.e., time-of-use rates), dynamic pricing (*e.g.*, critical peak pricing, peak time rebate), and demand response programs (*e.g.*, Programmable Communicating Thermostat program) as the analog meter is incapable of collecting or recording interval usage data. This option is also inconsistent with SCE's intention to decommission its legacy billing systems because it would require SCE to indefinitely operate and maintain its legacy billing systems and data gathering processes. Thus, in addition to the new back office systems and processes that support billing using interval data provided by the new Edison SmartConnect meters, SCE would need to operate and maintain indefinitely its legacy systems that support cumulative billing data provided by the analog meters.

The following sections describe the technical feasibility, costs, meter reading options, proposed fees, and SCE's recommendation for the analog meter option.

1. Technical Feasibility

The analog meter option is technically feasible. As SCE is currently deploying its Edison SmartConnect meters, the analog meters that have not yet been replaced continue to be read manually by SCE meter readers. However, as previously mentioned, the associated billing systems and data gathering processes that support cumulative data collected from analog meters would need to be maintained and operated. In addition, it is not technically feasible to offer time-differentiated rates and dynamic pricing to those customers who choose the analog meter option.

2. Costs for 2012-2014

Table III-1 below shows the 2012-2014 program costs associated with providing the analog meter option. Included in these cost estimates are maintenance and operation of the legacy billing systems and data gathering processes associated with the cumulative data provided by the analog meters. Assuming a monthly meter read by SCE's personnel, the total cost for 2012-2014 of providing this option is $64.0 million. This is comprised of $43.6 million in O&M expense, and $20.4 million in capital costs.

In addition, for those customers with an analog meter currently installed at their premises, there are no incremental meter capital costs or meter installation costs. *See* Appendix, pages 1A, 1B, 1C, and 1D for further information on the estimated costs. As provided for in the Appendix, the analog meter option will result in incremental costs for meter installation, meter reading, network mitigation, customer education, customer support, Information Technology (IT) systems development, IT operations and maintenance, as well as other operational costs. Furthermore, SCE assumes that the analog meter will be replaced with an Edison SmartConnect meter should the customer exit the opt-out program. For customers that exit the opt-out program, a field visit and a meter exchange will be required at additional cost to the customer.

Table III-1

2012-2014 Analog Meter Estimated Program Costs($ millions)

	2012		2013		2014		Total	
	O&M	Capital	O&M	Capital	O&M	Capital	O&M	Capital
Operations	$18.4	-	$12.6	-	$12.6	-	$43.6	-
Systems	-	16.7	-	$2.7	-	$1.0	-	$20.4

1. Meter Reading Options

As required by D.11-11-006, SCE estimated the program costs assuming the meter is read (i) by a SCE employee every month, (ii) by a SCE employee on a quarterly basis, with the remaining months being read by the customer, and (iii) by a SCE employee on a semi-annual basis, with the remaining months being read by the customer. Table III-2 below shows the O&M cost savings when customers read their meter relative to SCE manual meter reading. These cost savings reflect reductions in meter reading expenses offset by additional costs associated with billing exceptions, estimated bills, customer support costs, and other operational costs. However, there is significant uncertainty in terms of obtaining accurate and timely customer meter reads, which would affect SCE's ability to bill and collect revenues. The monthly cost savings do not appear to justify the risk of process uncertainty, revenue uncertainty, and customer bill impacts from potentially inaccurate meter reads associated with a customer self-read option. Thus, at this time, SCE recommends that the Commission adopt a monthly SCE meter read for opt-out customers. However, SCE will continue to evaluate potential meter reading and billing options associated with cumulative usage data that may produce operational efficiencies and lower program costs.

Table III-2

2012-2014 Meter Reading Cost Savings Relative to Monthly SCE Meter Reads

Quarterly SCE manual meter read, remaining months read by the customer	$1/month per customer
Semi-annual SCE manual meter read, remaining months read by the customer	$2/month per customer

1. Proposed Customer Fees

Table III-3 below provides the estimated customer fees to recover the total estimated cost for the analog meter option assuming monthly SCE meter reads. The fee structure is comprised of an up-front fee to cover the cost of account set-up and meter installation, a monthly fee to cover the cost of systems development and ongoing operations, and an exit fee for costs to terminate service in the opt-out program. The exit fee covers costs associated with restoring an Edison SmartConnect meter at the customer's residence, thus providing the next resident access to the Smart Grid functionality through Edison SmartConnect-enabled programs and tools. CARE customers who choose to opt out would receive a 20% discount relative to the non-CARE fee. The proposed CARE fee is consistent with current ratemaking practices pursuant to California Public Utilities Code Section 739.1(b). *See* Appendix 1D for further information on estimated customer fees.

Table III-3

Analog Meter Opt-Out Program Fees

	Up-Front	Monthly	Exit
Non-CARE	$91	$25	$91
CARE	$73	$20	$73

1. SCE's Recommendation

At this time, SCE recommends that the analog meter option not be offered to its residential customers. This option is not consistent with California's Energy Action Plan (Updated) because it does not support Commission directives to provide customers with interval billing data to support time-differentiated or dynamic rates, such as time-of-use, peak time rebate, or critical peak pricing. In addition, this option complicates SCE's back office systems by requiring the operation and maintenance of systems that would have eventually been decommissioned.

A. Digital Meter with No Radio Installed ("Radio-Out")

The digital meter with no radio installed ("radio-out") option consists of replacing the opt-out customer's existing analog or Edison SmartConnect meter with an Edison SmartConnect meter with the wireless radio physically removed. Since there is no wireless radio in these meters, these meters must be read manually. Interval usage data will be collected and recorded manually, thus enabling opt-out customers to participate in time-variant rates, dynamic rates, and demand response programs. The manual data collection process would require a SCE employee to use an optical probe meter reading system that would obtain the interval data directly from the meter. The following sections describe the technical feasibility, costs, meter reading options, proposed fees, and SCE's recommendation for the radio-out meter option.

1. Technical Feasibility

The radio-out option is technically feasible. Digital meters without radios are available today. SCE's personnel can manually probe the meter to collect interval usage data for billing purposes.

2. Costs for 2012-2014

Table III-4 below shows the total operational and program costs from 2012-2014 to implement a radio-out option. Assuming a monthly meter read by SCE's personnel, the total cost of providing this option is $73.0 million. This is comprised of $50.9 in O&M expense, and $22.1 million in capital costs.

Meter and meter installation costs are the same whether a customer currently has a legacy meter or an Edison SmartConnect meter because both require a meter exchange. SCE will replace the customer's existing meter with an Edison SmartConnect meter with the radio removed when delivered by SCE's meter vendors. This replacement process is necessary at this time because it is not economically efficient to safely remove a radio from a meter in the field, nor is it cost-effective for SCE to remove the radio in its meter shop. Similarly, SCE assumes that the radio-out Edison SmartConnect meter will be replaced with an Edison SmartConnect meter with the radio installed should the customer exit the opt-out program. For customers that exit the opt-out program, a field visit and a meter exchange will be required at additional cost to the customer. *See* Appendix, pages 2A, 2B, 2C, and 2D for further information on estimated costs.

Table III-4

2012-2014 Radio-Out Program Costs($ millions)

	2012		2013		2014		Total	
	O&M	Capital	O&M	Capital	O&M	Capital	O&M	Capital
Operations	$19.7	-	$15.5	-	$15.7	-	$50.9	-
Systems	-	$18.4	-	$2.7	-	$1.0	-	$22.1

1. Meter Reading Options

As required by D.11-11-006, SCE estimated the program costs assuming the meter is read (i) by a SCE employee every month, (ii) by a SCE employee on a quarterly basis, with the remaining months being read by the customer, and (iii) by a SCE employee on a semi-annual basis, with the remaining months being read by the customer. Customer self-reads under the radio-out option would require customers to manually read and report cumulative usage data received from a digital meter. Table III-5 below shows the cost savings resulting from monthly customer read with a quarterly or semi-annual verification compared to monthly SCE meter read. These cost savings reflect reductions in meter reading expenses offset by additional costs associated with billing exceptions, estimated bills, customer support costs, and other operational

costs. However, there is significant uncertainty in terms of obtaining accurate and timely customer meter reads, which would affect SCE's ability to bill and collect revenues. The monthly cost savings do not appear to justify the risk of process uncertainty, revenue uncertainty, and customer bill impacts from potentially inaccurate meter reads associated with a customer self-read option. In addition, opt-out customers would not be able to access interval data from the Edison SmartConnect meter as that capability requires an optical probe meter reading system that connects to the Edison SmartConnect meter. Customer cumulative meter reads would provide no value for customers served on time variant or dynamic rates. Thus, at this time, SCE recommends that the Commission adopt a monthly SCE meter read for opt-out customers. However, SCE will continue to evaluate potential meter reading and billing options that may produce operational efficiencies.

Table III-5

2012-2014 Meter Reading Cost Savings Relative to Monthly SCE Meter Reads

Quarterly SCE manual meter read, remaining months read by the customer	$4/month per customer
Semi-annual SCE manual meter read, remaining months read by the customer	$6/month per customer

1. Proposed Fees

Table III-6 below shows the proposed customer fees to recover the total estimated cost for the radio-out option assuming monthly SCE meter reads. The fee structure is comprised of an up-front fee to cover the cost of account set-up and meter installation, a monthly fee to cover the cost of ongoing operations and systems development, and an exit fee for costs to terminate service in the opt-out program. The exit fee covers costs associated with restoring an Edison SmartConnect meter at the customer's residence, thus providing the next resident access to the Smart Grid functionality through Edison SmartConnect-enabled programs and tools. CARE

customers who choose to opt out would receive a 20% discount. The proposed CARE fee is consistent with current ratemaking practices pursuant to California Public Utilities Code Section 739.1(b). See Appendix 2D for further information on estimated customer fees.

Table III-6
Radio-Out Opt-Out Program Fees

	Up-Front	Monthly	Exit
Non-CARE	$91	$30	$91
CARE	$73	$24	$73

1. SCE's Recommendation

At this time, SCE recommends that the radio-out meter option not be offered to its residential customers. Although the radio-out option provides interval usage data required to support time-variant and dynamic rates, this option precludes operational efficiencies associated with the anticipated capabilities to re-enable the wireless radio in the field that are associated with the radio-off option (discussed further in Section IV).

A. Wired Smart Meter

The wired smart meter option consists of providing a customer with a digital meter that has the ability to connect to the utility's back office systems via a dedicated telephone connection or through a power line carrier (PLC) device. The telephone-based wired smart meter option requires a physical telephone line connection to be installed near the meter panel with additional telephone line protection. The PLC option requires a device to be installed in the meter that will communicate to a collector unit at the distribution transformer where a PLC collector will convert the data to a wireless signal to be transmitted to SCE. Both options are fundamentally different from SCE's Edison SmartConnect system, thus these options would require significant system redesign to be able to receive such information into SCE's back office systems.

1. Technical Feasibility and Costs – Telephone-based Wired Meter

The technical feasibility of a telephone-based wired smart meter option is uncertain for SCE. The telephone-based wired smart meter option requires a modem to be installed in the meter, which is not currently available from SCE's meter vendors, and the development of new back office systems to collect data from the telephone line. In addition, the security features currently provided in the Edison SmartConnect system would not apply to a telephone line option, thus necessitating the development of new security measures.

Currently, the telephone-based wired smart meter option is not economically feasible for SCE's customers. Based on SCE's preliminary analysis, the installation costs of a wired meter option utilizing a dedicated telephone line would be approximately three times more than the installation cost of the other opt-out program options. Meter and meter installation costs for a telephone-based wired smart meter would be the same whether a customer currently has a legacy meter or an Edison SmartConnect meter because SCE would have to replace either meter type with a telephone-based wired smart meter. Similarly, the wired meter would need to be replaced with an Edison SmartConnect meter should the customer exit the opt-out program.

2. Technical Feasibility and Costs – Power Line Carrier Wired Meter

The technical feasibility of a PLC wired smart meter option is uncertain for SCE. The PLC option requires a device to be installed in the meter that will communicate to a collector unit at the distribution transformer where a PLC collector will convert the data to a wireless signal to be transmitted to SCE. SCE's meter vendors do not offer a North American PLC option. In Europe, the electric system has a meter to transformer ratio of approximately 300 to 1. For SCE, the meter to transformer ratio is approximately 5 to 1, meaning that SCE would need to install a pole mount collector for every five customers, rather than installing a pole mount collector for every 300 customers as is the case in Europe. In the case of an opt-out customer using a PLC option, a collector may be required for each customer due to the physical distribution of opt-out program participants.

SCE estimates that the need for a large number of pole mount collectors results in installation costs for a PLC option of approximately 12 times the installation cost of the other opt-out program options. These costs are in addition to the costs that would be incurred for option development, testing and integration, and the monthly charges for the transmission of the data. Meter and meter installation costs for a PLC wired smart meter are the same whether a customer currently has a legacy meter or an Edison SmartConnect meter because SCE would have to replace either meter type with a PLC wired smart meter. Similarly, the wired meter would need to be replaced with an Edison SmartConnect meter should the customer exit the opt-out program.

3. Meter Reading Options

A wired smart meter option does not require manual meter reads. Thus, SCE has not estimated costs assuming the meter is read (i) by a SCE employee every month, (ii) by a SCE employee on a quarterly basis, with the remaining months being read by the customer, and (iii) by a SCE employee on a semi-annual basis, with the remaining months being read by the customer.

4. Proposed Fees

The wired smart meter option has not proven to be technologically feasible for SCE, nor has this metering option proven to be economically feasible at this time. As such, SCE has not estimated customer fees for this option.

5. SCE's Recommendation

Due to the significant customer costs associated with both the telephone-based wired smart meter, and PLC wired smart meter options, SCE recommends the wired meter option not be adopted as an opt-out program option at this time.

IV.

SCE'S PREFERRED RADIO-OFF OPT-OUT PROGRAM OPTION

The purpose of this section is to describe SCE's recommended opt-out program option that utilizes an Edison SmartConnect meter with the wireless radio turned-off, including a description of the technical feasibility, meter reading options, program costs, proposed fees (CARE and non-CARE), and SCE's recommendation regarding the radio-off program option. The radio-off option consists of installing an Edison SmartConnect meter with its wireless radio disabled at the opt-out customer's premises or, eventually, turning the radio-off in the field. Since the wireless radio is disabled in these meters, these meters would need to be read manually. In addition, SCE's personnel will collect interval usage data manually, thus enabling opt-out customers to participate in time-variant and dynamic rates.

A. Technical Feasibility

The radio-off option is technically feasible. The wireless radio in Edison SmartConnect meters can be physically disabled and re-enabled by meter technicians. SCE's personnel can manually probe the meter to collect interval usage data for billing purposes.

B. Meter Reading Options

As required by D.11-11-006, SCE estimated the program costs assuming the meter is read (i) by a SCE employee every month, (ii) by a SCE employee on a quarterly basis, with the remaining months being read by the customer, and (iii) by a SCE employee on a semi-annual basis, with the remaining months being read by the customer. Customer self-reads under the radio-off option would require customers to manually read and report cumulative usage data received from a digital meter. Table IV-1 below shows the cost savings resulting from monthly customer read with a quarterly or semi-annual verification compared to monthly SCE meter read. These cost savings reflect reductions in meter reading expenses offset by additional costs associated with billing exceptions, estimated bills, customer support costs, and other operational costs. However, there is significant uncertainty in terms of obtaining accurate, timely customer meter reads, which would affect SCE's ability to bill and collect revenues. The monthly cost

savings do not appear to justify the risk of process uncertainty, revenue uncertainty, and customer bill impacts from potentially inaccurate meter reads associated with a customer self-read option. In addition, opt-out customers would not be able to access interval data from the Edison SmartConnect meter as that capability requires an optical probe meter reading system that connects to the Edison SmartConnect meter. Customer cumulative meter reads provide no value for customers served on time variant or dynamic rates. Thus, at this time, SCE recommends that the Commission adopt a monthly SCE meter read for opt-out customers. However, SCE will continue to evaluate potential meter reading and billing options that may produce operational efficiencies.

Table IV-1

2012-2014 Meter Reading Cost Savings Relative to Monthly SCE Meter Reads

Quarterly SCE manual meter read, remaining months read by the customer	$4/month per customer
Semi-annual SCE manual meter read, remaining months read by the customer	$6/month per customer

A. Costs for 2012-2014

This section shows the costs of SCE's recommended radio-off program option. Table IV-2 below shows the total operational and program costs from 2012-2014 to implement a radio-off option. Assuming a monthly meter read by SCE personnel, the total cost of providing this option is $73.0 million. This is comprised of $50.9 million in O&M expense, and $22.1 million in capital costs. Given that SCE will perform a meter exchange for the radio-off and radio-out options, the costs reflected in this Part are the same. However, in the future SCE expects to be able to re-enable the wireless radio for a radio-off meter in the field. This capability will eliminate the need for a second meter exchange should the customer leave the opt-out program.

Meter and meter installation costs are the same whether a customer currently has a legacy or a smart meter because SCE will need to exchange the customer's existing meter with an Edison SmartConnect meter with the radio disabled in SCE's meter shop or as delivered by SCE's meter vendors. Similarly, SCE assumes that the radio-off Edison SmartConnect meter will be reprogrammed or replaced with an Edison SmartConnect meter with the radio enabled should the customer exit the opt-out program at additional cost to the customer. See Appendix 3A, 3B, 3C, and 3D for further information on the estimated costs.

Table IV-2
2012-2014 Radio-Off Meter Program Costs ($ millions)

	2012		2013		2014		Total	
	O&M	Capital	O&M	Capital	O&M	Capital	O&M	Capital
Operations	$19.7	-	$15.5	-	$15.7	-	$50.9	-
Systems	-	$18.4	-	$2.7	-	$1.0	-	$22.1

A. Proposed Fees

Table IV-3 below shows the proposed customer fees to recover the total estimated cost for SCE's proposed radio-off opt-out program. The fee structure is comprised of an up-front fee to cover the costs of account set-up and meter installation, a monthly fee to cover the costs of ongoing operations and systems development, and an exit fee for costs to terminate service in the opt-out program. The exit fee covers costs associated with restoring an Edison SmartConnect meter at the customer's residence, thus providing the next resident access to the Smart Grid functionality through Edison SmartConnect-enabled programs and tools. CARE customers who choose to opt-out would receive a 20 percent discount. The proposed CARE fee is consistent with current ratemaking practices pursuant to California Public Utilities Code Section 739.1(b). See Appendix 3D for further information on the estimated customer fees.

Table IV-3
Radio-Off Opt-Out Program Fees

	Up-Front	Monthly	Exit
Non-CARE	$91	$30	$91
CARE	$73	$24	$73

A. SCE's Recommendation

At this time, SCE recommends the radio-off meter option with monthly SCE interval meter reads. The radio-off option best integrates with SCE's Edison SmartConnect Program, as authorized by the Commission in D.08-09-039, by leveraging the investments in the meter types, back office systems, and business integration processes. This option also supports California's Energy Action Plan (Updated) by providing interval billing data necessary to support time-variant rates, dynamic rates, and demand response programs. Finally, SCE monthly meter reads avoid exception processing and system issues associated with customer self-reads, such as expected increases in billing exceptions, estimated bills, customer support costs, and other operational and systems costs.

V.

CONCLUSION

At this time, SCE recommends the radio-off meter opt-out program option for residential customers with monthly SCE interval meter reads. The radio-off option best integrates with SCE's Edison SmartConnect Program, as authorized by the Commission in D.08-09-039, by leveraging the investments in the meter types, back office systems, and business integration processes. This option also supports California's Energy Action Plan (Updated) by providing interval billing data necessary to support time-differentiated and dynamic rates. However, based on the actual program enrollment volume, the geographic distribution of participants, and other factors, SCE will continue to evaluate potential opportunities for opt-out program efficiencies that could provide lower cost options for opt-out program participants and SCE's other

customers. Thus, SCE reserves the right to modify the costs and program options as detailed in this filing in its final opt-out program proposal.

In addition, the costs presented in this filing illustrate the full cost of the proposed residential opt-out program. Should the Commission adopt a fee structure that does not allow for the full recovery of program costs from program participants, the remainder of program costs will create a burden on other customers. As such, SCE will require a cost-recovery mechanism, such as one utilizing a memorandum account with monthly transfers to SCE's Base Revenue Requirement Balancing Account (BRRBA), that will ensure all opt-out program costs are recovered by SCE.

Finally, at the time of this filing, SCE has completed approximately 72% of its Edison SmartConnect meter deployment with a scheduled completion by the end of 2012. As such, a number of potential opt-out customers are not scheduled to receive an Edison SmartConnect meter until some time in 2012. This fact along with other operational considerations should be factored into an implementation plan for SCE's residential opt-out program. Because of these complicating factors, SCE would need a reasonable amount of time following a final Commission decision on its opt-out program to develop and execute its plan to implement an opt-out program.

Respectfully submitted,

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November 28, 2011

Attachment A

Southern California Edison

Smart Meter Opt-Out Program Options Cost Data
In Response to November 11, 2011
CPUC Decision (D.11-11-006)

Southern California Edison Company's
Smart Meter Technological Feasibility and Cost Information Compliance
Proposal Pursuant to D.11-11-006

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Southern California Edison Company's
Smart Meter Technological Feasibility and Cost Information Compliance
Proposal Pursuant to D.11-11-006

SUMMARY OF RESULTS [1]

Line	Description	Analog Meter Option	Radio-Out Option	Radio-Off Option
	[a]	[b]	[c]	[d]
1	**Cost of Option**			
2	Total Expense	$ 43,571,506	$ 50,913,412	$ 50,913,412
3	Total Capital Costs	$ 20,474,275	$ 22,111,116	$ 22,111,116
4	**Total Cost of Option**	$ 64,045,780	$ 73,024,528	$ 73,024,528
5	**Total Revenue Requirement**	$54,556,600	$62,654,500	$62,654,500
6	**Revenue Requirement Per Opt-Out Customer [2]**	$614	$705	$705
7	**Proposed One-Time Fee [3]**	$91	$91	$91
8	**Proposed Monthly Fee [3]**	$25	$30	$30
9	**Proposed Exit Fee [3, 4]**	$91	$91	$91

[1] Assumes that only one meter reading option will be provided to Opt-Out participants. If Opt-Out participants are able to select more than one Opt-Out metering option, then SCE will likely incur additional costs related to offering multiple Opt-Out options.

[2] Assumes 60,852 Opt-Out participants in 2012 (1.4% participation), and no community-wide Opt-Outs. Additionally, assumes 11% of participants will move out each year. Total estimated Opt-Out participation from 2012 through 2014 is 88,927.

[3] Non-CARE Fee

[4] Upon termination of service by an Opt-Out participant, restoration of a communicating Smart Meter is required to provide Smart Grid functionally to new customers.

1A. Estimated Installation Costs for an Analog Meter

This is the estimated cost of a single customer site-visit, inclusive of cost of meter to be installed if applicable.

Line	Description	Cost
1	**Meter Cost**	N/A
2	**Labor**	
3	Labor	$36.03
4	Paid Absence Rate	6.74
5	Pension & Benefits	18.43
6	Supervision & Management	13.93
7	IT-Related Costs (Desktop Charges)	0.21
8	Vehicle Cost	2.88
9	Total Hourly Rate [1]	$78.22
10	Average Time per Install in Hours [2]	0.50
11	**Total Labor Cost per Customer Site-Visit**	$39.11
12	**Vehicles**	
13	Additional vehicle-specific costs, not included in labor loading	0.00
14	**Total Cost**	
15	Total Average Cost per Customer Site-Visit	$39.11

[1] Total Hourly Rate based on average 2012-2014 hourly wage rates in nominal dollars for a Field Service Representative levels 2-3 and a Meter Technician levels 4-5. Hourly wage rates are weighted by the expected occurrence of FSR levels 2-3 at 95% of meter installs (basic) and Meter Technician levels 4-5 at 5% of meter installs (complex).

[2] Average Time per Install includes drive time, meter exchange, and reads/meter info entry in system. Time per Install is weighted by expected occurrence of FSR levels 2-3 at 95% of meter installs (basic) and Meter Technician levels 4-5 at 5% of meter installs (complex).

1B. Estimated Monthly Cost for a Meter Read of an Analog Meter

This is an average cost, per month, to perform a meter read of a non-communicating meter.

Line	Description	Cost
1	**Meter Reader Labor Cost**	
2	Labor	$31.54
3	Paid Absence Rate	5.90
4	Pension & Benefits	16.14
5	Supervision & Management	12.20
6	IT-Related Costs (Desktop Charges)	0.21
7	Vehicle Cost	2.85
8	Total Hourly Rate for Meter Reader [1]	$68.83
9	**Vehicles**	
10	Additional vehicle-specific costs, not included in labor loading	0.00
11	Average Time per Read in Hours [2]	0.17
12	**Total Cost**	
13	Total Average Monthly Cost per Manual Read	$11.47

[1] Total Hourly Rate based on average 2012-2014 hourly wage rate in nominal dollars for a Meter Reader levels 2-6.

[2] Average Time per Read includes drive time of seven minutes assuming dispersed locations and meter read time for cumulative usage Analog meters of three minutes (10 minutes total).

1C. Estimated Other Costs to Implement an Analog Meter Option

This is intended to capture all costs not associated with the initial site-visit to install a non-communicating meter or the monthly read.

Line	Description	Cost
1	**Variable Network Costs [1]**	
2	**Compensating Electric Mesh Network Devices: Capital Cost Per Node**	
3	Materials Costs	$1,310
4	Engineering, Installation, and Inspection Labor	$1,363
5	Attachment Fees	$0
6	Total Device Cost Per Node	$2,673
7	Distribution Planning and Permitting	$150
8	Total Cost Per Node	$2,823
9	Estimated Additional Network Nodes Required	3,655
10	**Total Variable Network Capital Costs**	$10,318,796
11	**Fixed Network Costs**	
12	**Compensating Electric Mesh Network Engineering Capital Costs**	
13	Monitoring Effort: Labor to Identify Additional Required Devices	$0
14	Additional Monitoring Tools and Other Miscellaneous Costs	$0
15	**Total Fixed Capital Costs for Mesh Network Engineering**	$0
16	**Total Network Capital Costs**	$10,318,796
17	**Information Technology Costs**	
18	Total Expense	$1,891,342
19	Total Capital	$7,765,977
20	**Total IT Costs**	$9,657,319
21	**Misc. Capital Costs**	
22	Meter Reading System Replacement	$389,502
23	System Development	$2,000,000
24	**Total Misc. Capital Costs**	$2,389,502
25	**Call Center - Customer Inquiry Expenses**	
26	Customer Inquiry Handling Expense	$1,721,524
27	Employee Training	$163,010
28	**Total Call Center - Customer Inquiry Expenses**	$1,884,534

29	**Operations Expenses**	
30	Billing Operations Staffing	$3,607,991
31	Training and Materials	$1,204,931
32	Meter Testing and Engineering	$7,595,878
33	Customer Annual Notification	$51,000
34	Customer Request Forms	$503,964
35	**Total Operations Expenses**	$12,963,765
36	**Other Expenses**	
37	Annual Recurring Leased Communication Services	$1,020,688
38	Interim Manual Processes	$1,250,000
39	**Total Other Expenses**	$2,270,688
40	**Other Costs**	
41	Total Other Expenses	$19,010,329
42	Total Other Capital Costs	$20,474,275
43	**Total Other Costs**	$39,484,603

[1] Nodes are assumed to be Operative as Installed, so AFUDC is not included.

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Proposal Pursuant to D.11-11-006

1D. Estimated Total Costs and Fees to Implement an Analog Meter Option

This is intended to capture the total costs and revenue requirements needed to implement the Analog Meter Option and the associated one-time and monthly customer fees.

Line	Description	Cost
1	**Installation Cost (from Table 1A)**	
2	Total Average Cost per Customer Site-Visit	$39.11
3	Assumed Number of Opt-Out Participants (2012 - 2014)	88,927
4	Subtotal Installation Cost	$3,478,055
5	Adjustment for previously approved cost to install	$0
6	**Total Installation Cost**	$3,478,055
7	**Meter Read Costs (from Table 1B)**	
8	Total Average Manual Cost per Monthly Manual Read	$11.47
9	Assumed Number of Opt-Out Meter Reads	1,837,428
10	**Total Meter Read Cost**	$21,083,122
11	**Total Other Costs (from Table 1C)**	
12	Total Other Expenses	$19,010,329
13	Total Other Capital Costs	$20,474,275
14	**Total Other Costs**	$39,484,603
15	Total Analog Meter Option Expense	$43,571,506
16	Total Analog Meter Option Capital Cost	$20,474,275
17	**Total Analog Meter Option Cost**	$64,045,780
18	Total Analog Meter Option 2012 Revenue Requirement	$54,556,600
19	Assumed Number of Opt-Out Participants	88,927
20	**Analog Meter Option Revenue Requirement Per Opt-Out Customer**	$614
21	Proposed One-Time Fee for Analog Meter Option [1]	$91
22	Proposed Monthly Fee for Analog Meter Option [1]	$25
23	Proposed Exit Fee for Analog Meter Option [2]	$91

[1] Non-CARE fee.

[2] The exit fee covers the costs of restoring the meter or enabling the radio when the opt-out customer is no longer participating in the program. SCE will update via advice letter.

2A. Estimated Installation Costs for a Radio-Out Meter

This is the estimated cost of a single customer site-visit, inclusive of cost of meter to be installed if applicable.

Line	Description	Cost
1	**Meter Cost**	N/A
2	**Labor**	
3	Labor	$36.03
4	Paid Absence Rate	6.74
5	Pension & Benefits	18.43
6	Supervision & Management	13.93
7	IT-Related Costs (Desktop Charges)	0.21
8	Vehicle Cost	2.88
9	Total Hourly Rate [1]	$78.22
10	Average Time per Install in Hours [2]	0.50
11	**Total Labor Cost per Customer Site-Visit**	$39.11
12	**Vehicles**	
13	Additional vehicle-specific costs, not included in labor loading	0.00
14	**Total Cost**	
15	Total Average Cost per Customer Site-Visit	$39.11

[1] Total Hourly Rate based on average 2012-2014 hourly wage rates in nominal dollars for a Field Service Representative levels 2-3 and a Meter Technician levels 4-5. Hourly wage rates are weighted by the expected occurrence of FSR levels 2-3 at 95% of meter installs (basic) and Meter Technician levels 4-5 at 5% of meter installs (complex).

[2] Average Time per Install includes drive time, meter exchange, and reads/meter info entry in system. Time per Install is weighted by expected occurrence of FSR levels 2-3 at 95% of meter installs (basic) and Meter Technician levels 4-5 at 5% of meter installs (complex).

2B. Estimated Monthly Cost for a Meter Read of a Radio-Out Meter

This is an average cost, per month, to perform a meter read of a non-communicating meter.

Line	Description	Cost
1	**Meter Reader Labor Cost**	
2	Labor	$31.54
3	Paid Absence Rate	5.90
4	Pension & Benefits	16.14
5	Supervision & Management	12.20
6	IT-Related Costs (Desktop Charges)	0.21
7	Vehicle Cost	2.85
8	Total Hourly Rate for Meter Reader [1]	$68.83
9	**Vehicles**	
10	Additional vehicle-specific costs, not included in labor loading	0.00
11	Average Time per Read in Hours [2]	0.23
12	**Total Cost**	
13	Total Average Monthly Cost per Manual Read	$16.06

[1] Total Hourly Rate based on average 2012-2014 hourly wage rate in nominal dollars for a Meter Reader levels 2-6.

[2] Average Time per Read includes drive time of seven minutes assuming dispersed locations and interval meter read via probe time of seven minutes (14 minutes total).

2C. Estimated Other Costs to Implement the Radio-Out Meter Option

This is intended to capture all costs not associated with the initial site-visit to install a non-communicating meter or the monthly read.

Line	Description	Cost
1	**Variable Network Costs [1]**	
2	**Compensating Electric Mesh Network Devices: Capital Cost Per Node**	
3	Materials Costs	$1,310
4	Engineering, Installation, and Inspection Labor	$1,363
5	Attachment Fees	$0
6	Total Device Cost Per Node	$2,673
7	Distribution Planning and Permitting	$150
8	Total Cost Per Node	$2,823
9	Estimated Additional Network Nodes Required	3,655
10	**Total Variable Network Capital Costs**	$10,318,796
11	**Fixed Network Costs**	
12	**Compensating Electric Mesh Network Engineering Capital Costs**	
13	Monitoring Effort: Labor to Identify Additional Required Devices	$0
14	Additional Monitoring Tools and Other Miscellaneous Costs	$0
15	**Total Fixed Capital Costs for Mesh Network Engineering**	$0
16	**Total Network Capital Costs**	$10,318,796
17	**Information Technology Costs**	
18	Total Expense	$800,000
19	Total Capital	$9,402,818
20	**Total IT Costs**	$10,202,818
21	**Misc. Capital Costs**	
22	Meter Reading System Replacement	$389,502
23	System Development	$2,000,000
24	**Total Misc. Capital Costs**	$2,389,502
25	**Call Center - Customer Inquiry Expenses**	
26	Customer Inquiry Handling Expense	$1,721,524
27	Employee Training	$163,010
28	**Total Call Center - Customer Inquiry Expenses**	$1,884,534

29	**Operations Expenses**	
30	Billing Operations Staffing	$3,607,991
31	Training and Materials	$1,204,931
32	Meter Testing and Engineering	$7,595,878
33	Customer Annual Notification	$51,000
34	Customer Request Forms	$503,964
35	**Total Operations Expenses**	$12,963,765
36	**Other Expenses**	
37	Annual Recurring Leased Communication Services	$1,020,688
38	Interim Manual Processes	$1,250,000
39	**Total Other Expenses**	$2,270,688
40	**Other Costs**	
41	Total Other Expenses	$17,918,987
42	Total Other Capital Costs	$22,111,116
43	**Total Other Costs**	$40,030,102

[1] Nodes are assumed to be Operative as Installed, so AFUDC is not included.

2D. Estimated Total Costs and Fees to Implement the Radio-Out Meter Option

This is intended to capture the total costs and revenue requirements needed to implement the Radio-Out Option and the associated one-time and monthly customer fees.

Line	Description	Cost
1	**Installation Cost (from Table 2A)**	
2	Total Average Cost per Customer Site-Visit	$39.11
3	Assumed Number of Opt-Out Participants (2012 - 2014)	88,927
4	Subtotal Installation Cost	$3,478,055
5	Adjustment for previously approved cost to install	$0
6	**Total Installation Cost**	$3,478,055
7	**Meter Read Costs (from Table 2B)**	
8	Total Average Manual Cost per Monthly Manual Read	$16.06
9	Assumed Number of Opt-Out Meter Reads	1,837,428
10	**Total Meter Read Cost**	$29,516,371
11	**Total Other Costs (from Table 2C)**	
12	Total Other Expenses	$17,918,987
13	Total Other Capital Costs	$22,111,116
14	**Total Other Costs**	$40,030,102
15	Total Radio-Out Meter Option Expense	$50,913,412
16	Total Radio-Out Meter Option Capital Cost	$22,111,116
17	**Total Radio-Out Meter Option Cost**	$73,024,528
18	Total Radio-Out Meter Option 2012 Revenue Requirement	$62,654,500
19	Assumed Number of Opt-Out Participants	88,927
20	**Radio-Out Meter Option Revenue Requirement Per Opt-Out Customer**	$705
21	Proposed One-Time Fee for Analog Meter Option [1]	$91
22	Proposed Monthly Fee for Analog Meter Option [1]	$30
23	Proposed Exit Fee for Analog Meter Option [2]	$91

[1] Non-CARE fee.

[2] The exit fee covers the costs of restoring the meter or enabling the radio when the opt-out customer is no longer participating in the program. SCE will update via advice letter.

3A. Estimated Installation Costs for a Radio-Off Meter

This is the estimated cost of a single customer site-visit, inclusive of cost of meter to be installed if applicable.

Line	Description	Cost
1	**Meter Cost**	N/A
2	**Labor**	
3	Labor	$36.03
4	Paid Absence Rate	6.74
5	Pension & Benefits	18.43
6	Supervision & Management	13.93
7	IT-Related Costs (Desktop Charges)	0.21
8	Vehicle Cost	2.88
9	Total Hourly Rate [1]	$78.22
10	Average Time per Install in Hours [2]	0.50
11	**Total Labor Cost per Customer Site-Visit**	$39.11
12	**Vehicles**	
13	Additional vehicle-specific costs, not included in labor loading	0.00
14	**Total Cost**	
15	Total Average Cost per Customer Site-Visit	$39.11

[1] Total Hourly Rate based on average 2012-2014 hourly wage rates in nominal dollars for a Field Service Representative levels 2-3 and a Meter Technician levels 4-5. Hourly wage rates are weighted by the expected occurrence of FSR levels 2-3 at 95% of meter installs (basic) and Meter Technician levels 4-5 at 5% of meter installs (complex).

[2] Average Time per Install includes drive time, meter exchange, and reads/meter info entry in system. Time per Install is weighted by expected occurrence of FSR levels 2-3 at 95% of meter installs (basic) and Meter Technician levels 4-5 at 5% of meter installs (complex).

3B. Estimated Monthly Cost for a Meter Read of a Radio-Off Meter

This is an average cost, per month, to perform a meter read of a non-communicating meter.

Line	Description	Cost
1	**Meter Reader Labor Cost**	
2	Labor	$31.54
3	Paid Absence Rate	5.90
4	Pension & Benefits	16.14
5	Supervision & Management	12.20
6	IT-Related Costs (Desktop Charges)	0.21
7	Vehicle Cost	2.85
8	Total Hourly Rate for Meter Reader [1]	$68.83
9	**Vehicles**	
10	Additional vehicle-specific costs, not included in labor loading	0.00
11	Average Time per Read in Hours [2]	0.23
12	**Total Cost**	
13	Total Average Monthly Cost per Manual Read	$16.06

[1] Total Hourly Rate based on average 2012-2014 hourly wage rate in nominal dollars for a Meter Reader levels 2-6.

[2] Average Time per Read includes drive time of seven minutes assuming dispersed locations and interval meter read via probe time of seven minutes (14 minutes total).

3C. Estimated Other Costs to Implement the Radio-Off Meter Option

This is intended to capture all costs not associated with the initial site-visit to install a non-communicating meter or the monthly read.

Line	Description	Cost
1	**Variable Network Costs [1]**	
2	**Compensating Electric Mesh Network Devices: Capital Cost Per Node**	
3	Materials Costs	$1,310
4	Engineering, Installation, and Inspection Labor	$1,363
5	Attachment Fees	$0
6	Total Device Cost Per Node	$2,673
7	Distribution Planning and Permitting	$150
8	Total Cost Per Node	$2,823
9	Estimated Additional Network Nodes Required	3,655
10	**Total Variable Network Capital Costs**	$10,318,796
11	**Fixed Network Costs**	
12	**Compensating Electric Mesh Network Engineering Capital Costs**	
13	Monitoring Effort: Labor to Identify Additional Required Devices	$0
14	Additional Monitoring Tools and Other Miscellaneous Costs	$0
15	**Total Fixed Capital Costs for Mesh Network Engineering**	$0
16	**Total Network Capital Costs**	$10,318,796
17	**Information Technology Costs**	
18	Total Expense	$800,000
19	Total Capital	$9,402,818
20	**Total IT Costs**	$10,202,818
21	**Misc. Capital Costs**	
22	Meter Reading System Replacement	$389,502
23	System Development	$2,000,000
24	**Total Misc. Capital Costs**	$2,389,502
25	**Call Center - Customer Inquiry Expenses**	
26	Customer Inquiry Handling Expense	$1,721,524
27	Employee Training	$163,010
28	**Total Call Center - Customer Inquiry Expenses**	$1,884,534

29	**Operations Expenses**	
30	Billing Operations Staffing	$3,607,991
31	Training and Materials	$1,204,931
32	Meter Testing and Engineering	$7,595,878
33	Customer Annual Notification	$51,000
34	Customer Request Forms	$503,964
35	**Total Operations Expenses**	$12,963,765
36	**Other Expenses**	
37	Annual Recurring Leased Communication Services	$1,020,688
38	Interim Manual Processes	$1,250,000
39	**Total Other Expenses**	$2,270,688
40	**Other Costs**	
41	Total Other Expenses	$17,918,987
42	Total Other Capital Costs	$22,111,116
43	**Total Other Costs**	$40,030,102

[1] Nodes are assumed to be Operative as Installed, so AFUDC is not included.

3D. Estimated Total Costs and Fees to Implement the Radio-Off Meter Option

This is intended to capture the total costs and revenue requirements needed to implement the Radio-Off Meter Option and the associated one-time and monthly customer fees.

Line	Description	Cost
1	**Installation Cost (from Table 3A)**	
2	Total Average Cost per Customer Site-Visit	$39.11
3	Assumed Number of Opt-Out Participants (2012 - 2014)	88,927
4	Subtotal Installation Cost	$3,478,055
5	Adjustment for previously approved cost to install	$0
6	**Total Installation Cost**	$3,478,055
7	**Meter Read Costs (from Table 3B)**	
8	Total Average Manual Cost per Monthly Manual Read	$16.06
9	Assumed Number of Opt-Out Meter Reads	1,837,428
10	**Total Meter Read Cost**	$29,516,371
11	**Total Other Costs (from Table 3C)**	
12	Total Other Expenses	$17,918,987
13	Total Other Capital Costs	$22,111,116
14	**Total Other Costs**	$40,030,102
15	Total Radio-Off Meter Option Expense	$50,913,412
16	Total Radio-Off Meter Option Capital Cost	$22,111,116
17	**Total Radio-Off Meter Option Cost**	$73,024,528
18	Total Radio-Off Meter Option 2012 Revenue Requirement	$62,654,500
19	Assumed Number of Opt-Out Participants	88,927
20	**Radio-Off Meter Option Revenue Requirement Per Opt-Out Customer**	$705
21	Proposed One-Time Fee for Analog Meter Option [1]	$91
22	Proposed Monthly Fee for Analog Meter Option [1]	$30
23	Proposed Exit Fee for Analog Meter Option [2]	$91

[1] Non-CARE fee.

[2] The exit fee covers the costs of restoring the meter or enabling the radio when the opt-out customer is no longer participating in the program. SCE will update via advice letter.