LIEE Measure Cost Effectiveness
Final Report

Study ID: SDG0131.01

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Table of Contents

1

Introduction

1.1 Background

In D. 01-12-020, the California Public Utilities Commission (Commission) instructed the Reporting Requirements Manual (RRM) Working Group and the Low Income Energy Efficiency (LIEE) Programs Standardization Project Team (hereinafter the Standardization Team or Team) to develop joint recommendations for updating the traditional utility cost test and participant cost test for the purpose of evaluating the cost effectiveness of the LIEE Program and its individual measures, adding test elements to capture non-energy benefits (NEBs) associated with the low income programs. The Commission also instructed the Standardization Project Team to assess all current LIEE program measures using these updated cost effectiveness tests after the Commission had approved the specific methodology.

On March 28, 2002, the RRM Working Group and the Standardization Team filed a joint report recommending a specific set of criteria to be used to assess the cost effectiveness of measures offered through the LIEE Program.[1] In D. 02-08-034, the Commission adopted these criteria and instructed the utilities[2] to use this methodology to augment their Program Year 2003 LIEE program applications with an evaluation of the proposed programs and measures to be offered in that year. The Decision required that the utilities file these augmentations within 45 days of the effective date of the Decision, but gave the Assigned Commissioner the discretion to change this due date for good cause.[3] This schedule was reiterated in an ACR issued on August 21, 2002.[4]

The Energy Division was assigned to schedule public input hearings in January of 2003 to take public input on the standardization project team's LIEE program measure assessment report and recommendations. Any modifications to the standard LIEE program measure mix

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1 *Final Report for LIEE Program and Measure Cost Effectiveness, Submitted by the Cost Effectiveness* Subcommittee of the RRM Working Group and Standardization Project Team, March 28, 2002.

2 Pacific Gas & Electric Company, Southern California Gas Company, Southern California Edison Company, and San Diego Gas & Electric Company.

3 Ordering Paragraph 4.

4 *Assigned Commissioner's Ruling Establishing Category and Providing Scoping Memo and Comment Period for CARE Program Evaluation Proposal*, August 21, 2002.

were projected to take effect January 1, 2004. In September 2002, Energy Division (ED) staff directed the project team to file its initial measure mix modification recommendations as a preliminary report. ED staff also asked the project team to help schedule and conduct public input workshops on the preliminary report recommendations, then to file a final measure assessment report and measure mix recommendations reflecting input obtained during the workshops.

In a prehearing conference held on July 22, 2002, the Administrative Law Judge indicated that the Standardization Team should also file its LIEE measure cost effectiveness report within 45 days from the date of D. 02-08-034. On September 17, 2002, the joint utilities Standardization Project team requested an extension of the due date for both the utility filings and the Standardization Team's measure assessment report, from September 23, 2002 to September 30, 2002. Commissioner Wood issued a September 17, 2002 ACR granting that extension.

The September 30, 2002 preliminary report[5] described the analysis of cost effectiveness and presented preliminary recommendations with respect to individual LIEE program measures to be dropped or retained for the 2004 program year. The analysis made extensive use of a set of measure impact estimates developed by XENERGY in the Joint Utilities' statewide impact evaluation of the 2000 LIEE Program. Subsequent to the filing of this report, two parties filed comments: the Office of Ratepayer Advocates (ORA) and the Insulation Contractors Association (ICA).[6] The Joint Utilities filed reply comments on December 4, 2002.[7]

In its interim opinion D. 02-12-019, the Commission instructed the utilities to "…evaluate the extent to which the September 30, 2002 filings need to be revised based on today's adopted budgets, and to submit any significant changes to the cost-effectiveness assessment and measure recommendations…" The Commission also instructed the utilities to submit "all data, assumptions, and methods used to calculate per home installation costs, including measure mix."[8] The utilities filed this report on January 6, 2003.[9]

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5 *LIEE Measure Cost Effectiveness: Preliminary Report*, September 30, 2002.

6 See *Comments of the office of Ratepayer Advocates on the LIEE Measure Cost Effectiveness Preliminary Report*, November 14, 2002; and *Comments by the Insulation Contractors Association on the "Joint Utilities Preliminary Low Income Energy Efficiency Measure Cost Effectiveness Preliminary Report*," November 14, 2002.

7 *Reply Comments of the Joint Utility Standardization Project Team on the Low Income Energy Efficiency Measure Cost Effectiveness Preliminary Report*, December 4, 2002.

8 Ordering Paragraph 4, p. 27.

9 *The Joint Utilities Revised Results of Measure Cost-Effectiveness*, January 6, 2003.

The Energy Division held workshops on the revised cost-effectiveness assessment on January 21, 2003 and January 23, 2003. Summaries of these workshops are contained in Appendix C.

On February 24, 2003, the Commission approved a revised workplan for Phase 4 of the LIEE Standardization Project. This work plan called for further analysis of LIEE measure cost-effectiveness, and provided for the submission of an updated assessment on or before April 1, 2003. On March 21, 2003, the utilities requested an extension of this deadline to June 2, 2003. An Assigned Commissioner's Ruling dated April 8, 2003 approved this extension.[10]

1.2 Issues

The approach approved by the Commission in D. 02-08-034 provides a comprehensive mechanism for assessing the cost effectiveness of LIEE measures and programs. This approach entails the application of two tests: a modified Participant Test, which assesses measures from the perspective of LIEE participants; and a Utility Test, which is calculated from the point of view of the utility. The application of this approach required the resolution of a variety of practical issues, which are discussed briefly below.

Non-Energy Benefits

Both tests are designed to incorporate a set of non-energy benefits (NEBs) as well as direct energy-related benefits. These NEBs are meant to capture a variety of effects like changes in comfort and reduction in hardship, which are not captured by the energy savings estimates derived from a load impact billing evaluation and are ignored in more traditional cost effectiveness approaches like the total resource cost (TRC) test. The NEBs used in this analysis, which were developed by TecMRKT Works for the RRM Working Group, are reasonably comprehensive. However, these NEBs factors were originally derived for use at the program level. The requirement to apply program level NEBs at the measure level necessitated a number of additional adjustments. These were made by the a joint subcommittee of the RRM Working Group and the Standardization Team, and reviewed by the Commission. Further, there are a few cases in which other factors, which could be considered underestimated or omitted NEBs, were considered judgmentally in the development of recommendations.

[10] *Assigned Commissioner's Ruling Revising the Due Dates for the Final Reports on LIEE Measure Assessment and Energy Division's Audit of the California Alternate Rate for Energy program Administrative Expenses*, April 8, 2003.

Measure Costs

The specific costs included in the Participant and Utility tests depended upon the specific application. In assessing overall program cost effectiveness, both direct measure costs and a variety of indirect costs (administration costs, outreach, shareholder earnings, etc.) are considered. In evaluating the cost effectiveness of individual measures, however, only installed measure costs are included. As pointed out in the utilities' September 30, 2002 filing, the rationale for this latter approach is that, from an economic perspective, cost effectiveness analysis should consider only those costs that are truly affected by the decision at hand. These are sometimes called incremental costs, or marginal costs. In applying the cost effectiveness framework to individual measures, the decision at hand is whether or not a specific measure should be added to or dropped from the program. Insofar as retaining or dropping a specific measure will have a relatively minor impact on indirect costs, these indirect costs should be ignored in this application of the measure level cost effectiveness tests.

Disaggregation of Results

The Standardization Team conducted the analysis of measure cost effectiveness at a fairly disaggregated level. For all measures, cost effectiveness ratios were developed by residence type and (where applicable) fuel type. For measures with weather-sensitive effects, the analysis was also conducted for individual climate zones. The climate zones used for this purpose were the California Energy Commission's 16 Title 24 climate zones. This disaggregated approach was designed to recognize the variation in benefits and costs across specific applications of the measures in question. However, it also yielded situations in which measures were cost-effective in some applications (some residence types, some climate zones, or one fuel) but not others. In the September 30, 2002 preliminary report, the Standardization Team made recommendations for the treatment of these situations on a case-by-case basis. In its subsequent comments, ORA objected to the asystematic nature of these preliminary recommendations and proposed that the Team develop more systematic decision rules to be used to maintain consistency in the treatment of these cases. The Team has developed such rules, and presents them in Section 2 of this report.

Relationship to Previous Studies

Previous Team analyses of measure cost-effectiveness, which were used for the preliminary study report filed on September 30, 2002, were conducted using estimates of measure energy savings impacts based on XENERGY's impact evaluation of the IOUs' 2000 LIEE Programs.[11] In the analysis underlying this final report, however, the Team has made use of

[11] The study is described in the Final Report by XENERGY, Inc.: "Impact Evaluation of the 2000 Statewide Low-Income Energy Efficiency (LIEE) Program," April 2002.

estimates of impacts based on XENERGY's evaluation of the 2001 LIEE Program.[12] This choice was made in spite of the fact that the Commission has not yet formally approved these 2001 impact estimates. It reflects the Team's judgment that the measure-specific impacts provided in the 2001 evaluation are superior to those developed in the 2000 study. This judgment is based in turn largely on the specific design of the 2001 impact evaluation. In previous impact evaluations, the primary focus had been on the estimation of overall program savings, although savings were developed for individual measures and groups of measures. In response to the Commission's instruction to the joint utilities to assess cost-effectiveness of individual measures and to use these results in measure selection, the Team requested that XENERGY refine the 2001 impact analysis to more effectively isolate individual measure impacts. This refinement took the form of an extensive review and revision of the preliminary engineering estimates used in the development of weights for measure savings in the XENERGY billing analysis model. Many of these engineering estimates were derived from the Database for Energy Efficiency Resources (the DEER database), which was developed by XENERGY under a previous statewide project.[13] Moreover, XENERGY refined the analysis to better isolate the savings from ceiling insulation by estimating a separate statistical adjustment coefficient for that measure.

While the Team considers the 2001 impact study estimates the best available estimates for the purposes of cost-effectiveness assessment, it should be noted that all estimates are subject to statistical error. Estimates of savings from measures with low impacts are particularly subject to high percentage errors as a result of inherent difficulties in isolating these impacts in the statistical analysis of changes in energy consumption. The Team also notes that subsequent years' program impact evaluation studies may yield measure savings estimates that differ somewhat from those used in this study, and that reconsideration of the program measure mix may be necessary over time as such changes occur.

1.3 Overview of Results

Overall Program Cost effectiveness

Table 1-1 presents the results of the updated analysis of overall LIEE Program cost effectiveness for each of the utilities' proposed 2003 programs. As indicated there, the modified participant benefit cost ratio ranges from 0.56 to 1.17, and the utility benefit cost

[12] The study is described in the Final Report by XENERGY, Inc.: "Impact Evaluation of the 2001 Statewide Low-Income Energy Efficiency (LIEE) Program," April 2003. It should be noted that, in its request for an extension of the April 1, 2003 deadline for this report, the Team indicated that it would not be able to use the new 2001 impact estimates. However, after a careful review of these estimates and the methodology used to develop them, the Team decided that the new estimates would form a better basis for making recommendations relating to PY 2004 measure offerings.

[13] XENERGY, Inc. "2001 DEER Update Study, Final Report." August 2001.

ratio ranges from 0.18 to 0.78. These estimates are somewhat different from those filed earlier, due primarily to the use of updated estimates of measure savings.

Table 1-1: LIEE Program Cost Effectiveness

Utility	Modified Participant Test	Utility Test
PG&E	0.56	0.32
SCE	1.17	0.78
SDG&E	0.71	0.35
SCG	0.61	0.18

Recommendations with Respect to Individual Measures

Table 1-2 presents an overview of the recommendations of the Standardization Team.

Table 1-2: Recommendations on Individual Measures

Measure	Recommendation
Non-Weather-Sensitive Measures	
Hard-wired CFL porch lights	Retain in all climate zones for single family homes, but drop for multi-family and mobile homes
Compact fluorescent lamps	Retain in all climate zones and residence types
Faucet aerators,	Retain in all climate zones and residence types
Low-flow showerheads,	Retain in all climate zones and residence types
High efficiency refrigerators	Retain in all climate zones and residence types
Water heater blankets	Retain in all climate zones and residence types
Water heater pipe wrap	Retain in all climate zones and residence types
High-efficiency water heaters	Drop from Program
Weather-Sensitive Measures	
Outlet gaskets	Retain in all climate zones and residence types
High efficiency central ACs	Drop in all climate zones and residence types
High efficiency room ACs	Retain in Climate Zones 11, 12, 13, 14, and 15
Caulking	Retain in all climate zones and residence types
Ceiling Insulation	Retain in all climate zones and residence types
Duct testing and sealing	Drop in all climate zones and residence types
Evaporative cooler covers	Retain in all climate zones and residence types
Evaporative cooler maintenance	Drop in all climate zones and residence types
Evaporative coolers	Retain in Climate Zones 11 – 16 for single family and mobile homes; drop from Program for multi-family homes and in Climate Zones other than 11 – 16.
Furnace filters	Retain, but only as part of furnace repair or replacement
Gas furnace repairs	Retain in all climate zones and residence types
Gas furnace replacements	Retain in all climate zones and residence types
Minor home repairs	Retain in all climate zones and residence types
Setback Thermostats	Drop from Program except where required by code in conjunction with furnace repair or replacement
Weatherstripping attic doors	Retain in all climate zones and residence types
Weatherstripping doors	Retain in all climate zones and residence types
Whole house fans	Drop from Program

1.4 Organization of Report

The remaining sections of this report are organized as follows:

- Section 2 describes the approach used in evaluating LIEE program measures.
- Section 3 presents recommendations based on the cost effectiveness results.
- Appendix A presents detailed cost-effectiveness results by measure, residence type, fuel (where applicable) and climate zone (where applicable).
- Appendix B presents the measure costs and savings estimates used in this analysis.

- Appendix C contains summaries of the public workshops held in January 2003.
- Appendix D presents written comments submitted by the California Insulation Contractors Association (ICA).

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Approach

2.1 Overview

In 2001, the Reporting Requirements Manual Working Group (the RRM Working Group) commissioned consultant contractors[1] to develop a Microsoft Excel workbook entitled "the Low Income Public Purpose Test (LIPPT) to test for cost effectiveness of low income programs." The model utilized three cost benefit categories: program costs, energy savings, and non-energy benefits. In 2002, the RRM Working Group, along with the LIEE Standardization Team (hereinafter called the Cost Effectiveness Subcommittee) developed cost effectiveness testing procedures and recommended a methodology for evaluating program measures using these procedures.[2] Furthermore, a separate workbook was made for each utility so that differences across utilities could be incorporated into the model. This analysis uses the workbooks developed by the Cost Effectiveness Subcommittee to estimate NEBs. While the workbooks were originally called the "LIPPT workbooks," this analysis will refer to them as the NEB workbooks.

2.2 Key Assumptions

The NEB workbook requires a number of inputs. In addition, a number of assumptions built into the model are needed to fully represent the designs of utility-specific LIEE Programs. These inputs are discussed below.

Measure Mixes

Measure mixes (i.e., estimates of installations by measure, climate zone, residence type, and fuel) were provided by the utilities. These mixes represent the utilities' best estimates of the numbers of measure installations that will take place in each utility's 2003 program. There is obviously some uncertainty around these estimates, partly as a consequence of the utilities' responsibility to install all feasible measures in homes participating in the Program.

[1] TecMRKT Works, Oregon, WI; SERA Inc., Seattle, WA; and Megdal Associates, Acton, MA.

[2] Cost effectiveness Subcommittee of the RRM Working Group and Standardization Project Team, Op. Cit.

[4] XENERGY, Inc., op. cit.

Energy Savings Estimates

Savings estimates for measures included in the 2001 LIEE Programs were based on the results of XENERGY's impact evaluation of those programs.[4] XENERGY also provided savings estimates by CEC climate zone[5] for the rapid deployment measures (which were not offered until mid-2001).

The following modifications were made to the savings estimates provided for this analysis:

- For cases where a utility had not installed a particular measure in a climate zone in 2001, XENERGY did not estimate results for that measure and climate zone. Therefore, in order to have a complete set of estimates, results for the missing estimates were interpolated using the following:
  - An average estimate for the measure, calculated from estimates provided by XENERGY from the impact evaluation of the 2001 program, and
  - Previously used estimates provided by XENERGY as described in the September 2002 preliminary report.
- In the impact evaluation, estimates for CFLs and porch lights were provided by bulb rather than per household. To convert to measure savings per household, the estimates were multiplied by the average number of bulbs and fixtures expected to be installed per house in each of the IOU's 2003 Program. For all the utilities, the number of porch light fixtures was reported to be one per household. The following were reported for CFL bulbs:
  - Four per household for PG&E,
  - Two per household for SCE, and
  - Two and 7/10 per household for SDG&E.
- Weatherstripping savings estimates were disaggregated into savings estimates for attic access weatherstripping and door weatherstripping. Savings estimates for attic and door weatherstripping from the DEER database[6] were used to accomplish this.
- Air conditioning savings for shell measures were scaled back based on an air conditioning saturation rate reported by each utility.
- Furnace repair and replacement savings were scaled by a percentage of furnaces working at the time of treatment. These factors were estimated from customer survey data from the PY2001 evaluation.

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5 In cases where more than one utility served a climate zone, estimates frequently differed across utilities in the same zone. In some cases, these differences were substantial. The differences stem from the use of different weather data (collected from multiple weather stations in each climate zone) for each of the utilities used in the impact analysis.

6 XENERGY, Inc., op. cit.

- Savings estimates for duct sealing and testing were scaled by the percentage of households tested that were also sealed.

Savings estimates for outlet gaskets were obtained from the DEER study.

Table 2-1 describes the source of the energy impact estimates used in the analysis.

Table 2-1: Source of Savings Estimates

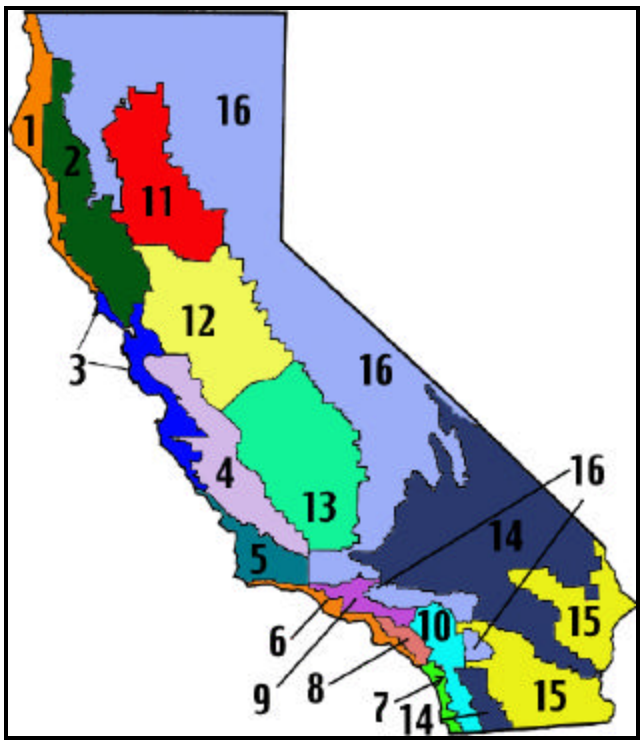
Measures	Source	Note
All weather sensitive measures	XENERGY	Results based on the 2001 LIEE impact analysis
CFL and Porch Lights	XENERGY	Results based on the 2001 LIEE impact analysis disaggregated into bulbs and fixtures
Outlet Gaskets	DEER	Not available by CEC climate zone
Weatherstripping	XENERGY	Estimates for attic access and door weatherstripping were bundled. DEER estimates were used to disaggregate them.
Other non-weather sensitive measures	XENERGY	Results based on the 2001 LIEE impact analysis

Table 2-2 presents the CEC climate zones for each utility service area. Figure 2-1 provides a map of the CEC climate zones as an easy reference.

Table 2-2: CEC Climate Zones by Utility Area

Utility	Climate Zones
PG&E	1, 2, 3, 4, 5, 6, 11, 12, 13, 14, 16
SCE	6, 8, 9, 10, 13, 14, 15, 16
SDG&E	7, 10, 14, 15
SoCalGas	4, 5, 6, 7, 8, 9, 10, 13, 14, 15, 16

Figure 2-1: CEC Climate Zones



Measure Costs

Estimates of measure installation costs in 2003 were reported by each utility. The issue of whether or not to allocate indirect costs to the measures when testing for cost effectiveness was considered. It was ultimately decided to base measure cost effectiveness decisions on results that used installation costs in the benefit-cost ratio denominator. The idea behind this decision was to test using marginal costs to see if the retention or deletion of a measure would make the overall program more or less cost effective.

Non-Energy Benefits

Initially, the Team did not intend to modify the framework of non-energy benefits within the NEB workbook; however, as was the case with the earlier September 2002 preliminary report, there were a few instances where the methodology used in the workbook proved problematic in calculating participant NEBs for the purpose of this analysis, partly because the NEBs were originally designed for application at the program level and this analysis required NEBs per measure. In these cases, workbook modifications were made in order to correct inconsistencies or to make measure-level results more reasonable. These modifications were discussed in greater detail in the Team's September 30, 2002 preliminary report.

Energy Rates and Avoided Costs

Each utility provided an energy rate to be used in the analysis. The rate was to include consideration of the percentage of customers receiving the CARE rate. Table 2-3 provides the rates used in the analysis.

Table 2-3: Energy Rates

Utility	kWh	Therms
PG&E	0.1220	0.6240
SCE	0.1174	0.0000
SDG&E	0.1365	0.7474
SoCalGas	0.0000	0.5310

Avoided costs were used from the CPUC's Energy Efficiency Policy Manual dated October 2001. The manual provided avoided costs through 2021. Table 2-4 shows the rates used in the analysis. After 2021, the rate was escalated by 3% per year.

Table 2-4: Avoided Costs

Year	kWh	Therms
2003	$ 0.0690	$ 0.4700
2004	$0.0660	$0.4300
2005	$0.0680	$0.4500
2006	$0.0630	$0.4700
2007	$0.0660	$0.4900
2008	$0.0680	$0.5100
2009	$0.0700	$0.5300
2010	$0.0730	$0.5500
2011	$0.0750	$0.4900
2012	$0.0780	$0.5100
2013	$0.0810	$0.5300
2014	$0.0850	$0.5600
2015	$0.0880	$0.5800
2016	$0.0920	$0.6100
2017	$0.0960	$0.6300
2018	$0.1010	$0.6600
2019	$0.1060	$0.6800
2020	$0.1100	$0.7100
2021	$0.1150	$0.7400

Effective Useful Lives (EULs)

There was considerable variation in EULs used by the utilities in the NEB workbooks as designed. After some discussion, it was agreed to use, as the primary source, the EULs provided by the California Measurement Advisory Committee (CALMAC) Public Workshops on PY2001 Energy Efficiency Programs (September 2000). Where a particular EUL was not provided by the CALMAC Workshop Report, the EUL presented in the Joint Utility Low Income Energy Efficiency Program Costs and Bill Savings Standardization Report (March 2001) was used. Table 2-5 lists the EULs used in this analysis and their respective sources.

Note that neither source provided an EUL for electric water heaters or whole house fans. For electric water heaters, the EUL for gas water heaters, 13 years, was used. For whole house fans, an EUL of 20 years was taken from the LIEE Phase III Final Report.

Table 2-5: EULs

Measure	EUL (in years)	Source
Air conditioner, central	18	CALMAC
Air conditioner, room	15	CALMAC
Caulking	5	BSR
Ceiling insulation	25	CALMAC
Compact Fluorescent Hard Wired Porch Lights	20	CALMAC
Compact Fluorescent Lights	8	CALMAC
Duct sealing & testing	25	CALMAC
Evaporative Cooler Covers	3	BSR
Evaporative cooler maintenance	4	BSR
Evaporative Coolers	15 permanent, 7 portable	BSR
Faucet aerators	5	BSR
Furnace filters	5	BSR
Gas furnace repair	10	BSR
Gas furnace replacement	22	BSR
Low-flow showerhead	10	CALMAC
Minor home repairs	10	BSR
Outlet gaskets	15	BSR
Refrigerators	15	CALMAC
Setback thermostats	12	CALMAC
Water heater blanket	5	BSR
Water heater pipe wrap	15	CALMAC
Water heater replacement, electric	13	(used gas EUL)
Water heater replacement, gas	13	CALMAC
Weatherstripping, attic access	5	BSR
Weatherstripping, door	5	BSR
Whole house fans	20	Appendix G of LIEE Phase III Final Report

CALMAC refers to the CALMAC Workshop Report (September 2000); BSR refers to the Joint Utility Low Income Energy Efficiency Program Costs and Bill Savings Standardization Report (March 2001)

2.3 Criteria for Evaluating Measures

The analysis relied heavily on the methodology laid out in the Final Report for LIEE Program and Measure Cost effectiveness, submitted by the Cost Effectiveness Subcommittee of the RRM Working Group and Standardization Team in March 2002 and adopted by the Commission in D. 02-08-034. These criteria called for the use of two benefit-cost tests: a

Utility Cost Test and a Modified Participant Cost Test. Both tests make use of installed costs to represent measure costs. The Utility Cost Test uses avoided costs to value energy savings, while the Modified Participant Test employees retail rates to value energy savings. The general test recommended by the Cost Effectiveness Subcommittee and adopted by the Commission entails comparing each utility's measure-specific benefit-cost ratio to the corresponding utility's overall program benefit-cost ratio, and keeping measures where the measure-specific benefit-cost ratio is at least as high as the individual IOU's overall program ratio for either the Utility Cost Test and/or the Modified Participant Test.

The Commission-approved cost-effectiveness guidelines used in this analysis also allow for the Team to consider NEBs that may not be fully reflected by estimates contained in the NEB workbook. That is, the guidelines allow the retention of a measure that fails both cost-effectiveness tests if the Team believes it might provide additional NEBs beyond those captured in the original NEB study.

As noted in Section 1 of this report, the Team conducted the cost-effectiveness analysis at a very disaggregated level. For all measures, the analysis was done separately by utility, residence type and, where applicable, by fuel (electricity and natural gas). For weather sensitive measures like ceiling insulation, the analysis was also conducted separately by climate zone. While this disaggregated analysis was justified on the basis of differences in impacts and costs across these categories, it sometimes yielded cases where measures were cost-effective for some, but not all, categories. In its September 30, 2002 report, the Team dealt with this situation judgmentally in developing recommendations. However, ORA suggested in its comments that a more systematic set of Team decision-making rules should have been applied to these cases. The Team accepted this recommendation and adopted the following general rules of thumb that were applied in the updated analysis:

1. When a measure is consistently cost-effective for some, but not all, residence types, offer the measure for the residence type(s) for which it is cost-effective, but not others.
2. When a measure is consistently cost-effective for some, but not all, utility service areas, even in the same climate zones and for the same fuels, offer the measure in all service areas if it is cost-effective in at least two. Drop the measure if it is cost-effective in fewer than two service areas. This preserves the spirit of standardization.
3. When a measure is consistently cost-effective for one, but not both, fuels, offer the measure for the fuel for which it is cost-effective, but not the other.
4. When a measure is consistently cost-effective for some, but not all, climate zones, offer the measure in the climate zones for which it is cost-effective, but not the others.

5. When a measure's cost effectiveness varies asystematically across climate zones, residence types and fuels, make judgments that come closest to preserving the spirit of the above guidelines.

These rules of thumb do not totally avoid the need for judgment, but serve as a useful guide for the maintenance of consistency across recommendations.

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Recommendations

3.1 Non-Weather-Sensitive Measures

Non-weather sensitive measures are those whose impacts do not vary across climate zones. These include hard-wired compact fluorescent porch lights, compact fluorescent lamps (CFLs), faucet aerators, low-flow showerheads, high efficiency refrigerators, water heater blankets, water heater pipe wrap, and high-efficiency water heaters. For the purposes of this analysis, outlet gaskets were also assumed to be non-weather sensitive, although the effects of this measure may vary across climate zones. This simplified approach was taken because of the relative lack of information relating to outlet gasket savings.[1] For these measures, uniform eligibility policies should be followed across all climate zones, so the cost effectiveness analysis was conducted at the utility service area level.

Benefit-cost ratios for the non-weather-sensitive measures are presented in Table A-1 of Appendix A. Based upon the application of the cost effectiveness criteria and judgments with respect to other factors, the Standardization Team offers the following recommendations with respect to individual non-weather sensitive Program measures:

Hard-wired compact fluorescent porch lights pass both the Participant Test[2] and the Utility Test in all service areas for single family applications, but in only one service area for multifamily and mobile homes. The Team recommends that this measure continue to be offered for single family homes but not for multifamily residences or mobile homes.

CFLs pass both the Participant Test and the Utility Test in all applications, and should continue to be offered for all residence types and in all climate zones.

Faucet aerators pass the Participant Test and/or the Utility Test in all applications and should continue to be offered for all residence types and in all climate zones.

Low-flow showerheads are cost-effective in all applications, and should continue to be offered for all residence types and in all climate zones.

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1 Savings estimates were not available by climate zones.

2 Throughout this report, the Modified Participant Test is sometimes referred to as the Participant Test.

High efficiency refrigerators pass both the Modified Participant Test and the Utility Test in all applications, and should continue to be offered for all residence types and in all climate zones.

Water heater blankets pass both the Modified Participant Test and the Utility Test in all applications, and should continue to be offered for all residence types and in all climate zones.

Water heater pipe wrap passes both the Modified Participant Test and the Utility Test in all applications, and should continue to be offered for all residence types and in all climate zones.

High efficiency water heaters do not pass the Modified Participant or Utility Test for any water heating fuel, residence type, or service area. As a result, the Team recommends that they be dropped from the Program.

3.2 Weather-Sensitive Measures

Weather-sensitive measures are those whose impacts vary significantly across climate zones. While the Commission mandated only that ceiling insulation be evaluated at the climate zone level, the Team agreed to assess all weather-sensitive measures (other than outlet gaskets) at this level. Values of the Modified Participant and Utility Tests are contained in Appendix A. For these measures, the Team faced three options: offer a measure in all climate zones; do not offer the measure in any climate zone; or offer the measure in selected climate zones.

For the purposes of the analysis, the Team further divided weather-sensitive measures into two groups; infiltration reduction measures and non-infiltration-reduction measures. Conclusions with respect to these two groups of measures are presented below.

Infiltration-Reduction Measures

Infiltration-reduction measures are measures whose primary effect is to reduce air transfer through the thermal shell in participating homes. The LIEE Program currently has five such measures: caulking, door weatherstripping, attic access weatherstripping, evaporative cooler covers and outlet gaskets. The cost-effectiveness of these five measures is discussed below.

Caulking. Results for caulking are depicted in Table A-4 of Appendix A. As indicated there, caulking fails both the Participant Test and the Utility Test in all applications for three of the utilities. However, caulking passes one or both tests in some or all climate

zones for SoCalGas. The reason for this difference is that SoCalGas reports far lower installed costs for caulking than the other utilities.

Evaporative cooler covers. ***As indicated in Table A-7 of Appendix A, evaporative cooler covers are not cost effective in multifamily dwellings or in any residence type with electric space heat. However, they are cost effective for SDG&E in two climate zones for homes with gas heat.***

Weatherstripping attic doors. ***According to the results shown in Table A-17, weatherstripping attic doors does not appear to be cost effective in any zone, for any heating fuel, or in any residence type.***

Weatherstripping doors. ***As indicated in Table A-18, door weatherstripping does not appear to be cost effective for any residence types, heating system, or climate zone***

Outlet gaskets. ***The results of the cost-effectiveness analysis for outlet gaskets are presented in Table A-1 of Appendix A. It should be noted that measure impact estimates were not available by climate zone for this measure, in spite of the fact that its impacts are weather-sensitive. As a result, an overall average cost-effectiveness ratio was developed for each heating fuel and each residence type. As shown in Table A-1, outlet gaskets pass the Modified Participant Test and/or the Utility when electric space heat is present in a majority of cases, but fail both tests for all applications involving gas space heating.***

The cost-effectiveness results for these measures are not particularly favorable. Nonetheless, the Team recommends that they be retained for the 2004 LIEE Program. The Team bases this recommendation on a number of factors:

- ***In general, the cost of installing these measures is quite low, and the energy savings are correspondingly low. As noted earlier in Section 1, the degree of uncertainty surrounding the estimates of energy savings for these measures is relatively high. It is extremely difficult to isolate their impacts on energy consumption through engineering analysis, billing analysis, or a mix of the two (as in the XENERGY PY2001 impact evaluation).***
- ***There may be significant interactions between infiltration-reduction measures and other weatherization measures. That is, infiltration reduction measures may enhance the savings from other measures through thermodynamic interactions.***
- ***Infiltration-reduction measures lower draftiness and thereby provide significant non-energy benefits relating to comfort. While comfort benefits are included in the NEB workbook, they are allocated across a wide range of measures encompassing both infiltration-reduction and non-infiltration-reduction measures. The Team***

believes that the allocation of these benefits by energy savings probably understates the benefits associated with infiltration-reduction measures.

- ***Most of these measures tend to be installed in a high percentage of participating homes. As pointed out by the ICA (see Appendices C and D), their costs may be overstated if contractors disproportionately assign "windshield costs" to these measures. Dropping these measures could have the impact of adversely affecting the costs (and cost effectiveness) of other measures in the future, should contractors assign more of their indirect costs to those measures.***
- ***Eliminating the measures would significantly reduce the number of homes weatherized.***

Non-Infiltration Reduction Measures

Non-infiltration reduction measures are measures for which the primary effect on energy use is through some mechanism other than infiltration reduction. Several LIEE measures fall into this category. Results and recommendations relating to these measures are presented below.

High efficiency central air conditioner replacements. Results for high efficiency central air conditioners are presented in Table A-2 of Appendix A. As shown there, high efficiency air conditioners do not pass either the Modified participant Test of the Utility Test in any case except for one utility (SDG&E) in Climate Zone 15. The Team recommends that this measure be dropped from the Program in all areas.

High efficiency room (window/wall) air conditioner replacements. High efficiency room air conditioners (see Table A-3 in Appendix A) are cost effective in climate zones 13 and 15 for one of the utilities serving those zones. Nonetheless, the Team recommends that high efficiency room air conditioners be offered for all residence types in climate zones 11-15, which have the most extreme summer conditions. The Team believes that the potential reduction in risks to customer health and safety associated with the availability of high efficiency units, which may not be fully reflected in current NEBs used in the analysis, justifies offering this measure in these extreme climate zones.

Ceiling insulation. Table A-5 of Appendix A presents the results of the cost effectiveness analysis for ceiling insulation. As shown, ceiling insulation passes the Participant Test and/or the Utility Test in virtually all cases. The Team recommends that ceiling insulation be retained in the Program using current polices with respect to ceiling insulation thresholds and final levels.

Duct testing and sealing. As shown in Table A-6 of Appendix A, duct testing and sealing is cost effective only for SoCal Gas and only in Climate Zone 14. The Team recommends that this measure be dropped from the Program.

Evaporative cooler maintenance. Table A-8 presents the cost effectiveness results for evaporative cooler maintenance. As shown, this measure is cost-effective for only one utility (SDG&E) and in only one climate zone. The Team recommends dropping this measure altogether from the Program.

Evaporative coolers. Evaporative cooler results are presented in Table A-9. As indicated, this measure is cost-effective for mobile homes and single family homes in at least one utility in climate zones 11, 12, 13, 15 and 16.[3] However, the measure is cost-effective for only one utility in one zone for multifamily dwellings. The Team recommends that evaporative coolers be retained in climate zones 11-16, but only for single family homes and mobile homes.

Furnace filters. Furnace filters were assessed under two scenarios:

- First, that their installation either does not require a licensed HVAC contractor or a licensed HVAC contractor is already on site to do a furnace repair or replacement; and
- Second, that a licensed HVAC contractor has to make a special trip to install the filter.

Installed costs are obviously higher under the second scenario than the first. As shown in Table A-10, furnace filters are cost effective in many zones and for most utilities under the first scenario. However, as indicated in Table A-11, furnace filters are cost effective only for SoCalGas in climate zone 14 under the second (more expensive) scenario. The Team believes that it is prudent to require that furnace filters be installed by licensed HVAC contractors. As a result, the Team recommends that furnace filters be installed in all zones, but only as part of furnace repairs or replacements. To some extent, this is a practical matter, in that it would make little sense to make significant furnace repairs or to replace a furnace without replacing the filter.

Gas Furnace Repairs. Table A-12 indicates that gas furnace repair is cost-effective in some but not all zones, and for some but not all utilities. However, the Team believes that the NEBs incorporated into this analysis do not fully reflect the non-energy benefits associated with this measure. NEBs are distributed in proportion to energy savings, and the

[3] Under current LIEE Statewide Policies and Procedures, evaporative coolers are offered in climate zones 2, 3, 4, 5, 9, 10, 11, 12, 13, 14, 15, and 16.

energy savings associated with this measure are assumed to be experienced only by households who were previously using their furnace. However, households who were not using their furnaces prior to repairs clearly obtain some comfort benefits as well, and these benefits are not explicitly encompassed by the method of allocating NEBs to individual measures. Moreover, there may be some safety benefits that are not recognized by the NEB framework.[4] In recognition of this shortcoming in the cost effectiveness methodology, the Team recommends that gas furnace repairs continue to be offered in all climate zones.

Gas furnace replacements. As indicated in Table A-13, gas furnace replacements are also cost effective in only some zones and for some utilities. Using the same rationale as discussed for furnace repairs, the Team recommends that furnace replacements continue to be offered in all zones.

Minor Home Repairs. Table A-14 presents results for minor home repairs. Minor home repairs carry very significant participant NEBs, and are consequently highly cost effective according to the Participant Test in nearly all climate zones. They are not cost effective in quite so many zones under the Utility Test, largely due to the differences in participant and utility NEBs. The Team recommends that they continue to be offered in all zones, even those in which they do not appear to be cost effective. The rationale here is that these repairs are often necessary to accommodate the installation of other cost-effective measures offered through the Program, and thus have an additional indirect benefit.

Setback Thermostats. Like furnace filters, setback thermostats were assessed under two scenarios:

- First, that an HVAC contractor is already on site to do a furnace repair or replacement; and
- Second, that an HVAC contractor has to make a special trip to install the programmable thermostat.

The results of this analysis are shown in Tables A-15 and A-16 of Appendix A. As indicated in Table A-15, this measure is cost effective in some climate zones for at least one utility under the first scenario. Table A-16 indicates that the measure fails to be cost effective in all climate zones, fuels, utilities, and residence types under the second scenario. The Team recommends that this measure be dropped from the Program, except in cases where furnace repairs or replacements are being made and local code requires programmable thermostats.

[4] The NEB study initially identified CO testing as a service that may yield safety benefits, but this non-energy benefit was not estimated as part of that study. Although such safety benefits may also be associated with improved furnace operation, the NEB study did not identify them.

Whole house fans. Table A-19 presents results for whole house fans. As indicated there, whole house fans are cost effective only in climate zone 10 for SDG&E. The Team recommends that whole house fans be dropped from the Program.

3.3 Summary of Recommendations

Table 3-1 presents a summary of the Team's recommendations relating to LIEE measure offerings.

Table 3-1: Recommendations for LIEE Measures

Measure	Recommendation
Non-Weather-Sensitive Measures	
Hard-wired CFL porch lights	Retain in all climate zones for single family homes, but drop for multi-family and mobile homes
Compact fluorescent lamps	Retain in all climate zones and residence types
Faucet aerators,	Retain in all climate zones and residence types
Low-flow showerheads,	Retain in all climate zones and residence types
High efficiency refrigerators	Retain in all climate zones and residence types
Water heater blankets	Retain in all climate zones and residence types
Water heater pipe wrap	Retain in all climate zones and residence types
High-efficiency water heaters	Drop from Program
Weather-Sensitive Measures	
Outlet gaskets	Retain in all climate zones and residence types
High efficiency central ACs	Drop in all climate zones and residence types
High efficiency room ACs	Retain in Climate Zones 11, 12, 13, 14, and 15
Caulking	Retain in all climate zones and residence types
Ceiling Insulation	Retain in all climate zones and residence types
Duct testing and sealing	Drop in all climate zones and residence types
Evaporative cooler covers	Retain in all climate zones and residence types
Evaporative cooler maintenance	Drop in all climate zones and residence types
Evaporative coolers	Retain in Climate Zones 11 – 16 for single family and mobile homes; drop from Program for multi-family homes and in Climate Zones other than 11 – 16.
Furnace filters	Retain, but only as part of furnace repair or replacement
Gas furnace repairs	Retain in all climate zones and residence types
Gas furnace replacements	Retain in all climate zones and residence types
Minor home repairs	Retain in all climate zones and residence types
Setback Thermostats	Drop from Program except where required by code in conjunction with furnace repair or replacement
Weatherstripping attic doors	Retain in all climate zones and residence types
Weatherstripping doors	Retain in all climate zones and residence types
Whole house fans	Drop from Program

Appendix A

Cost Effectiveness Results

Tables A-1 through A-19 present the measure level cost effectiveness ratios. Shaded cells indicate a measure cost effectiveness ratio that is larger than the program level ratio. Blank cells indicate the climate zone or fuel type is not applicable for that utility area. Cells with an asterisk (*) indicate that the zone is served by that utility, but savings were not available to test the measure.[1]

[1] This occurs only for zones 6 and 14 in the PG&E area and for zone 16 in the SCE area.

Table A-1: Non-Weather Sensitive Measures

Non Weather Sensitive Measures

Program B/C Ratio:	0.56	1.17	0.71	0.61	0.32	0.78	0.35	0.18
	Modified Participant Test				**Utility Test**			
Measure	**PG&E**	**SCE**	**SDG&E**	**SoCal**	**PG&E**	**SCE**	**SDG&E**	**SoCal**
CFL Porch Lights								
Multi-family	0.46	0.65	1.04		0.30	0.45	0.59	
Mobile Home	0.46	0.65	1.04		0.30	0.45	0.59	
Single Family	0.69	0.95	1.52		0.45	0.66	0.87	
CFLs								
Multi-family	0.81	6.81	0.86		0.53	4.67	0.49	
Mobile Home	0.81	6.81	0.86		0.53	4.67	0.49	
Single Family	1.18	9.84	1.25		0.76	6.74	0.70	
Faucet Aerators								
MF, Electric WH	3.55	2.39	3.31		1.27	1.03	1.17	
MF, Gas WH	1.79		1.78	2.01	0.79		0.80	1.06
MH, Electric WH	2.72	2.39	3.31		0.97	1.03	1.17	
MH, Gas WH	1.51		1.78	1.80	0.67		0.80	0.94
SF, Electric WH	4.47	3.92	5.43		1.60	1.69	1.92	
SF, Gas WH	2.17		2.47	2.49	0.96		1.10	1.31
Low Flow Showerheads								
MF, Electric WH	4.93	4.13	4.57		1.71	1.73	1.58	
MF, Gas WH	2.81		2.71	5.13	1.23		1.20	2.66
MH, Electric WH	3.99	4.13	4.57		1.39	1.73	1.58	
MH, Gas WH	2.46		2.71	4.43	1.08		1.20	2.30
SF, Electric WH	6.52	6.74	7.46		2.27	2.83	2.57	
SF, Gas WH	2.77		3.08	5.04	1.21		1.36	2.61
Outlet Gaskets								
MF, Electric SH	0.71	0.44	1.13		0.33	0.15	0.40	
MF, Gas SH	0.14		0.25	0.17	0.08		0.11	0.06
MH, Electric SH	0.75	0.75	2.07		0.35	0.26	0.73	
MH, Gas SH	0.15		0.54	0.27	0.09		0.23	0.10
SF, Electric SH	0.60	0.75	2.07		0.28	0.26	0.73	
SF, Gas SH	0.16		0.54	0.27	0.09		0.23	0.10
Refrigerators								
Multi-family	1.35	1.67	1.50		0.87	1.14	0.85	
Mobile Home	1.35	1.67	1.50		0.87	1.14	0.85	
Single Family	1.62	2.00	1.80		1.04	1.37	1.01	
Water Heater Blankets								
MF, Electric WH	1.75	1.23	1.67		1.15	0.86	0.97	
MF, Gas WH	0.97		0.95	0.87	0.79		0.70	0.83
MH, Electric WH	1.69	1.23	1.67		1.12	0.86	0.97	
MH, Gas WH	0.93		0.95	0.89	0.76		0.70	0.84
SF, Electric WH	2.74	2.02	2.75		1.81	1.41	1.59	
SF, Gas WH	1.23		1.17	1.10	1.01		0.85	1.04
Water Heater Pipe Wrap								
MF, Electric WH	5.54	3.94	4.07		3.56	2.69	2.30	
MF, Gas WH	3.03		2.27	2.11	2.42		1.61	1.94
MH, Electric WH	3.53	3.94	4.07		2.27	2.69	2.30	
MH, Gas WH	2.66		2.27	2.11	2.12		1.61	1.94
SF, Electric WH	6.30	6.46	6.69		4.05	4.41	3.77	
SF, Gas WH	3.42		2.90	2.70	2.73		2.06	2.48
Water Heater								
MF, Electric WH	0.16	0.41	0.20		0.10	0.28	0.11	
MF, Gas WH	0.07		0.11	0.10	0.06		0.08	0.09
MH, Electric WH	0.26	0.67	0.32		0.16	0.45	0.18	
MH, Gas WH	0.14		0.21	0.19	0.11		0.15	0.18
SF, Electric WH	0.26	0.67	0.32		0.16	0.45	0.18	
SF, Gas WH	0.14		0.21	0.19	0.11		0.15	0.18

Table A-2: Central Air Conditioning

Central Air Conditioning, Multi-Family

Program B/C	0.56	1.17	0.71	0.61	0.32	0.78	0.35	0.18
Climate	**Modified Participant Test**				**Utility Test**			
Zone	**PG&E**	**SCE**	**SDG&E**	**SoCal**	**PG&E**	**SCE**	**SDG&E**	**SoCal**
1	0.00				0.00			
2	0.03				0.02			
3	0.01				0.01			
4	0.03				0.02			
5	0.00				0.00			
6	0.02	0.02			0.01	0.01		
7			0.06				0.02	
8		0.02				0.02		
9		0.03				0.02		
10		0.12	0.13			0.08	0.06	
11	0.11				0.06			
12	0.07				0.04			
13	0.20	0.17			0.12	0.11		
14	0.12	0.12	0.19		0.07	0.08	0.08	
15		0.33	0.56			0.22	0.25	
16	0.09	0.09			0.05	0.06		

Central Air Conditioning, Mobile Home

Climate	**Modified Participant Test**				**Utility Test**			
Zone	**PG&E**	**SCE**	**SDG&E**	**SoCal**	**PG&E**	**SCE**	**SDG&E**	**SoCal**
1	0.00				0.00			
2	0.05				0.03			
3	0.01				0.01			
4	0.02				0.01			
5	0.00				0.00			
6	0.02	0.06			0.01	0.04		
7			0.02				0.01	
8		0.09				0.06		
9		0.12				0.08		
10		0.15	0.15			0.10	0.07	
11	0.14				0.08			
12	0.13				0.07			
13	0.20	0.47			0.12	0.32		
14	0.18	0.16	0.18		0.11	0.11	0.08	
15		0.94	0.27			0.64	0.12	
16	0.11	0.24			0.06	0.16		

Central Air Conditioning, Single Family

Climate	**Modified Participant Test**				**Utility Test**			
Zone	**PG&E**	**SCE**	**SDG&E**	**SoCal**	**PG&E**	**SCE**	**SDG&E**	**SoCal**
1	0.00				0.00			
2	0.05				0.03			
3	0.01				0.01			
4	0.02				0.01			
5	0.00				0.00			
6	0.02	0.02			0.01	0.01		
7			0.06				0.03	
8		0.06				0.04		
9		0.09				0.06		
10		0.12	0.19			0.08	0.08	
11	0.13				0.08			
12	0.12				0.07			
13	0.20	0.15			0.12	0.10		
14	0.18	0.16	0.34		0.10	0.11	0.15	
15		0.33	0.80			0.22	0.35	
16	0.11	0.13			0.06	0.09		

Table A-3: Room Air Conditioning

Room Air Conditioning, Multi-Family

Program B/C	0.56	1.17	0.71	0.61	0.32	0.78	0.35	0.18
Climate	**Modified Participant Test**				**Utility Test**			
Zone	**PG&E**	**SCE**	**SDG&E**	**SoCal**	**PG&E**	**SCE**	**SDG&E**	**SoCal**
1	0.00				0.00			
2	0.10				0.06			
3	0.03				0.02			
4	0.08				0.05			
5	0.01				0.00			
6	0.05	0.04			0.03	0.02		
7			0.08				0.03	
8		0.05				0.03		
9		0.11				0.08		
10		0.18	0.38			0.12	0.17	
11	0.33				0.19			
12	0.27				0.16			
13	0.50	0.27			0.29	0.18		
14	0.35	0.39	0.54		0.21	0.26	0.24	
15		0.61	0.81			0.41	0.35	
16	0.28	0.00			0.16	0.00		

Room Air Conditioning, Mobile Home

Climate	**Modified Participant Test**				**Utility Test**			
Zone	**PG&E**	**SCE**	**SDG&E**	**SoCal**	**PG&E**	**SCE**	**SDG&E**	**SoCal**
1	0.00				0.00			
2	0.12				0.07			
3	0.03				0.02			
4	0.06				0.03			
5	0.01				0.00			
6	0.04	0.03			0.03	0.02		
7			0.07				0.03	
8		0.05				0.03		
9		0.12				0.08		
10		0.19	0.20			0.13	0.09	
11	0.35				0.20			
12	0.31				0.18			
13	0.56	0.41			0.33	0.28		
14	0.47	0.35	0.36		0.27	0.23	0.16	
15		0.83	0.86			0.56	0.38	
16	0.29	0.21			0.17	0.14		

Room Air Conditioning, Single Family

Climate	**Modified Participant Test**				**Utility Test**			
Zone	**PG&E**	**SCE**	**SDG&E**	**SoCal**	**PG&E**	**SCE**	**SDG&E**	**SoCal**
1	0.00				0.00			
2	0.12				0.07			
3	0.03				0.02			
4	0.06				0.03			
5	0.01				0.00			
6	0.04	0.03			0.03	0.02		
7			0.07				0.03	
8		0.05				0.03		
9		0.12				0.08		
10		0.19	0.20			0.13	0.09	
11	0.35				0.20			
12	0.31				0.18			
13	0.56	0.41			0.33	0.28		
14	0.47	0.35	0.36		0.27	0.23	0.16	
15		0.83	0.86			0.56	0.38	
16	0.29	0.21			0.17	0.14		

Table A-4: Caulking

Caulking, Multi-Family, Electric SH

Program B/C	0.56	1.17	0.71	0.61	0.32	0.78	0.35	0.18
Climate	**Modified Participant Test**				**Utility Test**			
Zone	**PG&E**	**SCE**	**SDG&E**	**SoCal**	**PG&E**	**SCE**	**SDG&E**	**SoCal**
1	0.33				0.16			
2	0.23				0.11			
3	0.29				0.14			
4	0.29				0.14			
5	0.25				0.12			
6	*	0.09				0.03		
7			0.21				0.07	
8		0.09				0.03		
9		0.11				0.04		
10		0.11	0.25			0.04	0.09	
11	0.33				0.16			
12	0.29				0.14			
13	0.27	0.12			0.13	0.04		
14	*	0.18	0.26			0.06	0.09	
15		0.09	0.18			0.03	0.06	
16	0.48	*			0.23			

Caulking, Multi-Family, Gas SH

Climate	**Modified Participant Test**				**Utility Test**			
Zone	**PG&E**	**SCE**	**SDG&E**	**SoCal**	**PG&E**	**SCE**	**SDG&E**	**SoCal**
1	0.17				0.10			
2	0.15				0.09			
3	0.18				0.11			
4	0.15			1.37	0.09			0.53
5	0.20			1.37	0.12			0.53
6	*			1.37				0.53
7			0.36	1.33			0.17	0.51
8				0.76				0.29
9				0.91				0.35
10			0.26	0.91			0.12	0.35
11	0.17				0.10			
12	0.16				0.09			
13	0.18			2.13	0.10			0.83
14	*		0.27	3.46			0.12	1.34
15			0.22	1.07			0.10	0.41
16	0.13			4.11	0.07			1.59

Table A-4 (cont'd.): Caulking

Caulking, Mobile Home, Electric SH

Climate	Modified Participant Test				Utility Test			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	0.27				0.13			
2	0.19				0.09			
3	0.14				0.07			
4	0.16				0.08			
5	0.18				0.08			
6	*	0.13				0.05		
7			0.16				0.06	
8		0.12				0.04		
9		0.14				0.05		
10		0.16	0.19			0.06	0.07	
11	0.17				0.08			
12	0.23				0.11			
13	0.21	0.20			0.10	0.07		
14	*	0.24	0.16			0.09	0.06	
15		0.15	0.10			0.05	0.04	
16	0.20	*			0.10			

Caulking, Mobile Home, Gas SH

Climate	Modified Participant Test				Utility Test			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	0.16				0.09			
2	0.17				0.10			
3	0.14				0.08			
4	0.15			0.85	0.09			0.33
5	0.17			0.55	0.10			0.21
6	*			0.55				0.21
7			0.65	0.45			0.29	0.17
8				0.30				0.12
9				0.30				0.12
10			0.47	0.49			0.21	0.19
11	0.12				0.07			
12	0.17				0.10			
13	0.25			0.85	0.14			0.33
14	*		0.49	0.85			0.22	0.33
15			0.36	0.30			0.16	0.12
16	0.12			0.49	0.07			0.19

Table A-4 (cont'd.): Caulking

Caulking, Single Family, Electric SH

Climate	Modified Participant Test				Utility Test			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	0.37				0.18			
2	0.31				0.15			
3	0.31				0.15			
4	0.30				0.14			
5	0.33				0.16			
6	*	0.12				0.04		
7			0.25				0.09	
8		0.10				0.04		
9		0.13				0.04		
10		0.14	0.30			0.05	0.11	
11	0.31				0.15			
12	0.34				0.16			
13	0.24	0.18			0.12	0.06		
14	*	0.22	0.25			0.08	0.09	
15		0.14	0.20			0.05	0.07	
16	0.39	*			0.19			

Caulking, Single Family, Gas SH

Climate	Modified Participant Test				Utility Test			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	0.31				0.18			
2	0.23				0.14			
3	0.33				0.20			
4	0.34			1.46	0.20			0.57
5	0.36			1.10	0.21			0.42
6	*			2.74				1.06
7			0.58	1.38			0.26	0.53
8				1.16				0.45
9				1.40				0.54
10			0.68	1.28			0.31	0.50
11	0.36				0.21			
12	0.34				0.20			
13	0.34			1.71	0.20			0.66
14	*		0.93	1.71			0.42	0.66
15			0.42	0.67			0.18	0.26
16	0.25			1.95	0.15			0.75

Table A-5: Ceiling Insulation

Ceiling Insulation, Multi-Family, Electric SH

Program B/C	0.56	1.17	0.71	0.61	0.32	0.78	0.35	0.18
Climate	**Modified Participant Test**				**Utility Test**			
Zone	**PG&E**	**SCE**	**SDG&E**	**SoCal**	**PG&E**	**SCE**	**SDG&E**	**SoCal**
1	3.78				1.80			
2	2.76				1.32			
3	1.44				0.69			
4	1.29				0.61			
5	1.50				0.72			
6	*	4.12				1.46		
7			1.26				0.45	
8		3.94				1.40		
9		4.47				1.58		
10		4.70	1.86			1.67	0.67	
11	3.40				1.62			
12	2.93				1.40			
13	1.89	5.86			0.90	2.08		
14	*	7.83	3.03			2.78	1.09	
15		2.77	2.08			0.98	0.75	
16	3.35	*			1.60			

Ceiling Insulation, Multi-Family, Gas SH

Climate	**Modified Participant Test**				**Utility Test**			
Zone	**PG&E**	**SCE**	**SDG&E**	**SoCal**	**PG&E**	**SCE**	**SDG&E**	**SoCal**
1	1.84				1.07			
2	1.40				0.81			
3	1.25				0.72			
4	0.97			2.20	0.56			0.83
5	0.70			1.57	0.41			0.60
6	*			1.58				0.60
7			0.88	1.54			0.38	0.58
8				0.97				0.37
9				1.20				0.46
10			1.20	1.35			0.51	0.51
11	1.79				1.01			
12	1.15				0.64			
13	1.36			4.09	0.75			1.55
14	*		1.99	2.90			0.86	1.10
15			1.79	1.16			0.70	0.44
16	1.36			1.35	0.77			0.51

Table A-5 (cont'd.): Ceiling Insulation

Ceiling Insulation, Single Family, Electric SH

Climate	Modified Participant Test				Utility Test			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	2.47				1.18			
2	1.30				0.62			
3	1.72				0.82			
4	0.93				0.45			
5	1.06				0.51			
6	*	4.26				1.51		
7			1.15				0.42	
8		3.89				1.38		
9		5.26				1.86		
10		6.48	1.18			2.30	0.43	
11	1.10				0.52			
12	1.66				0.79			
13	1.03	9.71			0.49	3.45		
14	*	10.40	1.13			3.69	0.41	
15		12.33	0.71			4.37	0.25	
16	1.68	*			0.80			

Ceiling Insulation, Single Family, Gas SH

Climate	Modified Participant Test				Utility Test			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	1.44				0.84			
2	1.45				0.83			
3	1.00				0.57			
4	0.89			2.09	0.51			0.79
5	0.63			1.58	0.37			0.60
6	*			1.48				0.56
7			1.12	1.38			0.49	0.52
8				1.01				0.38
9				1.27				0.48
10			1.12	1.36			0.49	0.52
11	1.32				0.75			
12	1.07				0.61			
13	1.16			2.49	0.64			0.94
14	*		1.83	2.67			0.81	1.01
15			0.87	1.12			0.36	0.42
16	1.40			1.69	0.79			0.64

Table A-6: Duct Sealing

Duct Sealing & Testing, Multi-Family, Electric SH

Program B/C	0.56	1.17	0.71	0.61	0.32	0.78	0.35	0.18
Climate	**Modified Participant Test**				**Utility Test**			
Zone	**PG&E**	**SCE**	**SDG&E**	**SoCal**	**PG&E**	**SCE**	**SDG&E**	**SoCal**
1	0.00				0.00			
2	0.00				0.00			
3	0.00				0.00			
4	0.00				0.00			
5	0.00				0.00			
6	*	0.02				0.01		
7			0.00				0.00	
8		0.08				0.03		
9		0.09				0.03		
10		0.10	0.00			0.03	0.00	
11	0.01				0.00			
12	0.02				0.01			
13	0.04	0.16			0.02	0.06		
14	*	0.12	0.01			0.04	0.00	
15		0.06	0.02			0.02	0.01	
16	0.04	*			0.02			

Duct Sealing & Testing, Multi-Family, Gas SH

Climate	**Modified Participant Test**				**Utility Test**			
Zone	**PG&E**	**SCE**	**SDG&E**	**SoCal**	**PG&E**	**SCE**	**SDG&E**	**SoCal**
1	0.01				0.00			
2	0.01				0.01			
3	0.01				0.01			
4	0.01				0.01			
5	0.00			0.01	0.00			0.00
6	*			0.01				0.00
7			0.01	0.01			0.01	0.00
8				0.01				0.00
9				0.01				0.00
10			0.01	0.01			0.01	0.00
11	0.03				0.01			
12	0.04				0.02			
13	0.04			0.01	0.02			0.01
14	*		0.12	0.02			0.05	0.01
15			0.35	0.01			0.16	0.00
16	0.03			0.02	0.01			0.01

Table A-6 (cont'd): Duct Sealing

Duct Sealing & Testing, Mobile Home, Electric SH

Climate	Modified Participant Test				Utility Test			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	0.00				0.00			
2	0.00				0.00			
3	0.00				0.00			
4	0.00				0.00			
5	0.00				0.00			
6	*	0.02				0.01		
7			0.01				0.00	
8		0.03				0.01		
9		0.06				0.02		
10		0.10	0.01			0.03	0.00	
11	0.01				0.00			
12	0.01				0.00			
13	0.01	0.20			0.01	0.07		
14	*	0.17	0.02			0.06	0.01	
15		0.39	0.02			0.14	0.01	
16	0.01	*			0.00			

Duct Sealing & Testing, Mobile Home, Gas SH

Climate	Modified Participant Test				Utility Test			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	0.01				0.01			
2	0.01				0.01			
3	0.01				0.01			
4	0.01			0.41	0.01			0.16
5	0.01			0.30	0.00			0.11
6	*			0.29				0.11
7			0.11	0.27			0.05	0.10
8				0.22				0.08
9				0.25				0.09
10			0.08	0.28			0.04	0.10
11	0.02				0.01			
12	0.01				0.01			
13	0.02			0.41	0.01			0.16
14	*		0.09	0.68			0.04	0.26
15			0.08	0.22			0.03	0.08
16	0.01			0.38	0.01			0.14

Table A-6 (cont'd.): Duct Sealing

Duct Sealing & Testing, Single Family, Electric SH

Climate	Modified Participant Test				Utility Test			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	0.07				0.04			
2	0.06				0.03			
3	0.05				0.02			
4	0.04				0.02			
5	0.05				0.02			
6	*	0.15				0.05		
7			0.04				0.01	
8		0.13				0.05		
9		0.16				0.06		
10		0.18	0.06			0.06	0.02	
11	0.05				0.03			
12	0.25				0.12			
13	0.20	0.23			0.10	0.08		
14	*	0.28	0.10			0.10	0.04	
15		0.21	0.10			0.07	0.04	
16	0.06	*			0.03			

Duct Sealing & Testing, Single Family, Gas SH

Climate	Modified Participant Test				Utility Test			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	0.19				0.11			
2	0.18				0.11			
3	0.19				0.11			
4	0.20			0.41	0.12			0.16
5	0.09			0.30	0.05			0.11
6	*			0.29				0.11
7			0.10	0.27			0.05	0.10
8				0.22				0.08
9				0.25				0.09
10			0.12	0.28			0.05	0.10
11	0.19				0.11			
12	0.22				0.12			
13	0.20			0.41	0.11			0.16
14	*		0.28	0.68			0.12	0.26
15			0.16	0.22			0.06	0.08
16	0.11			0.38	0.06			0.14

Table A-7: Evaporative Cooler Covers

Evaporative Cooler Covers, Multi-Family, Electric SH

Program B/C	0.56	1.17	0.71	0.61	0.32	0.78	0.35	0.18
Climate	**Modified Participant Test**				**Utility Test**			
Zone	**PG&E**	**SCE**	**SDG&E**	**SoCal**	**PG&E**	**SCE**	**SDG&E**	**SoCal**
1	0.08				0.04			
2	0.06				0.03			
3	0.06				0.03			
4	0.06				0.03			
5	0.07				0.03			
6	*	0.08				0.03		
7			0.03				0.01	
8		0.08				0.03		
9		0.09				0.03		
10		0.09	0.04			0.03	0.02	
11	0.08				0.04			
12	0.04				0.02			
13	0.03	0.12			0.02	0.04		
14	*	0.15	0.07			0.06	0.03	
15		0.05	0.02			0.02	0.01	
16	0.05	*			0.02			

Evaporative Cooler Covers, Multi-Family, Gas SH

Climate	**Modified Participant Test**				**Utility Test**			
Zone	**PG&E**	**SCE**	**SDG&E**	**SoCal**	**PG&E**	**SCE**	**SDG&E**	**SoCal**
1	0.12				0.07			
2	0.10				0.06			
3	0.07				0.04			
4	0.09			0.10	0.05			0.04
5	0.07			0.07	0.04			0.03
6	*			0.07				0.03
7			0.32	0.07			0.15	0.03
8				0.06				0.02
9				0.06				0.02
10			0.35	0.08			0.16	0.03
11	0.05				0.03			
12	0.06				0.04			
13	0.04			0.14	0.02			0.05
14	*		0.59	0.14			0.27	0.05
15			0.23	0.05			0.11	0.02
16	0.07			0.08	0.04			0.03

Table A-7 (cont'd.): Evaporative Cooler Covers

Evaporative Cooler Covers, Mobile Home, Electric SH

Climate	Modified Participant Test				Utility Test			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	0.08				0.04			
2	0.06				0.03			
3	0.05				0.02			
4	0.04				0.02			
5	0.05				0.02			
6	*	0.12				0.05		
7			0.08				0.03	
8		0.10				0.04		
9		0.12				0.04		
10		0.13	0.10			0.05	0.04	
11	0.07				0.04			
12	0.10				0.05			
13	0.03	0.15			0.01	0.06		
14	*	0.20	0.09			0.07	0.03	
15		0.07	0.03			0.03	0.01	
16	0.06	*			0.03			

Evaporative Cooler Covers, Mobile Home, Gas SH

Climate	Modified Participant Test				Utility Test			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	0.04				0.02			
2	0.07				0.04			
3	0.10				0.06			
4	0.08			0.19	0.05			0.07
5	0.07			0.13	0.04			0.05
6	*			0.06				0.02
7			1.09	0.12			0.50	0.05
8				0.08				0.03
9				0.04				0.02
10			0.68	0.05			0.31	0.02
11	0.05				0.03			
12	0.05				0.03			
13	0.03			0.09	0.02			0.03
14	*		0.73	0.09			0.34	0.03
15			0.47	0.40			0.22	0.16
16	0.06			0.13	0.04			0.05

Table A-7 (cont'd.): Evaporative Cooler Covers

Evaporative Cooler Covers, Single Family, Electric SH

Climate	Modified Participant Test				Utility Test			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	0.12				0.06			
2	0.09				0.04			
3	0.07				0.03			
4	0.06				0.03			
5	0.07				0.04			
6	*	0.12				0.04		
7			0.04				0.02	
8		0.10				0.04		
9		0.12				0.04		
10		0.13	0.05			0.05	0.02	
11	0.04				0.02			
12	0.10				0.05			
13	0.04	0.15			0.02	0.05		
14	*	0.19	0.09			0.07	0.03	
15		0.07	0.03			0.03	0.01	
16	0.03	*			0.02			

Evaporative Cooler Covers, Single Family, Gas SH

Climate	Modified Participant Test				Utility Test			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	0.28				0.17			
2	0.08				0.05			
3	0.17				0.10			
4	0.32			0.14	0.19			0.05
5	0.22			0.10	0.13			0.04
6	*			0.10				0.04
7			0.47	0.09			0.22	0.03
8				0.05				0.02
9				0.08				0.03
10			0.58	0.10			0.27	0.04
11	0.16				0.09			
12	0.22				0.13			
13	0.08			0.27	0.05			0.11
14	*		1.46	0.31			0.67	0.12
15			0.47	0.05			0.22	0.02
16	0.10			0.09	0.06			0.03

Table A-8: Evaporative Cooler Maintenance

Evaporative Cooler Maintenance, Multi-Family

Program B/C	0.56	1.17	0.71	0.61	0.32	0.78	0.35	0.18
Climate	**Modified Participant Test**				**Utility Test**			
Zone	**PG&E**	**SCE**	**SDG&E**	**SoCal**	**PG&E**	**SCE**	**SDG&E**	**SoCal**
1	0.00				0.00			
2	0.04				0.02			
3	0.01				0.01			
4	0.03				0.02			
5	0.00				0.00			
6	0.02				0.01			
7			0.07				0.03	
8								
9		0.19				0.13		
10		0.25	0.16			0.18	0.07	
11	0.12				0.08			
12	0.10				0.06			
13	0.19	0.32			0.11	0.22		
14	0.13	0.34	0.22		0.08	0.24	0.10	
15		0.72	0.66			0.51	0.30	
16	0.11	0.26			0.06	0.18		

Evaporative Cooler Maintenance, Mobile Home

Climate	**Modified Participant Test**				**Utility Test**			
Zone	**PG&E**	**SCE**	**SDG&E**	**SoCal**	**PG&E**	**SCE**	**SDG&E**	**SoCal**
1	0.00				0.00			
2	0.05				0.03			
3	0.01				0.01			
4	0.02				0.01			
5	0.00				0.00			
6	0.02				0.01			
7			0.06				0.03	
8								
9		0.19				0.13		
10		0.24	0.18			0.16	0.08	
11	0.15				0.09			
12	0.13				0.08			
13	0.23	0.56			0.14	0.39		
14	0.20	0.33	0.33		0.12	0.23	0.15	
15		0.72	0.78			0.50	0.35	
16	0.12	0.29			0.07	0.20		

Evaporative Cooler Maintenance, Single Family

Climate	**Modified Participant Test**				**Utility Test**			
Zone	**PG&E**	**SCE**	**SDG&E**	**SoCal**	**PG&E**	**SCE**	**SDG&E**	**SoCal**
1	0.00				0.00			
2	0.05				0.03			
3	0.01				0.01			
4	0.02				0.01			
5	0.00				0.00			
6	0.02				0.01			
7			0.06				0.03	
8								
9		0.20				0.14		
10		0.25	0.17			0.18	0.08	
11	0.15				0.09			
12	0.13				0.08			
13	0.23	0.32			0.14	0.22		
14	0.20	0.33	0.31		0.12	0.23	0.14	
15		0.72	0.75			0.50	0.34	
16	0.12	0.00			0.07	0.00		

Table A-9: Evaporative Coolers

Evaporative Coolers, Multi-Family

Program B/C	0.56	1.17	0.71	0.61	0.32	0.78	0.35	0.18
Climate	**Modified Participant Test**				**Utility Test**			
Zone	**PG&E**	**SCE**	**SDG&E**	**SoCal**	**PG&E**	**SCE**	**SDG&E**	**SoCal**
1	0.00				0.00			
2	0.03				0.02			
3	0.03				0.02			
4	0.05				0.03			
5	0.00				0.00			
6	*							
7			0.11				0.05	
8								
9		0.10				0.07		
10		0.13	0.27			0.09	0.12	
11	0.21				0.12			
12	0.18				0.11			
13	0.30	0.17			0.17	0.11		
14	*	0.21	0.39			0.14	0.17	
15		0.38	1.15			0.26	0.50	
16	0.19	*			0.11			

Evaporative Coolers, Mobile Home

Climate	**Modified Participant Test**				**Utility Test**			
Zone	**PG&E**	**SCE**	**SDG&E**	**SoCal**	**PG&E**	**SCE**	**SDG&E**	**SoCal**
1	0.00				0.00			
2	0.13				0.07			
3	0.08				0.05			
4	0.30				0.18			
5	0.02				0.01			
6	*							
7			0.10				0.04	
8								
9		0.11				0.07		
10		0.43	0.30			0.29	0.13	
11	0.71				0.41			
12	0.65				0.38			
13	0.98	0.57			0.58	0.38		
14	*	0.59	0.54			0.39	0.24	
15		1.30	1.29			0.87	0.56	
16	0.70	*			0.41			

Evaporative Coolers, Single Family

Climate	**Modified Participant Test**				**Utility Test**			
Zone	**PG&E**	**SCE**	**SDG&E**	**SoCal**	**PG&E**	**SCE**	**SDG&E**	**SoCal**
1	0.00				0.00			
2	0.16				0.09			
3	0.17				0.10			
4	0.38				0.22			
5	0.02				0.01			
6	*							
7			0.22				0.10	
8								
9		0.34				0.23		
10		0.45	0.53			0.30	0.23	
11	0.67				0.39			
12	0.65				0.38			
13	1.00	0.57			0.59	0.38		
14	*	0.58	0.54			0.39	0.24	
15		1.29	1.29			0.87	0.56	
16	0.76	*			0.44			

Table A-10: Furnace Filters with Other Measures

Furnace Filters if installed with furnace repair or replacemnt or if not requiring licensed HVAC contractor, Multi-Family, Electric SH

Program B/C	0.56	1.17	0.71	0.61	0.32	0.78	0.35	0.18
Climate	**Modified Participant Test**				**Utility Test**			
Zone	**PG&E**	**SCE**	**SDG&E**	**SoCal**	**PG&E**	**SCE**	**SDG&E**	**SoCal**
1	0.78				0.40			
2	0.57				0.29			
3	0.68				0.35			
4	0.98				0.50			
5	1.13				0.58			
6	*	0.87				0.60		
7			0.76				0.25	
8		0.83				0.57		
9		0.94				0.65		
10		0.98	1.00			0.68	0.32	
11	0.73				0.38			
12	0.58				0.30			
13	0.60	1.23			0.31	0.85		
14	*	1.65	1.68			1.14	0.54	
15		0.58	0.59			0.40	0.19	
16	0.41	*			0.21			

Furnace Filters if installed with furnace repair or replacemnt or if not requiring licensed HVAC contractor, Multi-Family, Gas SH

Climate	**Modified Participant Test**				**Utility Test**			
Zone	**PG&E**	**SCE**	**SDG&E**	**SoCal**	**PG&E**	**SCE**	**SDG&E**	**SoCal**
1	0.29				0.19			
2	0.34				0.22			
3	0.48				0.31			
4	0.58			0.25	0.37			0.10
5	0.48			0.19	0.31			0.08
6	*			0.19				0.08
7			0.61	0.17			0.25	0.07
8				0.14				0.06
9				0.15				0.06
10			0.68	0.19			0.28	0.08
11	0.42				0.27			
12	0.41				0.26			
13	0.41			0.24	0.26			0.10
14	*		1.15	0.33			0.47	0.13
15			0.47	0.13			0.19	0.05
16	0.41			0.36	0.26			0.15

Table A-10 (cont'd.): Furnace Filters with Other Measures

Furnace Filters if installed with furnace repair or replacement or if not requiring licensed HVAC contractor, Mobile Home, Elec SH

Climate	Modified Participant Test				Utility Test			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	0.78				0.40			
2	0.58				0.30			
3	0.42				0.22			
4	0.41				0.21			
5	0.47				0.24			
6	*	0.97				0.67		
7			0.75				0.24	
8		0.82				0.56		
9		0.94				0.65		
10		1.03	1.06			0.71	0.34	
11	0.67				0.35			
12	0.63				0.33			
13	0.28	1.18			0.15	0.81		
14	*	1.55	1.58			1.07	0.51	
15		0.59	0.60			0.41	0.19	
16	0.79	*			0.41			

Furnace Filters if installed with furnace repair or replacement or if not requiring licensed HVAC contractor, Mobile Home, Gas SH

Climate	Modified Participant Test				Utility Test			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	0.20				0.13			
2	0.60				0.38			
3	0.43				0.27			
4	0.55			0.32	0.35			0.13
5	0.56			0.24	0.36			0.10
6	*			0.23				0.09
7			0.76	0.21			0.31	0.09
8				0.17				0.07
9				0.19				0.08
10			0.76	0.21			0.31	0.09
11	0.42				0.27			
12	0.48				0.31			
13	0.74			0.32	0.47			0.13
14	*		1.86	0.53			0.76	0.22
15			0.60	0.17			0.25	0.07
16	0.42			0.29	0.27			0.12

Table A-10 (cont'd.): Furnace Filters with Other Measures

Furnace Filters if installed with furnace repair or replacement or if not requiring licensed HVAC contractor, Single Family, Elec SH

Climate	Modified Participant Test				Utility Test			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	0.82				0.42			
2	0.88				0.45			
3	1.54				0.79			
4	1.43				0.74			
5	1.67				0.86			
6	*	1.45				1.00		
7			1.13				0.36	
8		1.22				0.84		
9		1.40				0.97		
10		1.55	1.58			1.07	0.51	
11	0.85				0.44			
12	0.91				0.47			
13	0.78	1.76			0.40	1.21		
14	*	2.32	2.36			1.60	0.76	
15		0.88	0.90			0.61	0.29	
16	0.77	*			0.39			

Furnace Filters if installed with furnace repair or replacement or if not requiring licensed HVAC contractor, Single Family, Gas SH

Climate	Modified Participant Test				Utility Test			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	0.50				0.32			
2	0.68				0.44			
3	1.28				0.82			
4	1.30			0.60	0.83			0.25
5	1.19			0.44	0.76			0.18
6	*			0.43				0.17
7			1.42	0.40			0.58	0.16
8				0.32				0.13
9				0.36				0.15
10			1.42	0.40			0.58	0.16
11	1.02				0.65			
12	1.04				0.66			
13	1.14			0.60	0.73			0.25
14	*		3.49	0.99			1.42	0.40
15			1.13	0.32			0.46	0.13
16	0.77			0.55	0.49			0.22

Table A-11: Furnace Filters with Licensed Contractor

Furnace Filters if installed alone and requiring licensed HVAC contractor, Multi-Family, Electric SH

Program B/C	0.56	1.17	0.71	0.61	0.32	0.78	0.35	0.18
Climate	**Modified Participant Test**				**Utility Test**			
Zone	**PG&E**	**SCE**	**SDG&E**	**SoCal**	**PG&E**	**SCE**	**SDG&E**	**SoCal**
1	0.15				0.08			
2	0.11				0.06			
3	0.10				0.05			
4	0.09				0.05			
5	0.11				0.06			
6	*	0.06				0.04		
7			0.07				0.02	
8		0.06				0.04		
9		0.07				0.05		
10		0.07	0.09			0.05	0.03	
11	0.11				0.05			
12	0.09				0.05			
13	0.09	0.09			0.04	0.06		
14	*	0.12	0.16			0.08	0.05	
15		0.04	0.06			0.03	0.02	
16	0.08	*			0.04			

Furnace Filters if installed alone and requiring licensed HVAC contractor, Multi-Family, Gas SH

Climate	**Modified Participant Test**				**Utility Test**			
Zone	**PG&E**	**SCE**	**SDG&E**	**SoCal**	**PG&E**	**SCE**	**SDG&E**	**SoCal**
1	0.09				0.06			
2	0.07				0.04			
3	0.07				0.04			
4	0.06			0.13	0.04			0.05
5	0.05			0.10	0.03			0.04
6	*			0.10				0.04
7			0.06	0.09			0.02	0.04
8				0.07				0.03
9				0.08				0.03
10			0.06	0.10			0.03	0.04
11	0.07				0.04			
12	0.07				0.05			
13	0.06			0.13	0.04			0.05
14	*		0.11	0.17			0.04	0.07
15			0.04	0.07			0.02	0.03
16	0.08			0.18	0.05			0.07

Table A-11 (cont'd.): Furnace Filters with Licensed Contractor

Furnace Filters if installed alone and requiring licensed HVAC contractor, Mobile Home, Elec SH

Climate	Modified Participant Test				Utility Test			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	0.15				0.08			
2	0.12				0.06			
3	0.09				0.04			
4	0.08				0.04			
5	0.10				0.05			
6	*	0.07				0.05		
7			0.07				0.02	
8		0.06				0.04		
9		0.07				0.05		
10		0.07	0.10			0.05	0.03	
11	0.10				0.05			
12	0.10				0.05			
13	0.07	0.08			0.04	0.06		
14	*	0.11	0.15			0.08	0.05	
15		0.04	0.06			0.03	0.02	
16	0.12	*			0.06			

Furnace Filters if installed alone and requiring licensed HVAC contractor, Mobile Home, Gas SH

Climate	Modified Participant Test				Utility Test			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	0.08				0.05			
2	0.13				0.08			
3	0.06				0.04			
4	0.06			0.17	0.04			0.07
5	0.06			0.12	0.04			0.05
6	*			0.12				0.05
7			0.07	0.11			0.03	0.04
8				0.09				0.04
9				0.10				0.04
10			0.07	0.11			0.03	0.04
11	0.07				0.04			
12	0.10				0.06			
13	0.10			0.17	0.07			0.07
14	*		0.17	0.27			0.07	0.11
15			0.06	0.09			0.02	0.04
16	0.07			0.15	0.04			0.06

Table A-11 (cont'd.): Furnace Filters with Licensed Contractor

Furnace Filters if installed alone and requiring licensed HVAC contractor, Single Family, Elec SH

Climate	Modified Participant Test				Utility Test			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	0.21				0.11			
2	0.17				0.09			
3	0.15				0.08			
4	0.14				0.07			
5	0.16				0.08			
6	*	0.10				0.07		
7			0.11				0.03	
8		0.09				0.06		
9		0.10				0.07		
10		0.11	0.15			0.08	0.05	
11	0.15				0.08			
12	0.16				0.08			
13	0.12	0.13			0.06	0.09		
14	*	0.17	0.22			0.11	0.07	
15		0.06	0.08			0.04	0.03	
16	0.15	*			0.08			

Furnace Filters if installed alone and requiring licensed HVAC contractor, Single Family, Gas SH

Climate	Modified Participant Test				Utility Test			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	0.17				0.11			
2	0.14				0.09			
3	0.17				0.11			
4	0.13			0.31	0.09			0.13
5	0.12			0.23	0.08			0.09
6	*			0.22				0.09
7			0.13	0.21			0.05	0.08
8				0.17				0.07
9				0.19				0.08
10			0.13	0.21			0.05	0.08
11	0.16				0.10			
12	0.20				0.13			
13	0.17			0.31	0.11			0.13
14	*		0.32	0.51			0.13	0.21
15			0.11	0.17			0.04	0.07
16	0.13			0.28	0.09			0.12

Table A-12: Furnace Repair

Gas Furnace Repair, Multi-Family

Program B/C	0.56	1.17	0.71	0.61	0.32	0.78	0.35	0.18
Climate	**Modified Participant Test**				**Utility Test**			
Zone	**PG&E**	**SCE**	**SDG&E**	**SoCal**	**PG&E**	**SCE**	**SDG&E**	**SoCal**
1	0.57				0.63			
2	0.42				0.46			
3	0.37				0.41			
4	0.34				0.38			
5	0.26				0.29			
6	*							
7			0.97				0.63	
8								
9								
10			1.19				0.77	
11	0.40				0.44			
12	0.36				0.40			
13	0.33				0.36			
14	*		1.19				0.77	
15			0.42				0.27	
16	0.48				0.53			

Gas Furnace Repair, Mobile Home

Climate	**Modified Participant Test**				**Utility Test**			
Zone	**PG&E**	**SCE**	**SDG&E**	**SoCal**	**PG&E**	**SCE**	**SDG&E**	**SoCal**
1	0.58				0.64			
2	0.46				0.51			
3	0.37				0.41			
4	0.35			0.00	0.39			0.00
5	0.26			0.36	0.28			0.24
6	*			0.32				0.21
7			0.98	0.31			0.63	0.21
8				0.22				0.15
9				0.27				0.18
10			1.15	0.31			0.74	0.21
11	0.40				0.44			
12	0.36				0.40			
13	0.33			0.57	0.36			0.38
14	*		1.15	0.57			0.74	0.38
15			0.40	0.20			0.26	0.14
16	0.32			0.27	0.35			0.18

Gas Furnace Repair, Single Family

Climate	**Modified Participant Test**				**Utility Test**			
Zone	**PG&E**	**SCE**	**SDG&E**	**SoCal**	**PG&E**	**SCE**	**SDG&E**	**SoCal**
1	0.58				0.64			
2	0.46				0.51			
3	0.37				0.41			
4	0.35			0.48	0.39			0.32
5	0.26			0.36	0.28			0.24
6	*			0.32				0.21
7			0.97	0.32			0.63	0.21
8				0.22				0.15
9				0.27				0.18
10			1.09	0.31			0.71	0.21
11	0.40				0.44			
12	0.36				0.40			
13	0.33			0.57	0.36			0.38
14	*		1.37	0.57			0.89	0.38
15			0.32	0.20			0.21	0.14
16	0.32			0.31	0.35			0.21

Table A-13: Furnace Replacement

Gas Furnace Replacement, Multi-Family

Program B/C	0.56	1.17	0.71	0.61	0.32	0.78	0.35	0.18
Climate	**Modified Participant Test**				**Utility Test**			
Zone	**PG&E**	**SCE**	**SDG&E**	**SoCal**	**PG&E**	**SCE**	**SDG&E**	**SoCal**
1	0.74				0.80			
2	0.56				0.61			
3	0.47				0.51			
4	0.45				0.48			
5	0.34				0.37			
6	*							
7			0.05				0.03	
8								
9								
10			0.06				0.04	
11	0.52				0.57			
12	0.47				0.51			
13	0.42				0.45			
14	*		0.09				0.06	
15			0.04				0.02	
16	0.62				0.68			

Gas Furnace Replacement, Mobile Home

Climate	**Modified Participant Test**				**Utility Test**			
Zone	**PG&E**	**SCE**	**SDG&E**	**SoCal**	**PG&E**	**SCE**	**SDG&E**	**SoCal**
1	1.53				1.66			
2	0.56				0.61			
3	0.53				0.58			
4	0.44			0.49	0.48			0.32
5	0.68			0.18	0.74			0.12
6	*			0.17				0.11
7			0.15	0.46			0.10	0.30
8				0.13				0.09
9				0.13				0.09
10			0.18	0.20			0.12	0.13
11	0.51				0.55			
12	0.47				0.51			
13	0.42			1.27	0.45			0.84
14	*		0.18	0.29			0.12	0.19
15			0.07	0.13			0.05	0.09
16	0.85			0.33	0.92			0.22

Gas Furnace Replacement, Single Family

Climate	**Modified Participant Test**				**Utility Test**			
Zone	**PG&E**	**SCE**	**SDG&E**	**SoCal**	**PG&E**	**SCE**	**SDG&E**	**SoCal**
1	1.26				1.37			
2	0.56				0.61			
3	0.53				0.58			
4	0.44			0.29	0.48			0.20
5	0.56			0.23	0.61			0.15
6	*			0.21				0.14
7			0.15	0.38			0.10	0.25
8				0.15				0.10
9				0.17				0.12
10			0.18	0.19			0.12	0.13
11	0.51				0.55			
12	0.47				0.51			
13	0.42			0.36	0.45			0.24
14	*		0.20	0.36			0.13	0.24
15			0.06	0.14			0.04	0.09
16	0.70			0.34	0.76			0.22

Table A-14: Minor Repairs

Minor Home Repairs, Multi-Family, Electric SH

Program B/C	0.56	1.17	0.71	0.61	0.32	0.78	0.35	0.18
Climate	**Modified Participant Test**				**Utility Test**			
Zone	**PG&E**	**SCE**	**SDG&E**	**SoCal**	**PG&E**	**SCE**	**SDG&E**	**SoCal**
1	10.37				1.72			
2	10.20				1.69			
3	4.12				0.68			
4	1.80				0.30			
5	2.70				0.45			
6	*	0.71				0.06		
7			1.09				0.16	
8		0.78				0.07		
9		1.24				0.10		
10		1.78	1.33			0.15	0.19	
11	3.89				0.64			
12	5.43				0.90			
13	1.52	2.10			0.25	0.18		
14	*	2.74	1.34			0.23	0.19	
15		4.74	1.28			0.40	0.18	
16	27.38	*			4.54			

Minor Home Repairs, Multi-Family, Gas SH

Climate	**Modified Participant Test**				**Utility Test**			
Zone	**PG&E**	**SCE**	**SDG&E**	**SoCal**	**PG&E**	**SCE**	**SDG&E**	**SoCal**
1	2.55				0.53			
2	2.38				0.49			
3	2.03				0.42			
4	1.56			1.51	0.32			0.12
5	2.50			0.97	0.52			0.08
6	*			0.97				0.08
7			1.12	0.88			0.20	0.07
8				0.67				0.05
9				0.71				0.06
10			1.63	0.84			0.29	0.07
11	1.60				0.32			
12	2.41				0.49			
13	1.56			1.56	0.31			0.13
14	*		1.35	1.56			0.24	0.13
15			1.35	0.63			0.22	0.05
16	2.20			0.93	0.45			0.07

Table A-14 (cont'd.): Minor Repair

Minor Home Repairs, Mobile Home, Electric SH

Climate	Modified Participant Test				Utility Test			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	2.66				0.44			
2	3.16				0.52			
3	2.35				0.39			
4	2.24				0.37			
5	2.43				0.40			
6	*	3.79				0.32		
7			1.07				0.15	
8		3.34				0.28		
9		4.36				0.37		
10		4.96	1.34			0.42	0.19	
11	0.95				0.16			
12	2.36				0.39			
13	0.99	6.72			0.16	0.56		
14	*	7.75	1.12			0.65	0.16	
15		6.79	1.10			0.57	0.16	
16	0.67	*			0.11			

Minor Home Repairs, Mobile Home, Gas SH

Climate	Modified Participant Test				Utility Test			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	0.93				0.19			
2	3.16				0.65			
3	1.41				0.29			
4	2.25			1.23	0.46			0.10
5	2.44			0.79	0.51			0.06
6	*			0.55				0.04
7			1.31	0.99			0.24	0.08
8				0.51				0.04
9				0.65				0.05
10			2.06	0.68			0.37	0.05
11	1.00				0.20			
12	2.14				0.44			
13	2.19			1.26	0.44			0.10
14	*		1.64	1.26			0.30	0.10
15			1.52	0.72			0.25	0.06
16	0.45			3.28	0.09			0.26

Table A-14 (cont'd.): Minor Repairs

Minor Home Repairs, Single Family, Electric SH

Climate	Modified Participant Test				Utility Test			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	3.32				0.55			
2	4.11				0.68			
3	8.78				1.45			
4	1.30				0.22			
5	1.14				0.19			
6	*	3.68				0.31		
7			1.56				0.22	
8		3.63				0.30		
9		3.61				0.30		
10		4.11	1.89			0.34	0.27	
11	1.31				0.22			
12	1.98				0.33			
13	0.98	5.20			0.16	0.44		
14	*	6.28	1.88			0.53	0.27	
15		3.74	1.74			0.31	0.25	
16	0.70	*			0.12			

Minor Home Repairs, Single Family, Gas SH

Climate	Modified Participant Test				Utility Test			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	1.87				0.39			
2	2.06				0.43			
3	1.82				0.38			
4	1.86			2.46	0.39			0.20
5	1.97			1.61	0.41			0.13
6	*			2.29				0.18
7			2.28	1.65			0.41	0.13
8				1.47				0.12
9				1.54				0.12
10			2.68	1.57			0.48	0.13
11	2.06				0.42			
12	2.45				0.50			
13	1.06			2.80	0.22			0.23
14	*		3.30	3.24			0.60	0.26
15			2.03	1.06			0.33	0.09
16	3.30			2.46	0.67			0.20

Table A-15: Setback Thermostats with Other Measures

Setback Thermostats if installed with furnace repair or replacement or if not requiring licensed HVAC contractor, Multi-Family, Electric SH

Program B/C	0.56	1.17	0.71	0.61	0.32	0.78	0.35	0.18
Climate	**Modified Participant Test**				**Utility Test**			
Zone	**PG&E**	**SCE**	**SDG&E**	**SoCal**	**PG&E**	**SCE**	**SDG&E**	**SoCal**
1	0.02				0.01			
2	0.02				0.01			
3	0.01				0.01			
4	0.02				0.01			
5	0.01				0.01			
6	0.01	0.13			0.01	0.09		
7			0.03				0.02	
8		0.14				0.09		
9		0.18				0.12		
10		0.22	0.07			0.14	0.03	
11	0.04				0.03			
12	0.04				0.02			
13	0.06	0.33			0.03	0.22		
14	0.05	0.34	0.10		0.03	0.23	0.04	
15		0.43	0.23			0.28	0.10	
16	0.04	0.26			0.02	0.18		

Setback Thermostats if installed with furnace repair or replacement or if not requiring licensed HVAC contractor, Multi-Family, Gas SH

Climate	**Modified Participant Test**				**Utility Test**			
Zone	**PG&E**	**SCE**	**SDG&E**	**SoCal**	**PG&E**	**SCE**	**SDG&E**	**SoCal**
1	0.19				0.13			
2	0.14				0.10			
3	0.11				0.08			
4	0.11			0.25	0.08			0.12
5	0.08			0.19	0.06			0.09
6	0.08			0.19	0.06			0.09
7			0.16	0.19			0.08	0.09
8				0.16				0.07
9				0.16				0.07
10			0.20	0.19			0.11	0.09
11	0.15				0.11			
12	0.12				0.09			
13	0.15			0.25	0.10			0.12
14	0.17		0.33	0.34	0.12		0.17	0.16
15			0.32	0.12			0.15	0.06
16	0.17			0.34	0.12			0.16

Table A-15 (cont'd.): Setback Thermostats with Other Measures

Setback Thermostats if installed with furnace repair or replacement or if not requiring licensed HVAC contractor, Mobile Home, Elec SH

Climate	Modified Participant Test				Utility Test			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	0.38				0.22			
2	0.28				0.16			
3	0.23				0.13			
4	0.20				0.12			
5	0.23				0.13			
6	0.16	0.20			0.09	0.13		
7			0.25				0.11	
8		0.18				0.12		
9		0.24				0.16		
10		0.29	0.37			0.19	0.16	
11	0.27				0.15			
12	0.00				0.00			
13	0.24	0.43			0.14	0.29		
14	0.00	0.47	0.57		0.00	0.31	0.25	
15		0.52	0.40			0.35	0.17	
16	0.31				0.18			

Setback Thermostats if installed with furnace repair or replacement or if not requiring licensed HVAC contractor, Mobile Home, Gas SH

Climate	Modified Participant Test				Utility Test			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	0.30				0.21			
2	0.13				0.09			
3	0.10				0.07			
4	0.13			0.29	0.09			0.14
5	0.09			0.23	0.07			0.11
6	0.09			0.21	0.06			0.10
7			0.16	0.19			0.09	0.09
8				0.16				0.07
9				0.17				0.08
10			0.18	0.21			0.09	0.10
11	0.13				0.09			
12	0.15				0.10			
13	0.15			0.29	0.10			0.14
14	0.24		0.26	0.49	0.17		0.13	0.23
15			0.27	0.16			0.12	0.07
16	0.19			0.28	0.14			0.13

Table A-15 (cont'd.): Setback Thermostats with Other Measures

Setback Thermostats if installed with furnace repair or replacement or if not requiring licensed HVAC contractor, Single Family, Elec SH

Climate	Modified Participant Test				Utility Test			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	0.37				0.21			
2	0.28				0.17			
3	0.23				0.13			
4	0.20				0.12			
5	0.22				0.12			
6	0.16	0.20			0.09	0.13		
7			0.26				0.11	
8		0.18				0.12		
9		0.24				0.16		
10		0.29	0.43			0.19	0.19	
11	0.30				0.17			
12	0.18				0.10			
13	0.25	0.43			0.15	0.29		
14	0.34	0.47	0.68		0.20	0.31	0.30	
15		0.52	0.72			0.35	0.31	
16	0.33	0.43			0.19	0.29		

Setback Thermostats if installed with furnace repair or replacement or if not requiring licensed HVAC contractor, Single Family, Gas SH

Climate	Modified Participant Test				Utility Test			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	0.23				0.17			
2	0.24				0.17			
3	0.21				0.15			
4	0.19			0.42	0.14			0.20
5	0.13			0.32	0.09			0.15
6	0.13			0.30	0.09			0.14
7			0.26	0.27			0.14	0.13
8				0.22				0.11
9				0.25				0.12
10			0.34	0.30			0.17	0.14
11	0.24				0.17			
12	0.23				0.16			
13	0.23			0.42	0.16			0.20
14	0.38		0.75	0.69	0.26		0.39	0.33
15			0.71	0.22			0.33	0.11
16	0.22			0.40	0.15			0.19

Table A-16: Setback Thermostats with Licensed Contractor

Setback Thermostats if installed alone and requiring licensed HVAC contractor, Multi-Family, Electric SH

Program B/C	0.56	1.17	0.71	0.61	0.32	0.78	0.35	0.18
Climate	**Modified Participant Test**				**Utility Test**			
Zone	**PG&E**	**SCE**	**SDG&E**	**SoCal**	**PG&E**	**SCE**	**SDG&E**	**SoCal**
1	0.01				0.01			
2	0.02				0.01			
3	0.01				0.01			
4	0.01				0.01			
5	0.01				0.01			
6	0.01	0.04			0.00	0.03		
7			0.01				0.01	
8		0.04				0.03		
9		0.05				0.04		
10		0.06	0.03			0.04	0.01	
11								
12								
13		0.10				0.07		
14		0.10	0.04			0.07	0.02	
15		0.13	0.09			0.09	0.04	
16	0.03	0.08			0.01	0.05		

Setback Thermostats if installed alone and requiring licensed HVAC contractor, Multi-Family, Gas SH

Climate	**Modified Participant Test**				**Utility Test**			
Zone	**PG&E**	**SCE**	**SDG&E**	**SoCal**	**PG&E**	**SCE**	**SDG&E**	**SoCal**
1	0.13				0.09			
2	0.09				0.07			
3	0.08				0.06			
4	0.08			0.11	0.06			0.05
5	0.06			0.08	0.04			0.04
6	0.06			0.08	0.04			0.04
7			0.06	0.08			0.03	0.04
8				0.07				0.03
9				0.07				0.03
10			0.08	0.08			0.04	0.04
11								
12								
13				0.11				0.05
14			0.13	0.15			0.07	0.07
15			0.13	0.05			0.06	0.03
16	0.12			0.15	0.08			0.07

Table A-16 (cont'd.): Setback Thermostats with Licensed Contractor

Setback Thermostats if installed alone and requiring licensed HVAC contractor, Mobile Home, Elec SH

Climate	Modified Participant Test				Utility Test			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	0.27				0.15			
2	0.20				0.11			
3	0.16				0.09			
4	0.14				0.08			
5	0.16				0.09			
6	0.11	0.06			0.06	0.04		
7			0.10				0.04	
8		0.05				0.04		
9		0.07				0.05		
10		0.09	0.15			0.06	0.07	
11								
12								
13		0.13				0.09		
14		0.14	0.23			0.09	0.10	
15		0.16	0.16			0.11	0.07	
16	0.21				0.12			

Setback Thermostats if installed alone and requiring licensed HVAC contractor, Mobile Home, Gas SH

Climate	Modified Participant Test				Utility Test			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	0.21				0.15			
2	0.09				0.06			
3	0.07				0.05			
4	0.09			0.13	0.06			0.06
5	0.06			0.10	0.05			0.05
6	0.06			0.09	0.04			0.04
7			0.07	0.08			0.04	0.04
8				0.07				0.03
9				0.07				0.04
10			0.07	0.09			0.04	0.04
11								
12								
13				0.13				0.06
14			0.10	0.21			0.05	0.10
15			0.11	0.07			0.05	0.03
16	0.13			0.12	0.10			0.06

Table A-16 (cont'd.): Setback Thermostats with Licensed Contractor

Setback Thermostats if installed alone and requiring licensed HVAC contractor, Single Family, Elec SH

Climate	Modified Participant Test				Utility Test			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	0.26				0.15			
2	0.20				0.11			
3	0.16				0.11			
4	0.14				0.09			
5	0.15				0.08			
6	0.11				0.09			
7		0.06			0.06	0.04		
8			0.11				0.05	
9		0.05				0.04		
10		0.07				0.05		
11		0.09	0.17			0.06	0.08	
12								
13								
14		0.13				0.09		
15		0.14	0.28			0.09	0.12	
16	0.23	0.16	0.29			0.11	0.13	

Setback Thermostats if installed alone and requiring licensed HVAC contractor, Single Family, Gas SH

Climate	Modified Participant Test				Utility Test			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	0.23	0.13			0.13	0.09		
2	0.16				0.11			
3	0.16				0.12			
4	0.15				0.11			
5	0.13			0.18	0.09			0.09
6	0.09			0.14	0.06			0.07
7	0.09			0.13	0.06			0.06
8			0.10	0.12			0.06	0.06
9				0.10				0.05
10				0.11				0.05
11			0.14	0.13			0.07	0.06
12								
13								
14				0.18				0.09
15			0.31	0.30			0.16	0.14
16			0.29	0.10			0.13	0.05

Table A-17: Weatherstripping, Attic

Weatherstripping Attic, Multi-Family, Electric SH

Program B/C	0.56	1.17	0.71	0.61	0.32	0.78	0.35	0.18
Climate	**Modified Participant Test**				**Utility Test**			
Zone	**PG&E**	**SCE**	**SDG&E**	**SoCal**	**PG&E**	**SCE**	**SDG&E**	**SoCal**
1	0.22				0.11			
2	0.14				0.07			
3	0.13				0.06			
4	0.12				0.06			
5	0.15				0.07			
6	*	0.06				0.02		
7								
8		0.06				0.02		
9		0.07				0.03		
10		0.08				0.03		
11	0.16				0.08			
12	0.16				0.08			
13	0.12	0.08			0.06	0.03		
14	*	0.12				0.04		
15		0.05				0.02		
16	0.13	*			0.06			

Weatherstripping Attic, Multi-Family, Gas SH

Climate	**Modified Participant Test**				**Utility Test**			
Zone	**PG&E**	**SCE**	**SDG&E**	**SoCal**	**PG&E**	**SCE**	**SDG&E**	**SoCal**
1	0.25				0.15			
2	0.22				0.13			
3	0.23				0.14			
4	0.23				0.14			
5	0.17				0.10			
6	*							
7								
8								
9								
10								
11	0.20				0.12			
12	0.22				0.13			
13	0.23				0.13			
14	*							
15								
16	0.20				0.12			

Table A-17 (cont'd.): Weatherstripping, Attic

Weatherstripping Attic, Single Family, Electric SH

Climate	Modified Participant Test				Utility Test			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	0.37				0.18			
2	0.32				0.15			
3	0.31				0.15			
4	0.28				0.14			
5	0.27				0.13			
6	*	0.24				0.08		
7								
8		0.22				0.08		
9		0.25				0.09		
10		0.27				0.10		
11	0.25				0.12			
12	0.28				0.13			
13	0.24	0.34			0.11	0.12		
14	*	0.42				0.15		
15		0.26				0.09		
16	0.20	*			0.10			

Weatherstripping Attic, Single Family, Gas SH

Climate	Modified Participant Test				Utility Test			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	0.28				0.17			
2	0.26				0.16			
3	0.32				0.19			
4	0.31				0.18			
5	0.35				0.21			
6	*							
7								
8								
9								
10								
11	0.33				0.20			
12	0.39				0.23			
13	0.35				0.20			
14	*							
15								
16	0.23				0.13			

Table A-18: Weatherstripping, Door

Weatherstripping Door, Multi-Family, Electric SH

Program B/C	0.56	1.17	0.71	0.61	0.32	0.78	0.35	0.18
Climate	**Modified Participant Test**				**Utility Test**			
Zone	**PG&E**	**SCE**	**SDG&E**	**SoCal**	**PG&E**	**SCE**	**SDG&E**	**SoCal**
1	0.35				0.17			
2	0.32				0.15			
3	0.22				0.10			
4	0.29				0.14			
5	0.30				0.14			
6	*	0.10				0.03		
7			0.35				0.13	
8		0.09				0.03		
9		0.11				0.04		
10		0.11	0.42			0.04	0.15	
11	0.29				0.14			
12	0.24				0.11			
13	0.17	0.13			0.08	0.04		
14	*	0.19	0.42			0.07	0.15	
15		0.08	0.27			0.03	0.10	
16	0.35	*			0.17			

Weatherstripping Door, Multi-Family, Gas SH

Climate	**Modified Participant Test**				**Utility Test**			
Zone	**PG&E**	**SCE**	**SDG&E**	**SoCal**	**PG&E**	**SCE**	**SDG&E**	**SoCal**
1	0.15				0.09			
2	0.15				0.09			
3	0.12				0.07			
4	0.12			0.23	0.07			0.09
5	0.13			0.16	0.08			0.06
6	*			0.15				0.06
7			0.52	0.13			0.23	0.05
8				0.11				0.04
9				0.11				0.04
10			0.47	0.13			0.21	0.05
11	0.12				0.07			
12	0.12				0.07			
13	0.14			0.24	0.08			0.09
14	*		0.43	0.24			0.19	0.09
15			0.32	0.10			0.14	0.04
16	0.14			0.15	0.08			0.06

Table A-18 (cont'd.): Weatherstripping, Door

Weatherstripping Door, Mobile Home, Electric SH

Climate	Modified Participant Test				Utility Test			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	0.39				0.19			
2	0.20				0.09			
3	0.15				0.07			
4	0.10				0.05			
5	0.11				0.05			
6	*	0.12				0.04		
7			0.20				0.07	
8		0.10				0.04		
9		0.13				0.05		
10		0.13	0.24			0.05	0.09	
11	0.18				0.09			
12	0.13				0.06			
13	0.14	0.16			0.07	0.06		
14	*	0.20	0.20			0.07	0.07	
15		0.11	0.11			0.04	0.04	
16	0.21	*			0.10			

Weatherstripping Door, Mobile Home, Gas SH

Climate	Modified Participant Test				Utility Test			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	0.12				0.07			
2	0.13				0.08			
3	0.10				0.06			
4	0.10			0.15	0.06			0.06
5	0.11			0.10	0.06			0.04
6	*			0.07				0.03
7			0.55	0.08			0.25	0.03
8				0.06				0.02
9				0.08				0.03
10			0.50	0.09			0.23	0.03
11	0.12				0.07			
12	0.13				0.07			
13	0.14			0.15	0.08			0.06
14	*		0.46	0.15			0.21	0.06
15			0.31	0.08			0.14	0.03
16	0.15			0.09	0.09			0.03

Table A-18 (cont'd.): Weatherstripping, Door

Weatherstripping Door, Single Family, Electric SH

Climate	Modified Participant Test				Utility Test			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	0.16				0.08			
2	0.16				0.08			
3	0.14				0.07			
4	0.11				0.05			
5	0.18				0.09			
6	*	0.13				0.05		
7			0.20				0.07	
8		0.12				0.04		
9		0.14				0.05		
10		0.15	0.24			0.05	0.09	
11	0.14				0.06			
12	0.12				0.06			
13	0.10	0.19			0.05	0.07		
14	*	0.23	0.24			0.08	0.09	
15		0.14	0.19			0.05	0.07	
16	0.23	*			0.11			

Weatherstripping Door, Single Family, Gas SH

Climate	Modified Participant Test				Utility Test			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	0.10				0.06			
2	0.12				0.07			
3	0.12				0.07			
4	0.12			0.17	0.07			0.07
5	0.10			0.14	0.06			0.05
6	*			0.28				0.11
7			0.48	0.16			0.22	0.06
8				0.17				0.07
9				0.16				0.06
10			0.56	0.14			0.25	0.05
11	0.14				0.08			
12	0.13				0.08			
13	0.14			0.24	0.08			0.09
14	*		0.77	0.31			0.35	0.12
15			0.33	0.09			0.14	0.03
16	0.12			0.24	0.07			0.09

Table A-19: Whole House Fans

Whole House Fans, Single Family

Program B/C	0.56	1.17	0.71	0.61	0.32	0.78	0.35	0.18
Climate	**Modified Participant Test**				**Utility Test**			
Zone	**PG&E**	**SCE**	**SDG&E**	**SoCal**	**PG&E**	**SCE**	**SDG&E**	**SoCal**
1	0.00				0.00			
2	0.06				0.04			
3	0.01				0.01			
4	0.03				0.02			
5	0.00				0.00			
6	0.02	0.04			0.01	0.03		
7			0.12				0.05	
8		0.16				0.11		
9		0.08				0.05		
10		0.52	0.95			0.35	0.42	
11	0.07				0.04			
12	0.11				0.06			
13	0.17	0.24			0.10	0.17		
14	0.40	0.72	0.33		0.24	0.49	0.15	
15		0.38	0.18			0.26	0.08	
16	0.18	0.32			0.11	0.22		

Appendix B

Measure Installation Costs and Energy Savings Estimates

Table B-1 through Table B-19 present the measure level per household installation costs and energy savings used in the analysis. While reviewing these tables, it may be helpful to note the following:

- Energy savings estimates for some climate zones were interpolated using an average estimate for that measure and previously used estimates.
- Energy savings estimates for CFLs were converted to per household savings using the average number of bulbs per household expected to be installed in 2003. These per household savings are reflected in Table B-1.
- Energy savings estimates for duct testing and sealing were scaled by the percentage of homes tested that are also sealed. These savings are reflected in Table B-6.
- With the exception of the rapid deployment measures, energy savings estimates for weather sensitive measures were not available for PG&E in climate zones 6 and 14 and for SCE in climate zone 16.

Table B-1: Non Weather Sensitive Measures

	Per Unit Cost				Annual Savings Therms				Annual Savings kWh Space Heating & Other				Annual Savings kWh AC			
Measure	**PG&E**	**SCE**	**SDG&E**	**SoCal**	**PG&E**	**SCE**	**SDG&E**	**SoCal**	**PG&E**	**SCE**	**SDG&E**	**SoCal**	**PG&E**	**SCE**	**SDG&E**	**SoCal**
CFL Porch Lights																
Multi-family	78.66	60.00	43.33						24.20	24.20	24.20					
Mobile Home	78.70	60.00	43.33						24.20	24.20	24.20					
Single Family	77.33	60.00	43.33						35.60	35.60	35.60					
CFLs																
Multi-family	63.00	4.00	49.38						65.60	32.80	44.28					
Mobile Home	63.00	4.00	49.38						65.60	32.80	44.28					
Single Family	63.00	4.00	49.38						94.80	47.40	63.99					
Faucet Aerators																
MF, Electric WH	7.22	10.00	8.40						26.50	26.50	26.50					
MF, Gas WH	7.83		8.40	7.64	2.60		2.60	2.60								
MH, Electric WH	9.41	10.00	8.40						26.50	26.50	26.50					
MH, Gas WH	9.28		8.40	8.54	2.60		2.60	2.60								
SF, Electric WH	9.39	10.00	8.40						43.40	43.40	43.40					
SF, Gas WH	8.93		8.40	8.54	3.60		3.60	3.60								
Low Flow Showerheads																
MF, Electric WH	23.31	26.00	27.29						66.60	66.60	66.60					
MF, Gas WH	24.57		27.29	14.79	7.20		7.20	7.20								
MH, Electric WH	28.79	26.00	27.29						66.60	66.60	66.60					
MH, Gas WH	28.14		27.29	17.13	7.20		7.20	7.20								
SF, Electric WH	28.75	26.00	27.29						108.70	108.70	108.70					
SF, Gas WH	28.44		27.29	17.13	8.20		8.20	8.20								
Outlet Gaskets																
MF, Electric SH	13.38	20.00	6.57						5.52	3.38	3.04		-0.20	-0.05	-0.10	
MF, Gas SH	14.86		6.57	17.00	0.24	0.14	0.13	0.15					-0.20	-0.05	-0.10	
MH, Electric SH	18.68	20.00	6.57						7.99	5.62	5.33		0.12	0.18	0.40	
MH, Gas SH	21.94		6.57	17.00	0.34	0.24	0.23	0.24					0.12	0.18	0.40	
SF, Electric SH	23.27	20.00	6.57						7.99	5.62	5.33		0.12	0.18	0.40	
SF, Gas SH	21.62		6.57	17.00	0.34	0.24	0.23	0.24					0.12	0.18	0.40	
Refrigerators																
Multi-family	617.00	530.00	683.63						665.10	665.10	665.10					
Mobile Home	617.00	530.00	683.63						665.10	665.10	665.10					
Single Family	617.00	530.00	683.63						794.80	794.80	794.80					
Water Heater Blankets																
MF, Electric WH	26.55	40.00	34.09						88.50	88.50	88.50					
MF, Gas WH	27.82		34.09	34.57	9.20		9.20	9.20								
MH, Electric WH	27.37	40.00	34.09						88.50	88.50	88.50					
MH, Gas WH	28.86		34.09	33.83	9.20		9.20	9.20								
SF, Electric WH	27.75	40.00	34.09						145.30	145.30	145.30					
SF, Gas WH	26.75		34.09	33.83	11.30		11.30	11.30								
Water Heater Pipe Wrap																
MF, Electric WH	8.02	12.00	13.42						35.40	35.40	35.40					
MF, Gas WH	8.31		13.42	13.43	3.60		3.60	3.60								
MH, Electric WH	12.58	12.00	13.42						35.40	35.40	35.40					
MH, Gas WH	9.47		13.42	13.43	3.60		3.60	3.60								
SF, Electric WH	11.58	12.00	13.42						58.10	58.10	58.10					
SF, Gas WH	9.42		13.42	13.43	4.60		4.60	4.60								
Water Heater																
MF, Electric WH	860.00	350.00	839.84						118.00	118.00	118.00					
MF, Gas WH	860.00		688.67	700.00	9.50		9.50	9.50								
MH, Electric WH	860.00	350.00	839.84						193.23	193.23	193.23					
MH, Gas WH	860.00		688.67	700.00	19.00		19.00	19.00								
SF, Electric WH	860.00	350.00	839.84						193.23	193.23	193.23					
SF, Gas WH	860.00		688.67	700.00	19.00		19.00	19.00								

Table B-2: Central Air Conditioning

Central Air Conditioning, Multi-Family

Climate	Per Unit Cost				Annual Savings Therms				Annual Savings kWh Space Heating & Other				Annual Savings kWh AC			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	2700.00												0.30			
2	2700.00												54.89			
3	2700.00												16.29			
4	2700.00												46.75			
5	2700.00												3.62			
6	2700.00	2644.00											27.44	27.86		
7			2425.79												60.04	
8		2644.00												39.19		
9		2644.00												47.10		
10		2644.00	2425.79											216.30	142.61	
11	2700.00												188.19			
12	2700.00												122.20			
13	2700.00	2644.00											340.60	288.71		
14	2700.00	2644.00	2425.79										201.76	204.82	204.76	
15		2644.00	2425.79											572.90	606.93	
16	2700.00	2644.00											161.05	163.49		

Central Air Conditioning, Mobile Home

Climate	Per Unit Cost				Annual Savings Therms				Annual Savings kWh Space Heating & Other				Annual Savings kWh AC			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	2700.00															
2	2700.00												80.61			
3	2700.00												17.52			
4	2700.00												37.15			
5	2700.00												4.56			
6	2700.00	2644.00											28.39	95.50		
7			2425.79												22.95	
8		2644.00												152.30		
9		2644.00												205.00		
10		2644.00	2425.79											253.00	164.30	
11	2700.00												235.70			
12	2700.00												217.50			
13	2700.00	2644.00											347.90	811.10		
14	2700.00	2644.00	2425.79										310.87	268.80	195.00	
15		2644.00	2425.79											1625.26	293.72	
16	2700.00	2644.00											189.61	413.97		

Central Air Conditioning, Single Family

Climate	Per Unit Cost				Annual Savings Therms				Annual Savings kWh Space Heating & Other				Annual Savings kWh AC			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	2700.00															
2	2700.00												78.52			
3	2700.00												17.20			
4	2700.00												36.19			
5	2700.00												4.44			
6	2700.00	2644.00											27.65	33.09		
7			2425.79												67.78	
8		2644.00												95.50		
9		2644.00												152.30		
10		2644.00	2425.79											205.00	201.34	
11	2700.00												233.00			
12	2700.00												205.40			
13	2700.00	2644.00											342.10	253.00		
14	2700.00	2644.00	2425.79										302.80	268.60	362.40	
15		2644.00	2425.79											573.00	867.64	
16	2700.00	2644.00											184.69	221.04		

Table B-3: Room Air Conditioning

Room Air Conditioning, Multi-Family

Climate	Per Unit Cost				Annual Savings Therms				Annual Savings kWh Space Heating & Other				Annual Savings kWh AC			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	750.00															
2	750.00												52.09			
3	750.00												15.32			
4	750.00												44.12			
5	750.00												3.68			
6	750.00	987.00											25.74	25.74		
7			673.66												26.96	
8		987.00												36.77		
9		987.00												81.51		
10		987.00	673.66											132.98	128.70	
11	750.00												177.72			
12	750.00												144.01			
13	750.00	987.00											269.03	196.90		
14	750.00	987.00	673.66										190.59	281.90	183.00	
15		987.00	673.66											445.80	272.50	
16	750.00	987.00											151.98			

Room Air Conditioning, Mobile Home

Climate	Per Unit Cost				Annual Savings Therms				Annual Savings kWh Space Heating & Other				Annual Savings kWh AC			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	750.00															
2	750.00												65.57			
3	750.00												14.09			
4	750.00												30.03			
5	750.00												3.68			
6	750.00	987.00											23.29	23.29		
7			673.66												22.79	
8		987.00												37.38		
9		987.00												88.86		
10		987.00	673.66											140.34	67.73	
11	750.00												187.52			
12	750.00												169.75			
13	750.00	987.00											302.12	302.12		
14	750.00	987.00	673.66										252.48	252.48	121.93	
15		987.00	673.66											604.85	291.81	
16	750.00	987.00											154.43	154.43		

Room Air Conditioning, Single Family

Climate	Per Unit Cost				Annual Savings Therms				Annual Savings kWh Space Heating & Other				Annual Savings kWh AC			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	750.00															
2	750.00												65.57			
3	750.00												14.09			
4	750.00												30.03			
5	750.00												3.68			
6	750.00	987.00											23.29	23.29		
7			673.66												22.79	
8		987.00												37.38		
9		987.00												88.86		
10		987.00	673.66											140.34	67.73	
11	750.00												187.52			
12	750.00												169.75			
13	750.00	987.00											302.12	302.12		
14	750.00	987.00	673.66										252.48	252.48	121.93	
15		987.00	673.66											604.85	291.81	
16	750.00	987.00											154.43	154.43		

Table B-4: Caulking – Multifamily

Caulking, Multi-Family, Electric SH

Climate	Per Unit Cost				Annual Savings Therms				Annual Savings kWh Space Heating & Other				Annual Savings kWh AC			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	41.92								19.30							
2	44.31								13.60				0.60			
3	28.95								11.50				0.30			
4	27.01								10.60				0.60			
5	36.05								12.30				0.05			
6	36.05	92.00								7.10				0.70		
7			35.27								6.70				0.90	
8		92.00								7.10				0.70		
9		92.00								8.40				1.10		
10		92.00	35.27							8.60	8.00			1.60	1.20	
11	28.74								12.70				1.60			
12	30.35								11.80				1.40			
13	29.18	92.00							10.00	9.40			2.50	1.80		
14	29.18	92.00	35.27							13.80	8.20			2.51	1.20	
15		92.00	35.27							5.10	3.93			4.10	4.72	
16	25.75	92.00							16.70				1.00			

Caulking, Multi-Family, Gas SH

Climate	Per Unit Cost				Annual Savings Therms				Annual Savings kWh Space Heating & Other				Annual Savings kWh AC			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	57.93				2.40											
2	46.61				1.70								0.60			
3	33.22				1.50								0.30			
4	35.30			5.26	1.30			0.90					0.60			
5	29.87			5.26	1.50			0.90					0.05			
6	29.87			5.26				0.90								
7			35.27	5.26			2.20	0.87							0.90	
8				5.26				0.50								
9				5.26				0.60								
10			35.27	5.26			1.50	0.60							1.20	
11	38.09				1.50								1.60			
12	38.75				1.40								1.40			
13	35.73			5.26	1.40			1.40					2.50			
14	35.73		35.27	5.26			1.60	2.27							1.20	
15			35.27	5.26			1.00	0.70							4.72	
16	46.61			5.26	1.40			2.70					1.00			

Table B-4 (Cont.): Caulking – Mobile Homes

Caulking, Mobile Home, Electric SH

Climate	Per Unit Cost				Annual Savings Therms				Annual Savings kWh Space Heating & Other				Annual Savings kWh AC			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	51.50								19.50							
2	57.18								14.70				0.80			
3	57.18								11.10				0.80			
4	47.38								10.50				0.50			
5	47.38								11.61				0.05			
6	47.38	92.00								11.08				0.42		
7			45.91								6.70				0.70	
8		92.00								9.44				0.66		
9		92.00								10.90				1.56		
10		92.00	45.91							11.99	8.00			2.45	1.20	
11	53.03								12.10				1.90			
12	41.35								12.50				1.60			
13	37.77	92.00							9.90	13.62			2.50	5.27		
14	37.77	92.00	45.91							17.80	6.85			4.43	0.83	
15		92.00	45.91							6.72	2.59			10.59	3.99	
16	54.08	92.00							14.60				1.50			

Caulking, Mobile Home, Gas SH

Climate	Per Unit Cost				Annual Savings Therms				Annual Savings kWh Space Heating & Other				Annual Savings kWh AC			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	61.80				2.40											
2	60.81				2.50								0.80			
3	40.17				1.30								0.80			
4	35.53			13.15	1.30			1.40					0.50			
5	35.53			13.15	1.50			0.90					0.05			
6	61.80			13.15	1.02			0.90					0.34			
7			45.91	13.15			5.20	0.73							0.70	
8				13.15				0.50								
9				13.15				0.50								
10			45.91	13.15			3.70	0.80							1.20	
11	52.88				1.40								1.90			
12	52.21				2.10								1.60			
13	35.26			13.15	2.00			1.40					2.50			
14	30.90		45.91	13.15			3.90	1.40							0.83	
15			45.91	13.15			2.59	0.50							3.99	
16	51.50			13.15	1.40			0.80					1.50			

Table B-4 (Cont.): Caulking – Single Family

Caulking, Single Family, Electric SH

Climate	Per Unit Cost				Annual Savings Therms				Annual Savings kWh Space Heating & Other				Annual Savings kWh AC			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	56.08								28.80							
2	52.61								21.60				2.10			
3	42.70								17.90				1.10			
4	39.66								16.10				1.40			
5	39.14								17.70				0.10			
6	39.14	92.00								9.86				0.42		
7			45.91								9.90				2.30	
8		92.00								8.41				0.66		
9		92.00								9.70				1.56		
10		92.00	45.91							10.70	11.90			2.45	2.90	
11	47.43								18.80				4.40			
12	46.03								20.10				3.90			
13	50.84	92.00							14.80	12.13			6.20	5.27		
14	50.84	92.00	45.91							15.80	10.16			4.43	2.45	
15		92.00	45.91							5.98	3.83			10.59	11.72	
16	43.78	92.00							21.80				5.20			

Caulking, Single Family, Gas SH

Climate	Per Unit Cost				Annual Savings Therms				Annual Savings kWh Space Heating & Other				Annual Savings kWh AC			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	61.80				4.70											
2	59.53				3.30								2.10			
3	43.06				3.50								1.10			
4	40.49			13.15	3.30			2.40					1.40			
5	40.49			13.15	3.60			1.80					0.10			
6	40.49			13.15				4.50								
7			45.91	13.15			4.50	2.26							2.30	
8				13.15				1.90								
9				13.15				2.30								
10			45.91	13.15			5.30	2.10							2.90	
11	50.55				4.20								4.40			
12	53.19				4.30								3.90			
13	49.09			13.15	3.70			2.80					6.20			
14	51.50		45.91	13.15			7.34	2.80							2.45	
15			45.91	13.15			2.45	1.10							11.72	
16	51.21			13.15	2.90			3.20					5.20			

Table B-5: Ceiling Insulation – Multifamily

Ceiling Insulation, Multi-Family, Electric SH

Climate	Per Unit Cost				Annual Savings Therms				Annual Savings kWh Space Heating & Other				Annual Savings kWh AC			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	325.56								522.75							
2	325.56								375.07				18.54			
3	507.50								305.50				14.23			
4	507.50								270.42				18.76			
5	507.50								323.24				2.37			
6	507.50	200.00								149.94				28.34		
7			492.00								168.22				36.87	
8		200.00								143.49				40.18		
9		200.00								162.50				89.32		
10		200.00	492.00							171.11	233.26			146.00	87.76	
11	259.20								326.66				129.70			
12	259.20								281.60				112.80			
13	404.56	200.00							252.30	213.08			198.80	295.94		
14	404.56	200.00	492.00							284.82	388.28			209.85	126.14	
15		200.00	492.00							100.80	137.41			622.02	373.90	
16	325.56	200.00							426.91				100.70			

Ceiling Insulation, Multi-Family, Gas SH

Climate	Per Unit Cost				Annual Savings Therms				Annual Savings kWh Space Heating & Other				Annual Savings kWh AC			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	433.38				60.87											
2	433.38				45.00								18.54			
3	423.05				39.40								14.23			
4	469.63			383.16	33.50			32.36					18.76			
5	469.63			383.16	25.02			23.11					2.37			
6	469.63			383.16				23.20								
7			492.00	383.16			20.54	22.56							36.87	
8				383.16				14.30								
9				383.16				17.70								
10			492.00	383.16			25.02	19.90							87.76	
11	371.09				42.10								129.70			
12	485.32				35.00								112.80			
13	429.13			383.16	31.40			60.10					198.80			
14	429.13		492.00	383.16			42.94	42.53							126.14	
15			492.00	383.16			17.18	17.01							373.90	
16	433.38			383.16	38.40			19.90					100.70			

Table B-5 (Cont.): Ceiling Insulation – Single Family

Ceiling Insulation, Single Family, Electric SH

Climate	Per Unit Cost				Annual Savings Therms				Annual Savings kWh Space Heating & Other				Annual Savings kWh AC			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	444.60								466.06				0.23			
2	609.00								319.20				49.90			
3	418.19								295.60				25.70			
4	612.50								230.60				33.60			
5	612.50								274.81				4.16			
6	612.50	200.00								217.38				39.10		
7			492.00								146.90				49.70	
8		200.00								183.66				63.49		
9		200.00								212.72				151.38		
10		200.00	492.00							233.53	162.50			239.62	24.70	
11	692.89								284.10				105.80			
12	470.95								300.00				87.60			
13	712.56	200.00							220.10	266.17			249.90	515.12		
14	644.80	200.00	492.00							350.11	146.04			431.18	44.45	
15		200.00	492.00							133.44	55.66			1032.40	106.43	
16	602.01	200.00							366.50				171.40			

Ceiling Insulation, Single Family, Gas SH

Climate	Per Unit Cost				Annual Savings Therms				Annual Savings kWh Space Heating & Other				Annual Savings kWh AC			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	682.73				75.20								0.23			
2	506.99				52.90								49.90			
3	606.61				44.40								25.70			
4	628.32			465.62	40.50			37.38					33.60			
5	628.32			465.62	29.90			28.20					4.16			
6	628.32			465.62				26.50								
7			492.00	465.62			25.80	24.66							49.70	
8				465.62				18.10								
9				465.62				22.70								
10			492.00	465.62			27.90	24.30							24.70	
11	538.07				47.00								105.80			
12	594.42				42.60								87.60			
13	616.95			465.62	38.20			44.40					249.90			
14	616.95		492.00	465.62			45.52	47.60							44.45	
15			492.00	465.62			14.66	20.00							106.43	
16	527.80			465.62	45.20			30.10					171.40			

Table B-6: Duct Testing & Sealing – Multifamily

Duct Sealing & Testing, Multi-Family, Electric SH

Climate	Per Unit Cost				Annual Savings Therms				Annual Savings kWh Space Heating & Other				Annual Savings kWh AC			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	500.00								0.50				0.00			
2	500.00								0.36				0.79			
3	500.00								0.29				0.24			
4	500.00								0.28				0.67			
5	500.00								0.31				0.06			
6	500.00	290.00								0.33				2.24		
7			375.45								0.08				0.41	
8		290.00								0.31				11.76		
9		290.00								0.35				13.36		
10		290.00	375.45							0.37	0.11			14.00	0.96	
11	500.00								0.33				2.70			
12	500.00								0.32				10.75			
13	500.00	290.00							2.50	0.46			16.61	23.28		
14	500.00	290.00	375.45							0.62	0.18			16.51	1.38	
15		290.00	375.45							0.22	0.06			8.24	4.10	
16	500.00	290.00							2.50				16.61			

Duct Sealing & Testing, Multi-Family, Gas SH

Climate	Per Unit Cost				Annual Savings Therms				Annual Savings kWh Space Heating & Other				Annual Savings kWh AC			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	500.00				0.27								0.02			
2	500.00				0.20								3.98			
3	500.00				0.43								1.19			
4	500.00			500.00	0.17			0.29					3.38			
5	500.00			500.00	0.13			0.22					0.28			
6	500.00			500.00				0.22								
7			375.44	500.00			0.25	0.20							0.41	
8				500.00				0.17								
9				500.00				0.17								
10			375.44	500.00			0.18	0.22							0.96	
11	500.00				0.19								13.63			
12	500.00				0.72								10.75			
13	500.00			500.00	0.38			0.29					16.61			
14	500.00		375.44	500.00			2.30	0.39							1.38	
15			375.44	500.00			6.83	0.15							4.10	
16	500.00			500.00	0.23			0.41					11.65			

Table B-6 (Cont.): Duct Testing & Sealing – Mobile Homes

Duct Sealing & Testing, Mobile Home, Electric SH

Climate	Per Unit Cost				Annual Savings Therms				Annual Savings kWh Space Heating & Other				Annual Savings kWh AC			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	500.00								0.70				0.00			
2	500.00								0.52				1.11			
3	500.00								0.43				0.24			
4	500.00								0.38				0.51			
5	500.00								0.43				0.06			
6	500.00	290.00								0.51				2.22		
7			375.44								0.61				0.25	
8		290.00								0.43				3.59		
9		290.00								0.50				8.54		
10		290.00	375.44							0.55	0.84			13.53	1.10	
11	500.00								0.45				3.17			
12	500.00								0.43				2.86			
13	500.00	290.00							0.37	0.62			5.09	29.06		
14	500.00	290.00	375.44							0.82	1.26			24.34	1.36	
15		290.00	375.44							0.31	0.48			58.25	3.24	
16	500.00	290.00							0.54				2.60			

Duct Sealing & Testing, Mobile Home, Gas SH

Climate	Per Unit Cost				Annual Savings Therms				Annual Savings kWh Space Heating & Other				Annual Savings kWh AC			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	500.00				0.57								0.00			
2	500.00				0.42								1.11			
3	500.00				0.37								0.24			
4	500.00			500.00	0.35			7.94					0.51			
5	500.00			500.00	0.25			5.77					0.06			
6	500.00			500.00				5.59								
7			375.44	500.00			2.25	5.27							0.64	
8				500.00				4.20								
9				500.00				4.76								
10			375.44	500.00			1.59	5.31							1.10	
11	500.00				0.38								3.17			
12	500.00				0.35								2.86			
13	500.00			500.00	0.34			7.90					5.09			
14	500.00		375.44	500.00			1.70	12.98							1.81	
15			375.44	500.00			1.20	4.20							4.33	
16	500.00			500.00	0.31			7.21					2.60			

Table B-6 (Cont.): Duct Testing & Sealing – Single Family

Duct Sealing & Testing, Single Family, Electric SH

Climate	Per Unit Cost				Annual Savings Therms				Annual Savings kWh Space Heating & Other				Annual Savings kWh AC			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	500.00								15.83				0.00			
2	500.00								11.87				1.17			
3	500.00								9.74				0.26			
4	500.00								8.67				0.54			
5	500.00								9.79				0.07			
6	500.00	290.00								11.56				0.69		
7			375.44								3.59				2.12	
8		290.00								9.76				1.11		
9		290.00								11.32				2.64		
10		290.00	375.44							12.42	5.00			4.18	2.67	
11	500.00								10.31				3.36			
12	500.00								46.99				14.64			
13	500.00	290.00							35.28	14.15			22.46	8.99		
14	500.00	290.00	375.44							18.61	7.50			7.53	8.04	
15		290.00	375.44							7.10	2.86			18.01	19.25	
16	500.00	290.00							12.36				2.75			

Duct Sealing & Testing, Single Family, Gas SH

Climate	Per Unit Cost				Annual Savings Therms				Annual Savings kWh Space Heating & Other				Annual Savings kWh AC			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	500.00				7.36								0.00			
2	500.00				6.96								1.17			
3	500.00				7.39								0.26			
4	500.00			500.00	7.68			7.94					0.54			
5	500.00			500.00	3.26			5.77					0.07			
6	500.00			500.00				5.59								
7			375.44	500.00			1.93	5.27							2.12	
8				500.00				4.20								
9				500.00				4.76								
10			375.44	500.00			2.28	5.31							2.67	
11	500.00				7.25											
12	500.00				7.30								14.64			
13	500.00			500.00	6.19			7.90					22.46			
14	500.00		375.44	500.00			5.16	12.98							8.04	
15			375.44	500.00			1.67	4.20							19.25	
16	500.00			500.00	4.07			7.21					2.75			

Table B-7: Evaporative Cooler Covers – Multifamily

Evaporative Cooler Covers, Multi-Family, Electric SH

Climate	Per Unit Cost				Annual Savings Therms				Annual Savings kWh Space Heating & Other				Annual Savings kWh AC			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	54.59								9.98							
2	54.59								7.70							
3	42.23								5.88							
4	42.23								5.40							
5	42.23								6.16							
6	42.23	40.00								4.70						
7			28.03								1.33					
8		40.00								4.51						
9		40.00								5.12						
10		40.00	28.03							5.39	1.77					
11	36.05								6.30							
12	68.25								6.50							
13	76.48	40.00							5.10	6.69						
14	76.48	40.00	28.03							8.94	2.95					
15		40.00	28.03							3.17	1.04					
16	54.59	40.00							5.53							

Evaporative Cooler Covers, Multi-Family, Gas SH

Climate	Per Unit Cost				Annual Savings Therms				Annual Savings kWh Space Heating & Other				Annual Savings kWh AC			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	30.90				1.45											
2	30.90				1.20											
3	30.90				0.90											
4	22.66			33.02	0.80			0.65								
5	22.66			33.02	0.66			0.49								
6	22.66			33.02				0.49								
7			28.03	33.02			2.51	0.45								
8				33.02				0.37								
9				33.02				0.40								
10			28.03	33.02			2.73	0.50								
11	49.18				1.00											
12	37.12				0.90											
13	56.45			33.02	0.80			0.90								
14	56.45		28.03	33.02			4.69	0.90								
15			28.03	33.02			1.85	0.30								
16	30.90			33.02	0.90			0.50								

Table B-7 (Cont.): Evaporative Cooler Covers – Mobile Homes

Evaporative Cooler Covers, Mobile Home, Electric SH

Climate	Per Unit Cost				Annual Savings Therms				Annual Savings kWh Space Heating & Other				Annual Savings kWh AC			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	55.80								10.05							
2	55.80								7.70							
3	55.80								5.90							
4	55.80								5.43							
5	55.80								6.01							
6	55.80	40.00								7.03						
7			28.03								3.50					
8		40.00								5.96						
9		40.00								6.88						
10		40.00	28.03							7.57	4.30					
11	39.46								6.30							
12	28.84								6.50							
13	92.70	40.00							5.10	8.64						
14	46.35	40.00	28.03							11.35	3.74					
15		40.00	28.03							4.32	1.42					
16	55.80	40.00							7.35							

Evaporative Cooler Covers, Mobile Home, Gas SH

Climate	Per Unit Cost				Annual Savings Therms				Annual Savings kWh Space Heating & Other				Annual Savings kWh AC			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	77.25				1.10											
2	41.50				1.10											
3	28.33				1.08											
4	24.72			51.64	0.80			1.90								
5	24.72			51.64	0.69			1.37								
6	24.72			51.64				0.60								
7			28.03	51.64			8.60	1.25								
8				51.64				0.79								
9				51.64				0.40								
10			28.03	51.64			5.40	0.50								
11	49.31				1.00											
12	43.85				0.90											
13	62.68			51.64	0.80			0.90								
14	62.68		28.03	51.64			5.80	0.90								
15			28.03	51.64			3.71	4.10								
16	36.05			51.64	0.90			1.31								

Table B-7 (Cont.): Evaporative Cooler Covers – Single Family

Evaporative Cooler Covers, Single Family, Electric SH

Climate	Per Unit Cost				Annual Savings Therms				Annual Savings kWh Space Heating & Other				Annual Savings kWh AC			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	54.59								14.43							
2	54.59								10.80							
3	54.59								8.09							
4	54.59								7.80							
5	54.59								8.62							
6	54.59	40.00								6.94						
7			28.03								1.84					
8		40.00								5.88						
9		40.00								6.79						
10		40.00	28.03							7.47	2.05					
11	99.72								9.10							
12	46.41								9.80							
13	78.67	40.00							7.40	8.52						
14	78.67	40.00	28.03							11.20	3.74					
15		40.00	28.03							4.26	1.42					
16	139.05	40.00							10.55							

Evaporative Cooler Covers, Single Family, Gas SH

Climate	Per Unit Cost				Annual Savings Therms				Annual Savings kWh Space Heating & Other				Annual Savings kWh AC			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	54.59				5.97											
2	54.59				1.80											
3	54.59				3.57											
4	25.90			51.64	3.28			1.39								
5	25.90			51.64	2.30			1.00								
6	25.90			51.64				0.98								
7			28.03	51.64			3.71	0.92								
8				51.64				0.50								
9				51.64				0.80								
10			28.03	51.64			4.58	1.00								
11	53.87				3.30											
12	44.17				3.80											
13	94.99			51.64	3.10			2.80								
14	92.70		28.03	51.64			11.56	3.20								
15			28.03	51.64			3.71	0.50								
16	36.05			51.64	1.40			0.90								

Table B-8: Evaporative Cooler Maintenance

Evaporative Cooler Maintenance, Multi-Family

Climate	Per Unit Cost				Annual Savings Therms				Annual Savings kWh Space Heating & Other				Annual Savings kWh AC			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	133.90															
2	133.90												10.21			
3	133.90												3.00			
4	133.90												8.71			
5	133.90												0.68			
6	133.90												5.25	6.90		
7			150.00												14.79	
8														9.86		
9		70.00												29.10		
10		70.00	150.00											38.10	34.50	
11	133.90												35.10			
12	133.90												28.40			
13	133.90	70.00											53.00	48.20		
14	133.90	70.00	150.00										37.53	51.90	49.29	
15		70.00	150.00											109.20	146.29	
16	133.90	70.00											30.03	39.43		

Evaporative Cooler Maintenance, Mobile Home

Climate	Per Unit Cost				Annual Savings Therms				Annual Savings kWh Space Heating & Other				Annual Savings kWh AC			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	133.90															
2	133.90												14.41			
3	133.90												3.15			
4	133.90												6.60			
5	133.90												0.83			
6	133.90												5.25	6.79		
7			150.00												13.58	
8														17.50		
9		70.00												28.70		
10		70.00	150.00											35.60	39.78	
11	133.90												41.10			
12	133.90												37.15			
13	133.90	70.00											66.20	85.38		
14	133.90	70.00	150.00										55.54	49.70	71.80	
15		70.00	150.00											109.10	171.44	
16	133.90	70.00											33.80	43.66		

Evaporative Cooler Maintenance, Single Family

Climate	Per Unit Cost				Annual Savings Therms				Annual Savings kWh Space Heating & Other				Annual Savings kWh AC			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	133.90															
2	133.90												14.40			
3	133.90												3.15			
4	133.90												6.60			
5	133.90												0.83			
6	133.90												5.25	6.50		
7			150.00												13.00	
8														18.20		
9		70.00												29.80		
10		70.00	150.00											37.90	38.06	
11	133.90												41.10			
12	133.90												37.10			
13	133.90	70.00											66.20	48.20		
14	133.90	70.00	150.00										55.50	50.40	68.70	
15		70.00	150.00											109.10	164.04	
16	133.90	70.00											33.75			

Table B-9: Evaporative Coolers

Evaporative Coolers, Multi-Family

Climate	Per Unit Cost				Annual Savings Therms				Annual Savings kWh Space Heating & Other				Annual Savings kWh AC			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	319.00												0.08			
2	319.00												11.35			
3	319.00												11.35			
4	319.00												22.19			
5	319.00												1.76			
6	319.00													12.67		
7			826.97												47.02	
8														17.86		
9		728.00												56.20		
10		728.00	826.97											70.70	111.69	
11	319.00												85.00			
12	319.00												75.80			
13	319.00	728.00											122.00	90.40		
14	319.00	728.00	826.97											114.20	160.39	
15		728.00	826.97											204.80	475.42	
16	319.00	728.00											76.47			

Evaporative Coolers, Mobile Home

Climate	Per Unit Cost				Annual Savings Therms				Annual Savings kWh Space Heating & Other				Annual Savings kWh AC			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	319.00												0.28			
2	319.00												51.97			
3	319.00												32.14			
4	319.00												125.17			
5	319.00												7.05			
6	319.00													28.80		
7			826.97												41.80	
8														46.44		
9		728.00												57.30		
10		728.00	826.97											232.10	124.22	
11	319.00												291.40			
12	319.00												267.70			
13	319.00	728.00											405.80	307.30		
14	319.00	728.00	826.97											314.90	223.57	
15		728.00	826.97											696.00	535.28	
16	319.00	728.00											288.00			

Evaporative Coolers, Single Family

Climate	Per Unit Cost				Annual Savings Therms				Annual Savings kWh Space Heating & Other				Annual Savings kWh AC			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	319.00												0.35			
2	319.00												64.82			
3	319.00												70.20			
4	319.00												156.13			
5	319.00												8.79			
6	319.00													35.92		
7			826.97												92.70	
8														57.92		
9		728.00												182.30		
10		728.00	826.97											241.50	221.40	
11	319.00												277.10			
12	319.00												267.40			
13	319.00	728.00											413.40	307.60		
14	319.00	728.00	826.97											308.90	223.57	
15		728.00	826.97											694.30	535.28	
16	319.00	728.00											311.90			

Table B-10: Furnace Filters Installed with Furnace Repair or Replacement or Requiring a Licensed HVAC Contractor – Multifamily

Furnace Filters if installed with furnace repair or replacement or not requiring licensed HVAC contractor, Multi-Family, Electric SH

Climate	Per Unit Cost				Annual Savings Therms				Annual Savings kWh Space Heating & Other				Annual Savings kWh AC			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	16.48								19.20							
2	16.92								14.30							
3	10.95								11.10							
4	7.21								10.50							
5	7.21								12.12							
6	7.21	5.00								7.66						
7			10.00								6.62					
8		5.00								7.36						
9		5.00								8.33						
10		5.00	10.00							8.70	8.70					
11	11.34								12.40							
12	12.86								11.20							
13	11.17	5.00							10.00	10.86						
14	11.17	5.00	10.00							14.58	14.58					
15		5.00	10.00							5.13	5.13					
16	17.51								10.71							

Furnace Filters if installed with furnace repair or replacement or not requiring licensed HVAC contractor, Multi-Family, Gas SH

Climate	Per Unit Cost				Annual Savings Therms				Annual Savings kWh Space Heating & Other				Annual Savings kWh AC			
Zone		SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	30.90				2.40											
2	17.79				1.60											
3	10.85				1.40											
4	8.33			42.50	1.30			1.42								
5	8.33			42.50	1.08			1.08								
6	8.33			42.50				1.08								
7			10.00	42.50			0.97	0.97								
8				42.50				0.79								
9				42.50				0.85								
10			10.00	42.50			1.08	1.08								
11	12.42				1.40											
12	14.47				1.60											
13	10.84			42.50	1.20			1.36								
14	10.84		10.00	42.50			1.82	1.82								
15			10.00	42.50			0.74	0.74								
16	17.79			42.50	1.93			1.99								

Table B-10 (Cont.): Furnace Filters Installed with Furnace Repair or Replacement or Requiring a Licensed HVAC Contractor – Mobile Homes

Furnace Filters if installed with furnace repair or replacement or not requiring licensed HVAC contractor, Mobile Home, Elec SH

Climate	Per Unit Cost				Annual Savings Therms				Annual Savings kWh Space Heating & Other				Annual Savings kWh AC			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	16.48								19.14							
2	17.13								14.70							
3	17.13								10.80							
4	17.13								10.50							
5	17.13								12.00							
6	17.13	5.00								8.54						
7			10.00								6.54					
8		5.00								7.21						
9		5.00								8.30						
10		5.00	10.00							9.15	9.15					
11	12.08								12.10							
12	12.49								11.80							
13	23.69	5.00							10.00	10.42						
14	23.69	5.00	10.00							13.69	13.69					
15		5.00	10.00							5.21	5.21					
16	12.36								14.60							

Furnace Filters if installed with furnace repair or replacement or not requiring licensed HVAC contractor, Mobile Home, Gas SH

Climate	Per Unit Cost				Annual Savings Therms				Annual Savings kWh Space Heating & Other				Annual Savings kWh AC			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	44.50				2.40											
2	18.81				3.00											
3	11.37				1.30											
4	8.80			42.50	1.30			1.79								
5	8.80			42.50	1.32			1.32								
6	8.80			42.50				1.28								
7			10.00	42.50			1.20	1.20								
8				42.50				0.96								
9				42.50				1.08								
10			10.00	42.50			1.20	1.20								
11	12.46				1.40											
12	17.17				2.20											
13	11.10			42.50	2.20			1.79								
14	11.10		10.00	42.50			2.95	2.95								
15			10.00	42.50			0.96	0.96								
16	12.36			42.50	1.40			1.63								

Table B-10 (Cont.): Furnace Filters Installed with Furnace Repair or Replacement or Requiring a Licensed HVAC Contractor – Single Family

Furnace Filters if installed with furnace repair or replacement or not requiring licensed HVAC contractor, Single Family, Elec SH

Climate	Per Unit Cost				Annual Savings Therms				Annual Savings kWh Space Heating & Other				Annual Savings kWh AC			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	23.69								28.80							
2	16.48								21.50							
3	7.21								16.50							
4	7.21								15.40							
5	7.21								17.95							
6	7.21	5.00								12.78						
7			10.00								9.79					
8		5.00								10.79						
9		5.00								12.42						
10		5.00	10.00							13.69	13.69					
11	14.81								18.70							
12	14.79								20.00							
13	12.78	5.00							14.80	15.59						
14	12.78	5.00	10.00							20.49	20.49					
15		5.00	10.00							7.80	7.80					
16	16.48								18.80							

Furnace Filters if installed with furnace repair or replacement or not requiring licensed HVAC contractor, Single Family, Gas SH

Climate	Per Unit Cost				Annual Savings Therms				Annual Savings kWh Space Heating & Other				Annual Savings kWh AC			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	35.44				4.70											
2	18.12				3.30											
3	10.26				3.50											
4	7.76			42.50	2.70			3.36								
5	7.76			42.50	2.46			2.46								
6	7.76			42.50				2.39								
7			10.00	42.50			2.24	2.24								
8				42.50				1.79								
9				42.50				2.02								
10			10.00	42.50			2.24	2.24								
11	12.83				3.50											
12	16.24				4.50											
13	11.81			42.50	3.60			3.36								
14	10.30		10.00	42.50			5.53	5.53								
15			10.00	42.50			1.79	1.79								
16	14.03			42.50	2.90			3.06								

Table B-11: Furnace Filters Installed Alone and Requiring a Licensed HVAC Contractor – Multifamily

Furnace Filters if installed alone and requiring licensed HVAC contractor, Multi-Family, Electric SH

Climate	Per Unit Cost				Annual Savings Therms				Annual Savings kWh Space Heating & Other				Annual Savings kWh AC			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	83.98								19.20							
2	84.42								14.30							
3	78.45								11.10							
4	74.71								10.50							
5	74.71								12.12							
6	74.71	70.00								7.66						
7			107.50								6.62					
8		70.00								7.36						
9		70.00								8.33						
10		70.00	107.50							8.70	8.70					
11	78.84								12.40							
12	80.36								11.20							
13	78.67	70.00							10.00	10.86						
14	78.67	70.00	107.50							14.58	14.58					
15		70.00	107.50							5.13	5.13					
16	85.01								10.71							

Furnace Filters if installed alone and requiring licensed HVAC contractor, Multi-Family, Gas SH

Climate	Per Unit Cost				Annual Savings Therms				Annual Savings kWh Space Heating & Other				Annual Savings kWh AC			
Zone		SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	98.40				2.40											
2	85.29				1.60											
3	78.35				1.40											
4	75.83			82.50	1.30			1.42								
5	75.83			82.50	1.08			1.08								
6	75.83			82.50				1.08								
7			107.50	82.50			0.97	0.97								
8				82.50				0.79								
9				82.50				0.85								
10			107.50	82.50			1.08	1.08								
11	79.92				1.40											
12	81.97				1.60											
13	78.34			82.50	1.20			1.36								
14	78.34		107.50	82.50			1.82	1.82								
15			107.50	82.50			0.74	0.74								
16	85.29			82.50	1.93			1.99								

Table B-11 (Cont.): Furnace Filters Installed Alone and Requiring a Licensed HVAC Contractor – Mobile Homes

Furnace Filters if installed alone and requiring licensed HVAC contractor, Mobile Home, Elec SH

Climate	Per Unit Cost				Annual Savings Therms				Annual Savings kWh Space Heating & Other				Annual Savings kWh AC			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	83.98								19.14							
2	84.63								14.70							
3	84.63								10.80							
4	84.63								10.50							
5	84.63								12.00							
6	84.63	70.00								8.54						
7			107.50								6.54					
8		70.00								7.21						
9		70.00								8.30						
10		70.00	107.50							9.15	9.15					
11	79.58								12.10							
12	79.99								11.80							
13	91.19	70.00							10.00	10.42						
14	91.19	70.00	107.50							13.69	13.69					
15		70.00	107.50							5.21	5.21					
16	79.86								14.60							

Furnace Filters if installed alone and requiring licensed HVAC contractor, Mobile Home, Gas SH

Climate	Per Unit Cost				Annual Savings Therms				Annual Savings kWh Space Heating & Other				Annual Savings kWh AC			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	112.00				2.40											
2	86.31				3.00											
3	78.87				1.30											
4	76.30			82.50	1.30			1.79								
5	76.30			82.50	1.32			1.32								
6	76.30			82.50				1.28								
7			107.50	82.50			1.20	1.20								
8				82.50				0.96								
9				82.50				1.08								
10			107.50	82.50			1.20	1.20								
11	79.96				1.40											
12	84.67				2.20											
13	78.60			82.50	2.20			1.79								
14	78.60		107.50	82.50			2.95	2.95								
15			107.50	82.50			0.96	0.96								
16	79.86			82.50	1.40			1.63								

Table B-11 (Cont.): Furnace Filters Installed Alone and Requiring a Licensed HVAC Contractor – Single Family

Furnace Filters if installed alone and requiring licensed HVAC contractor, Single Family, Elec SH

Climate	Per Unit Cost				Annual Savings Therms				Annual Savings kWh Space Heating & Other				Annual Savings kWh AC			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	91.19								28.80							
2	83.98								21.50							
3	74.71								16.50							
4	74.71								15.40							
5	74.71								17.95							
6	74.71	70.00								12.78						
7			107.50								9.79					
8		70.00								10.79						
9		70.00								12.42						
10		70.00	107.50							13.69	13.69					
11	82.31								18.70							
12	82.29								20.00							
13	80.28	70.00							14.80	15.59						
14	80.28	70.00	107.50							20.49	20.49					
15		70.00	107.50							7.80	7.80					
16	83.98								18.80							

Furnace Filters if installed alone and requiring licensed HVAC contractor, Single Family, Gas SH

Climate	Per Unit Cost				Annual Savings Therms				Annual Savings kWh Space Heating & Other				Annual Savings kWh AC			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	102.94				4.70											
2	85.62				3.30											
3	77.76				3.50											
4	75.26			82.50	2.70			3.36								
5	75.26			82.50	2.46			2.46								
6	75.26			82.50				2.39								
7			107.50	82.50			2.24	2.24								
8				82.50				1.79								
9				82.50				2.02								
10			107.50	82.50			2.24	2.24								
11	80.33				3.50											
12	83.74				4.50											
13	79.31			82.50	3.60			3.36								
14	77.80		107.50	82.50			5.53	5.53								
15			107.50	82.50			1.79	1.79								
16	81.53			82.50	2.90			3.06								

Table B-12: Gas Furnace Repair

Gas Furnace Repair, Multi-Family

Climate	Per Unit Cost				Annual Savings Therms				Annual Savings kWh Space Heating & Other				Annual Savings kWh AC			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	350.00				63.94											
2	350.00				47.16											
3	350.00				41.20											
4	350.00				38.45			16.83								
5	350.00				29.31			12.83								
6	350.00							12.65								
7			83.00				24.70	11.72								
8								9.67								
9								9.95								
10			83.00				30.10	12.83								
11	350.00				45.03											
12	350.00				40.70											
13	350.00				36.50			16.46								
14	350.00		83.00				30.10	22.14								
15			83.00				10.74	8.84								
16	350.00				53.74			23.53								

Gas Furnace Repair, Mobile Home

Climate	Per Unit Cost				Annual Savings Therms				Annual Savings kWh Space Heating & Other				Annual Savings kWh AC			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	350.00				64.55											
2	350.00				51.70											
3	350.00				41.20											
4	350.00			325.00	39.20											
5	350.00			325.00	28.70			27.00								
6	350.00			325.00				23.70								
7			83.00	325.00			24.80	23.34								
8				325.00				16.20								
9				325.00				20.00								
10			83.00	325.00			29.10	23.20								
11	350.00				44.40											
12	350.00				40.70											
13	350.00			325.00	36.50			42.50								
14	350.00		83.00	325.00			29.10	42.50								
15			83.00	325.00			10.07	15.20								
16	350.00			325.00	35.60			20.46								

Gas Furnace Repair, Single Family

Climate	Per Unit Cost				Annual Savings Therms				Annual Savings kWh Space Heating & Other				Annual Savings kWh AC			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	350.00				64.55											
2	350.00				51.70											
3	350.00				41.20											
4	350.00			325.00	39.20			35.83								
5	350.00			325.00	28.70			27.00								
6	350.00			325.00				23.70								
7			83.00	325.00			24.70	23.67								
8				325.00				16.20								
9				325.00				20.00								
10			83.00	325.00			27.60	23.00								
11	350.00				44.40											
12	350.00				40.70											
13	350.00			325.00	36.50			42.50								
14	350.00		83.00	325.00			34.82	42.50								
15			83.00	325.00			8.13	15.20								
16	350.00			325.00	35.60			23.20								

Table B-13: Gas Furnace Replacement

Gas Furnace Replacement, Multi-Family

Climate	Per Unit Cost				Annual Savings Therms				Annual Savings kWh Space Heating & Other				Annual Savings kWh AC			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	700.00				96.82			20.93								
2	700.00				73.80											
3	700.00				61.60											
4	700.00				58.39			58.39								
5	700.00				44.50			44.50								
6	700.00							43.81								
7			1358.44				12.29	40.60								
8								33.49								
9								34.53								
10			1358.44				13.47	44.50								
11	700.00				68.36											
12	700.00				61.10											
13	700.00				54.80			56.91								
14	700.00		1358.44				23.15	76.52								
15			1358.44				9.27	30.62								
16	700.00				81.46			81.46								

Gas Furnace Replacement, Mobile Home

Climate	Per Unit Cost				Annual Savings Therms				Annual Savings kWh Space Heating & Other				Annual Savings kWh AC			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	700.00				200.31											
2	700.00				73.80											
3	700.00				69.70											
4	700.00			1313.89	58.20			86.41								
5	700.00			1313.89	88.92			32.40								
6	700.00			1313.89				29.60								
7			1358.44	1313.89			37.20	80.77								
8				1313.89				23.60								
9				1313.89				23.60								
10			1358.44	1313.89			44.70	34.80								
11	700.00				66.90											
12	700.00				61.10											
13	700.00			1313.89	54.80			224.08								
14	700.00		1358.44	1313.89			44.70	51.00								
15			1358.44	1313.89			17.56	22.80								
16	700.00			1313.89	110.70			58.04								

Gas Furnace Replacement, Single Family

Climate	Per Unit Cost				Annual Savings Therms				Annual Savings kWh Space Heating & Other				Annual Savings kWh AC			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	700.00				164.83											
2	700.00				73.80											
3	700.00				69.70											
4	700.00			1313.89	58.20			52.10								
5	700.00			1313.89	73.17			40.50								
6	700.00			1313.89				37.00								
7			1358.44	1313.89			37.00	66.46								
8				1313.89				26.60								
9				1313.89				30.80								
10			1358.44	1313.89			45.10	34.20								
11	700.00				66.90											
12	700.00				61.10											
13	700.00			1313.89	54.80			63.80								
14	700.00		1358.44	1313.89			49.32	63.80								
15			1358.44	1313.89			14.34	25.30								
16	700.00			1313.89	91.09			59.90								

Table B-14: Minor Home Repairs – Multifamily

Minor Home Repairs, Multi-Family, Electric SH

Climate	Per Unit Cost				Annual Savings Therms				Annual Savings kWh Space Heating & Other				Annual Savings kWh AC			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	18.18								52.10							
2	12.68								34.50				3.40			
3	35.09								39.40				1.50			
4	56.63								26.90				3.60			
5	42.78								31.90				0.19			
6	42.78	65.00								19.00				3.70		
7			80.00								17.00				5.10	
8		65.00								18.20				4.10		
9		65.00								20.20				6.50		
10		65.00	80.00							24.30	20.40			9.30	7.10	
11	32.95								31.80				9.80			
12	21.47								28.90				9.00			
13	73.07	65.00							25.20	26.90			14.80	11.00		
14	73.07	65.00	80.00							36.76	20.60			14.33	7.20	
15		65.00	80.00							12.80	9.78			24.80	28.58	
16	6.00	65.00							42.20				8.69			

Minor Home Repairs, Multi-Family, Gas SH

Climate	Per Unit Cost				Annual Savings Therms				Annual Savings kWh Space Heating & Other				Annual Savings kWh AC			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	49.76				6.30											
2	40.10				4.50								3.40			
3	39.63				3.90								1.50			
4	47.04			161.28	3.40			3.60					3.60			
5	20.80			161.28	2.57			2.30					0.19			
6	20.80			161.28				2.30								
7			80.00	161.28			3.20	2.10							5.10	
8				161.28				1.60								
9				161.28				1.70								
10			80.00	161.28			4.70	2.00							7.10	
11	57.25				3.90								9.80			
12	35.87				3.70								9.00			
13	56.57			161.28	3.40			3.70					14.80			
14	56.57		80.00	161.28			3.80	3.70							7.20	
15			80.00	161.28			2.02	1.50							28.58	
16	40.10			161.28	3.80			2.20					8.69			

Table B-14 (Cont.): Minor Home Repairs – Mobile Homes

Minor Home Repairs, Mobile Home, Electric SH

Climate	Per Unit Cost				Annual Savings Therms				Annual Savings kWh Space Heating & Other				Annual Savings kWh AC			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	67.16								49.30							
2	44.62								37.10				5.00			
3	44.62								28.10				2.47			
4	44.62								26.50				3.20			
5	44.62								29.86				0.26			
6	44.62	65.00								29.19				2.55		
7			80.00								17.00				4.40	
8		65.00								24.65				4.22		
9		65.00								29.74				9.99		
10		65.00	80.00							31.39	20.60			15.88	7.10	
11	132.41								30.80				11.00			
12	54.60								32.20				9.40			
13	111.52	65.00							24.90	35.80			14.90	34.09		
14	111.52	65.00	80.00							47.09	17.58			28.54	5.19	
15		65.00	80.00							17.90	6.68			68.18	28.44	
16	229.00	65.00							37.80				12.09			

Minor Home Repairs, Mobile Home, Gas SH

Climate	Per Unit Cost				Annual Savings Therms				Annual Savings kWh Space Heating & Other				Annual Savings kWh AC			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	137.22				6.30											
2	31.45				4.60								5.00			
3	53.77				3.60								2.47			
4	32.34			198.62	3.40			3.60					3.20			
5	32.34			198.62	3.90			2.30					0.26			
6	39.50			198.62				1.60								
7			80.00	198.62			3.90	2.91							4.40	
8				198.62				1.50								
9				198.62				1.90								
10			80.00	198.62			6.10	2.00							7.10	
11	91.48				3.80								11.00			
12	48.29				4.50								9.40			
13	47.80			198.62	4.20			3.70					14.90			
14	216.60		80.00	198.62			4.90	3.70							5.19	
15			80.00	198.62			2.59	2.10							28.44	
16	204.93			198.62	3.80			9.60					12.09			

Table B-14 (Cont.): Minor Home Repairs – Single Family

Minor Home Repairs, Single Family, Electric SH

Climate	Per Unit Cost				Annual Savings Therms				Annual Savings kWh Space Heating & Other				Annual Savings kWh AC			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	78.41								71.90							
2	49.47								53.90				6.10			
3	19.29								45.60				3.20			
4	117.13								40.70				4.10			
5	142.00								44.70				0.32			
6	142.00	65.00								29.23				0.85		
7			80.00								24.60				7.00	
8		65.00								28.50				1.40		
9		65.00								27.30				3.31		
10		65.00	80.00							30.30	29.70			5.26	8.50	
11	143.10								47.10				12.80			
12	98.32								49.60				11.20			
13	160.46	65.00							37.00	35.85			17.90	11.30		
14	160.46	65.00	80.00							45.50	30.10			9.46	7.45	
15		65.00	80.00							17.93	12.51			22.60	40.87	
16	309.96	65.00							54.30				14.90			

Minor Home Repairs, Single Family, Gas SH

Climate	Per Unit Cost				Annual Savings Therms				Annual Savings kWh Space Heating & Other				Annual Savings kWh AC			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	134.68				12.50											
2	96.08				9.40								6.10			
3	93.04				8.20								3.20			
4	84.32			198.62	7.50			7.20					4.10			
5	84.32			198.62	8.20			4.70					0.32			
6	84.32			198.62				6.70								
7			80.00	198.62			6.80	4.84							7.00	
8				198.62				4.30								
9				198.62				4.50								
10			80.00	198.62			8.00	4.60							8.50	
11	96.37				9.00								12.80			
12	77.80				8.70								11.20			
13	166.33			198.62	7.60			8.20					17.90			
14	138.20		80.00	198.62			10.07	9.50							7.45	
15			80.00	198.62			3.23	3.10							40.87	
16	53.05			198.62	7.70			7.20					14.90			

Table B-15: Setback Thermostats Installed with Furnace Repair or Replacement or Not Requiring a Licensed HVAC Contractor – Multifamily

Setback Thermostats if installed with furnace repair or replacement or not requiring licensed HVAC contractor, Multi-Family, Elec SH

Climate	Per Unit Cost				Annual Savings Therms				Annual Savings kWh Space Heating & Other				Annual Savings kWh AC			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	92.50								1.54				0.01			
2	92.50								1.10				1.90			
3	92.50								0.90				0.57			
4	92.50								0.85				1.61			
5	92.50								0.95				0.13			
6	92.50	30.00							0.60	3.03			1.00	0.80		
7			71.00								0.52				2.04	
8		30.00								2.95				1.07		
9		30.00								3.30				2.41		
10		30.00	71.00							3.48	0.68			3.93	4.84	
11	92.50								1.01				6.49			
12	92.50								1.00				5.25			
13	92.50	30.00							0.85	4.37			9.80	7.85		
14	92.50	30.00	71.00						1.14	5.80	1.14		6.99	5.62	6.95	
15		30.00	71.00							2.05	0.40			16.60	20.60	
16	92.50	30.00							0.86	4.37			5.55	4.46		

Setback Thermostats if installed with furnace repair or replacement or not requiring licensed HVAC contractor, Multi-Family, Gas SH

Climate	Per Unit Cost				Annual Savings Therms				Annual Savings kWh Space Heating & Other				Annual Savings kWh AC			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	92.50				2.60								0.01			
2	92.50				1.80								1.90			
3	92.50				1.57								0.57			
4	92.50			75.00	1.48			1.44					1.61			
5	92.50			75.00	1.13			1.08					0.13			
6	92.50			75.00	1.08			1.08					1.00			
7			71.00	75.00			1.03	1.08							2.04	
8				75.00				0.90								
9				75.00				0.90								
10			71.00	75.00			1.13	1.08							4.84	
11	92.50				1.73								6.49			
12	92.50				1.40								5.25			
13	92.50			75.00	1.50			1.44					9.80			
14	92.50		71.00	75.00	1.98		1.94	1.98					6.99		6.95	
15			71.00	75.00			0.77	0.72							20.60	
16	92.50			75.00	2.07			1.98					5.55			

Table B-15 (Cont.): Setback Thermostats Installed with Furnace Repair or Replacement or Not Requiring a Licensed HVAC Contractor – Mobile Homes

Setback Thermostats if installed with furnace repair or replacement or not requiring licensed HVAC contractor, Mobile Home, Elec SH

Climate	Per Unit Cost				Annual Savings Therms				Annual Savings kWh Space Heating & Other				Annual Savings kWh AC			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	92.50								28.40				4.45			
2	92.50								21.30				2.13			
3	92.50								17.47				0.47			
4	92.50								15.56				0.98			
5	92.50								17.57				0.12			
6	92.50	30.00							12.35	4.73			0.71	0.71		
7			71.00								9.60				1.54	
8		30.00								4.02				1.25		
9		30.00								4.64				2.86		
10		30.00	71.00							5.09	13.37			4.55	4.56	
11	92.50								18.50				6.10			
12	92.50															
13	92.50	30.00							15.24	5.80			9.80	9.82		
14	92.50	30.00	71.00							7.68	20.04			8.21	8.21	
15		30.00	71.00							2.95	7.69			19.72	19.65	
16	92.50	30.00							22.18	8.48			5.01	5.00		

Setback Thermostats if installed with furnace repair or replacement or not requiring licensed HVAC contractor, Mobile Home, Gas SH

Climate	Per Unit Cost				Annual Savings Therms				Annual Savings kWh Space Heating & Other				Annual Savings kWh AC			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	92.50				3.90								4.45			
2	92.50				1.70								2.13			
3	92.50				1.30								0.47			
4	92.50			75.00	1.73			1.71					0.98			
5	92.50			75.00	1.26			1.31					0.12			
6	92.50			75.00	1.21			1.21					0.71			
7			71.00	75.00			1.10	1.11							1.54	
8				75.00				0.91								
9				75.00				1.01								
10			71.00	75.00			1.00	1.21							4.56	
11	92.50				1.40								6.10			
12	92.50				1.70								5.50			
13	92.50			75.00	1.50			1.71					9.80			
14	92.50		71.00	75.00	2.82		1.29	2.82					8.18		8.21	
15			71.00	75.00			0.41	0.91							19.65	
16	92.50			75.00	2.40			1.61					5.01			

Table B-15 (Cont.): Setback Thermostats Installed with Furnace Repair or Replacement or Not Requiring a Licensed HVAC Contractor – Single Family

Setback Thermostats if installed with furnace repair or replacement or not requiring licensed HVAC contractor, Single Family, Elec SH

Climate	Per Unit Cost				Annual Savings Therms				Annual Savings kWh Space Heating & Other				Annual Savings kWh AC			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	92.50								28.80				0.02			
2	92.50								20.24				5.43			
3	92.50								16.61				3.10			
4	92.50								14.79				2.49			
5	92.50								16.70				0.32			
6	92.50	30.00							11.74	4.73			1.81	0.71		
7			71.00								9.12				3.91	
8		30.00								4.02				1.25		
9		30.00								4.64				2.86		
10		30.00	71.00							5.09	12.71			4.55	11.61	
11	92.50								21.20				6.20			
12	92.50								11.10				7.60			
13	92.50	30.00							15.30	5.80			11.80	9.82		
14	92.50	30.00	71.00						19.04	7.68	19.04		20.82	8.21	20.89	
15		30.00	71.00							2.95	7.31			19.72	50.01	
16	92.50	30.00							21.08	8.48			12.74	5.00		

Setback Thermostats if installed with furnace repair or replacement or not requiring licensed HVAC contractor, Single Family, Gas SH

Climate	Per Unit Cost				Annual Savings Therms				Annual Savings kWh Space Heating & Other				Annual Savings kWh AC			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	92.50				3.20								0.02			
2	92.50				2.96								5.43			
3	92.50				2.80								3.10			
4	92.50			75.00	2.50			2.43					2.49			
5	92.50			75.00	1.79			1.86					0.32			
6	92.50			75.00	1.72			1.72					1.81			
7			71.00	75.00			1.63	1.58							3.91	
8				75.00				1.29								
9				75.00				1.43								
10			71.00	75.00			1.65	1.72							11.61	
11	92.50				2.90								6.20			
12	92.50				2.70								7.60			
13	92.50			75.00	2.40			2.43					11.80			
14	92.50		71.00	75.00	4.01		4.02	4.01					20.82		20.89	
15			71.00	75.00			1.29	1.29							50.01	
16	92.50			75.00	2.23			2.29					12.74			

Table B-16: Setback Thermostats Installed Alone and Requiring a Licensed HVAC Contractor – Multifamily

Setback Thermostats if installed alone and requiring licensed HVAC contractor, Multi-Family, Electric SH

Climate	Per Unit Cost				Annual Savings Therms				Annual Savings kWh Space Heating & Other				Annual Savings kWh AC			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	133.90								1.54				0.01			
2	133.90								1.10				1.90			
3	133.90								0.90				0.57			
4	133.90								0.85				1.61			
5	133.90								0.95				0.13			
6	133.90	100.00							0.60	3.03			1.00	0.80		
7			175.00								0.52				2.04	
8		100.00								2.95				1.07		
9		100.00								3.30				2.41		
10		100.00	175.00							3.48	0.68			3.93	4.84	
11									1.01				6.49			
12									1.00				5.25			
13		100.00							0.85	4.37			9.80	7.85		
14		100.00	175.00						1.14	5.80	1.14		6.99	5.62	6.95	
15		100.00	175.00							2.05	0.40			16.60	20.60	
16	133.90	100.00							0.86	4.37			5.55	4.46		

Setback Thermostats if installed alone and requiring licensed HVAC contractor, Multi-Family, Gas SH

Climate	Per Unit Cost				Annual Savings Therms				Annual Savings kWh Space Heating & Other				Annual Savings kWh AC			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	133.90				2.60								0.01			
2	133.90				1.80								1.90			
3	133.90				1.57								0.57			
4	133.90			175.00	1.48			1.44					1.61			
5	133.90			175.00	1.13			1.08					0.13			
6	133.90			175.00	1.08			1.08					1.00			
7			175.00	175.00			1.03	1.08							2.04	
8				175.00				0.90								
9				175.00				0.90								
10			175.00	175.00			1.13	1.08							4.84	
11					1.73								6.49			
12					1.40								5.25			
13				175.00	1.50			1.44					9.80			
14			175.00	175.00	1.98		1.94	1.98					6.99		6.95	
15			175.00	175.00			0.77	0.72							20.60	
16	133.90			175.00	2.07			1.98					5.55			

Table B-16 (Cont.): Setback Thermostats Installed Alone and Requiring a Licensed HVAC Contractor – Mobile Homes

Setback Thermostats if installed alone and requiring licensed HVAC contractor, Mobile Home, Elec SH

Climate	Per Unit Cost				Annual Savings Therms				Annual Savings kWh Space Heating & Other				Annual Savings kWh AC			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	133.90								28.40				4.45			
2	133.90								21.30				2.13			
3	133.90								17.47				0.47			
4	133.90								15.56				0.98			
5	133.90								17.57				0.12			
6	133.90	100.00							12.35	4.73			0.71	0.71		
7			175.00								9.60				1.54	
8		100.00								4.02				1.25		
9		100.00								4.64				2.86		
10		100.00	175.00							5.09	13.37			4.55	4.56	
11									18.50				6.10			
12																
13		100.00							15.24	5.80			9.80	9.82		
14		100.00	175.00							7.68	20.04			8.21	8.21	
15		100.00	175.00							2.95	7.69			19.72	19.65	
16	133.90	100.00							22.18	8.48			5.01	5.00		

Setback Thermostats if installed alone and requiring licensed HVAC contractor, Mobile Home, Gas SH

Climate	Per Unit Cost				Annual Savings Therms				Annual Savings kWh Space Heating & Other				Annual Savings kWh AC			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	133.90				3.90								4.45			
2	133.90				1.70								2.13			
3	133.90				1.30								0.47			
4	133.90			175.00	1.73			1.71					0.98			
5	133.90			175.00	1.26			1.31					0.12			
6	133.90			175.00	1.21			1.21					0.71			
7			175.00	175.00			1.10	1.11							1.54	
8				175.00				0.91								
9				175.00				1.01								
10			175.00	175.00			1.00	1.21							4.56	
11					1.40								6.10			
12					1.70								5.50			
13				175.00	1.50			1.71					9.80			
14			175.00	175.00	2.82		1.29	2.82					8.18		8.21	
15			175.00	175.00			0.41	0.91							19.65	
16	133.90			175.00	2.40			1.61					5.01			

Table B-16 (Cont.): Setback Thermostats Installed Alone and Requiring a Licensed HVAC Contractor – Single Family

Setback Thermostats if installed alone and requiring licensed HVAC contractor, Single Family, Elec SH

Climate	Per Unit Cost				Annual Savings Therms				Annual Savings kWh Space Heating & Other				Annual Savings kWh AC			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	133.90								28.80				0.02			
2	133.90								20.24				5.43			
3	133.90								16.61				3.10			
4	133.90								14.79				2.49			
5	133.90								16.70				0.32			
6	133.90	100.00							11.74	4.73			1.81	0.71		
7			175.00								9.12				3.91	
8		100.00								4.02				1.25		
9		100.00								4.64				2.86		
10		100.00	175.00							5.09	12.71			4.55	11.61	
11									21.20				6.20			
12									11.10				7.60			
13		100.00							15.30	5.80			11.80	9.82		
14		100.00	175.00						19.04	7.68	19.04		20.82	8.21	20.89	
15		100.00	175.00							2.95	7.31			19.72	50.01	
16	133.90	100.00							21.08	8.48			12.74	5.00		

Setback Thermostats if installed alone and requiring licensed HVAC contractor, Single Family, Gas SH

Climate	Per Unit Cost				Annual Savings Therms				Annual Savings kWh Space Heating & Other				Annual Savings kWh AC			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	133.90				3.20								0.02			
2	133.90				2.96								5.43			
3	133.90				2.80								3.10			
4	133.90			175.00	2.50			2.43					2.49			
5	133.90			175.00	1.79			1.86					0.32			
6	133.90			175.00	1.72			1.72					1.81			
7			175.00	175.00			1.63	1.58							3.91	
8				175.00				1.29								
9				175.00				1.43								
10			175.00	175.00			1.65	1.72							11.61	
11					2.90								6.20			
12					2.70								7.60			
13				175.00	2.40			2.43					11.80			
14			175.00	175.00	4.01		4.02	4.01					20.82		20.89	
15			175.00	175.00			1.29	1.29							50.01	
16	133.90			175.00	2.23			2.29					12.74			

Table B-17: Weatherstripping Attic – Multifamily

Weatherstripping Attic, Multi-Family, Electric SH

Climate	Per Unit Cost				Annual Savings Therms				Annual Savings kWh Space Heating & Other				Annual Savings kWh AC			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	10.30								3.17							
2	11.73								2.30				0.07			
3	10.57								1.93				0.03			
4	10.57								1.78				0.07			
5	10.30								2.07				0.01			
6	10.30	20.00								1.15				0.06		
7																
8		20.00								1.10				0.07		
9		20.00								1.23				0.11		
10		20.00								1.31				0.16		
11	9.91								2.11				0.18			
12	10.29								2.22				0.15			
13	10.49	20.00							1.63	1.44			0.28	0.18		
14	10.49	20.00								2.12				0.24		
15		20.00								0.77				0.41		
16	13.39	20.00							2.40				0.11			

Weatherstripping Attic, Multi-Family, Gas SH

Climate	Per Unit Cost				Annual Savings Therms				Annual Savings kWh Space Heating & Other				Annual Savings kWh AC			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	16.85				1.05											
2	13.39				0.73								0.07			
3	11.51				0.65								0.03			
4	10.10				0.57								0.07			
5	10.30				0.44								0.01			
6	10.30															
7																
8																
9																
10																
11	12.99				0.65								0.18			
12	11.58				0.62								0.15			
13	10.95				0.59								0.28			
14	10.95															
15																
16	13.39				0.65								0.11			

Table B-17 (Cont.): Weatherstripping Attic – Single Family

Weatherstripping Attic, Single Family, Electric SH

Climate	Per Unit Cost				Annual Savings Therms				Annual Savings kWh Space Heating & Other				Annual Savings kWh AC			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	12.23								6.34							
2	11.11								4.75				0.46			
3	9.27								3.92				0.26			
4	9.27								3.54				0.26			
5	10.30								3.89				0.02			
6	10.30	20.00								4.27				0.15		
7																
8		20.00								3.80				0.24		
9		20.00								4.26				0.57		
10		20.00								4.53				0.90		
11	13.06								4.14				0.97			
12	10.98								3.94				0.84			
13	11.71	20.00							3.37	5.19			1.36	1.93		
14	11.71	20.00								6.79				1.62		
15		20.00								2.63				3.87		
16	21.28	20.00							5.61				1.14			

Weatherstripping Attic, Single Family, Gas SH

Climate	Per Unit Cost				Annual Savings Therms				Annual Savings kWh Space Heating & Other				Annual Savings kWh AC			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	16.11				1.13											
2	12.51				0.79								0.46			
3	10.66				0.84								0.26			
4	10.25				0.77								0.26			
5	10.25				0.89								0.02			
6	10.25															
7																
8																
9																
10																
11	12.94				1.01								0.97			
12	11.41				1.06								0.84			
13	11.38				0.89								1.36			
14	10.30															
15																
16	13.65				0.70								1.14			

Table B-18: Weatherstripping Door – Multifamily

Weatherstripping Door, Multi-Family, Electric SH

Climate	Per Unit Cost				Annual Savings Therms				Annual Savings kWh Space Heating & Other				Annual Savings kWh AC			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	53.49								25.63							
2	42.82								18.60				0.53			
3	52.57								15.58				0.27			
4	36.05								14.42				0.53			
5	40.79								16.73				0.04			
6	40.79	120.00								10.35				0.54		
7			31.47								10.20				0.90	
8		120.00								9.90				0.63		
9		120.00								11.07				0.99		
10		120.00	31.47							11.79	12.30			1.44	1.20	
11	44.02								17.09				1.42			
12	55.78								17.98				1.25			
13	58.13	120.00							13.17	12.96			2.23	1.62		
14	58.13	120.00	31.47							19.11	12.40			2.13	1.20	
15		120.00	31.47							6.93	5.99			3.69	4.80	
16	41.20	120.00							19.40				0.89			

Weatherstripping Door, Multi-Family, Gas SH

Climate	Per Unit Cost				Annual Savings Therms				Annual Savings kWh Space Heating & Other				Annual Savings kWh AC			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	76.07				2.85											
2	52.69				1.97								0.53			
3	59.78				1.75								0.27			
4	54.50			75.76	1.53			2.20					0.53			
5	37.08			75.76	1.19			1.50					0.04			
6	37.08			75.76				1.40								
7			31.47	75.76			2.80	1.26							0.90	
8				75.76				1.00								
9				75.76				1.00								
10			31.47	75.76			2.50	1.20							1.20	
11	61.23				1.75								1.42			
12	59.21				1.68								1.25			
13	51.38			75.76	1.61			2.30					2.23			
14	51.38		31.47	75.76			2.30	2.30							1.20	
15			31.47	75.76			1.42	0.90							4.80	
16	52.69			75.76	1.75			1.40					0.89			

Table B-18 (Cont.): Weatherstripping Door – Mobile Homes

Weatherstripping Door, Mobile Home, Electric SH

Climate	Per Unit Cost				Annual Savings Therms				Annual Savings kWh Space Heating & Other				Annual Savings kWh AC			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	43.26								23.24							
2	64.83								17.47				0.62			
3	64.83								12.87				0.62			
4	92.70								12.71				0.39			
5	92.70								14.09				0.04			
6	92.70	120.00								12.91				0.30		
7			55.92								10.30				0.70	
8		120.00								10.97				0.47		
9		120.00								13.34				1.10		
10		120.00	55.92							13.77	12.40			1.74	1.20	
11	59.74								14.43				1.40			
12	86.59								15.52				1.25			
13	63.17	120.00							11.78	15.71			1.95	3.73		
14	63.17	120.00	55.92							20.65	10.36			3.14	0.82	
15		120.00	55.92							7.96	3.99			7.50	3.94	
16	59.74	120.00							17.00				1.17			

Weatherstripping Door, Mobile Home, Gas SH

Climate	Per Unit Cost				Annual Savings Therms				Annual Savings kWh Space Heating & Other				Annual Savings kWh AC			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	96.52				2.96											
2	68.43				2.20								0.62			
3	66.35				1.67								0.62			
4	67.39			119.99	1.60			2.30					0.39			
5	67.39			119.99	1.82			1.50					0.04			
6	60.77			119.99				1.00								
7			55.92	119.99			5.40	1.22							0.70	
8				119.99				0.90								
9				119.99				1.20								
10			55.92	119.99			4.90	1.30							1.20	
11	63.88				1.82								1.40			
12	77.49				2.36								1.25			
13	68.00			119.99	2.28			2.30					1.95			
14	55.62		55.92	119.99			4.50	2.30							0.82	
15			55.92	119.99			2.77	1.20							3.94	
16	49.44			119.99	1.82			1.29					1.17			

Table B-18 (Cont.): Weatherstripping Door – Single Family

Weatherstripping Door, Single Family, Electric SH

Climate	Per Unit Cost				Annual Savings Therms				Annual Savings kWh Space Heating & Other				Annual Savings kWh AC			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	98.69								22.46							
2	77.57								16.85				1.64			
3	73.04								13.88				0.94			
4	81.89								12.56				0.94			
5	55.62								13.81				0.08			
6	55.62	120.00								14.29				0.51		
7			55.92								9.90				2.30	
8		120.00								12.71				0.81		
9		120.00								14.25				1.90		
10		120.00	55.92							15.17	11.90			3.00	2.90	
11	85.06								14.66				3.43			
12	91.26								13.96				2.96			
13	95.51	120.00							11.93	17.38			4.84	6.45		
14	95.51	120.00	55.92							22.72	12.00			5.42	2.43	
15		120.00	55.92							8.81	4.99			12.96	11.60	
16	67.47	120.00							19.89				4.06			

Weatherstripping Door, Single Family, Gas SH

Climate	Per Unit Cost				Annual Savings Therms				Annual Savings kWh Space Heating & Other				Annual Savings kWh AC			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	142.36				3.57											
2	90.33				2.51								1.64			
3	93.24				2.66								0.94			
4	85.80			119.99	2.43			2.60					0.94			
5	111.24			119.99	2.81			2.10					0.08			
6	111.24			119.99				4.20								
7			55.92	119.99			4.60	2.47							2.30	
8				119.99				2.60								
9				119.99				2.40								
10			55.92	119.99			5.30	2.10							2.90	
11	99.53				3.19								3.43			
12	105.61				3.34								2.96			
13	92.55			119.99	2.81			3.60					4.84			
14	74.16		55.92	119.99			7.42	4.60							2.43	
15			55.92	119.99			2.31	1.30							11.60	
16	83.43			119.99	2.20			3.60					4.06			

Table B-19: Whole House Fans

Whole House Fans, Single Family

Climate	Per Unit Cost				Annual Savings Therms				Annual Savings kWh Space Heating & Other				Annual Savings kWh AC			
Zone	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal	PG&E	SCE	SDG&E	SoCal
1	1200.00															
2	1200.00												45.73			
3	1200.00												8.54			
4	1200.00												21.95			
5	1200.00												2.44			
6	1200.00	650.00											17.07	17.07		
7			650.00												33.65	
8		650.00												62.80		
9		650.00												31.09		
10		650.00	650.00											207.91	259.20	
11	1200.00												53.65			
12	1200.00												77.40			
13	1200.00	650.00											119.30	96.94		
14	1200.00	650.00	650.00										289.00	289.00	90.06	
15		650.00	650.00											153.65	47.90	
16	1200.00	650.00											129.26	129.26		

Appendix C

Summary of Public Input Workshops

January 21, 2003 Pacific Energy Center, San Francisco

Attendees:
Barbara Morton, CPUC
Josie Webb, CPUC
Jeorge Tagnipes, CPUC
Gilbert Escamilla, CPUC
Bob Burt, ICA
Fred Sebold, Itron / RER
Brenda Gettig, Itron / RER
Diane Calden, PG&E
Doug Naaf, PG&E
Mary O'Drain, PG&E
Jack Parkhill, SCE
Angela Jones, Vanward Consulting (for SCE)
Don Wood, Sempra Utilities
Dave Rogers, Sempra Utilities
Wallis Winegar, Winegard Energy
Via telephone:
Evelyn Lee, PG&E
Karen Degannes, CPUC

Fred Sebold of RER summarized how the measure cost effectiveness tests had been conducted by the project team, and explained how results changed between the initial preliminary report filed September 30 and the follow up report filed January 6. He noted that by the time the team does its final analysis, we hope to have the results of the PY2001 LIEE Programs Impact Study currently being conducted by Xenergy. The final round of measure assessment tests will use updated measure energy savings estimates produced by that study.

Bob Burt of the California Insulation Contractors Association (ICA) noted that a measure should not be dropped for all fuel types if it proves cost effective for one and not the other. He later suggested that it is not a problem to offer individual measures in some climate zones or residence types but not others, based on the results of measure cost-effectiveness test analysis.

Gilbert Escamilla noted that the standardization project team should include a description of how it dealt with variations across utilities, fuel types, etc., in its final report. He suggested that it is important to develop and have the Commission adopt an explicit set of decision-making rules for treating these cases.

Don Wood of Sempra Utilities noted that the LIEE program measure mix may evolve over time, noting that water heater blankets may be phased out of the program eventually because manufacturers are starting to incorporate insulation into their newer hot water heater units.

Bob Burt disagreed with the Team's preliminary recommendation to offer attic insulation only in "naked" attics (attics with zero pre-existing insulation). He noted that California law requires the utilities to install all feasible LIEE measures in eligible customer homes. He said that there are still quite a few homes with minimum levels of ceiling insulation, and they should have insulation added up to the program standard as an equity consideration, and to help these customer save money on their bills. He pointed out that LIEE program contractors crews are trained in how to handle situations with pre-existing insulation safely, and that the recommendation for insulating only naked attics should be rejected. He further suggested that the Standardization Team should more fully explain its initial contention that there may be potential safety problems when contractors insulate over existing insulation, or that this particular recommendation should be dropped in the team's final report.

Gilbert Excamilla asked for more explanation of the changes in results between the September and January reports. Gilbert mentioned that a list of "non-cost issues" had been compiled by Jim O'Bannon of RHA early in the process. Members of the Standardization Team explained that the list O'Bannon developed was intended to be used primarily for consideration of proposed <u>new</u> measures rather than existing measures. However, it was agreed that the Team would review the list to see if anything was relevant to this cost effectiveness analysis. Don Wood noted that in its original phase 4 work plan, the project team proposed an annual process for parties to suggest new program measures and have then considered for addition to the program, but that this task had been deleted in the ACR approving the phase 4 workplan and budget. The team agreed that the Commission should still consider developing a process for adding new measures to the LIEE program in the future, and will include that recommendation in the final report. Josie Webb noted that the second phase of the Commission's statewide low-income needs assessment study might identify new measures, which could be added to the programs in the future.

Angela Jones suggested that the Team should be careful about saying that some costs were excluded from the cost-effectiveness analysis, since at least some of these costs are probably included in contractor bids and thus in the costs provided by the utilities for the analysis.

Wallace Winegar commented on the recommendation to drop duct sealing. He suggested that duct testing and sealing is considered cost effective under other programs like the Residential Contractors Program (RCP. He stated that under the current LIEE program standards adopted by the Commission, a contractor is only paid for sealing the ducts if he can meet the threshold duct leakage reduction levels indicated by the duct test. Therefore, there is an incentive for contractors to seal ducts only where it is easy to meet the maximum duct loss standard. The result is that ducts that are hard to get to, or that require a large reduction in duct loss don't get sealed. He further suggested that the Standardization Team look at comparing the standards and incentives for duct sealing in both the LIEE and the RCP programs. He suggested that contractors should be paid based on the level of effort they put into sealing ducts, not on achieving threshold duct leakage reduction levels. Josie Webb expressed concern that contractors' decision to seal ducts was so subjective.

Wallace Winegar also stated that in many other energy efficiency programs, duct sealing is only inspected on a spot basis, and this is not the case for the LIEE program. In response to a question from a team member about what percentage of eligible low income homes need central HVAC duct testing and sealing, he stated that homes in the PG&E's service area, the Central Valley, and around Los Angeles commonly have central heating. Don Wood noted that in the San Diego region, only about 10 - 20% of the LIEE eligible homes have central heating and air conditioning.

Bob Burt suggested that the benefits of electric peak load reduction should be considered in the measure cost-effectiveness analysis. The Team pointed out that this issue will be considered under the scope of the New Framework Study which will consider adding this benefit back for all energy efficiency programs cost effectiveness testing. Angela noted that progress on this study could be followed through the proceeding covered by CPUC service list R01-08-028. Fred explained how peak reduction is addressed somewhat when we develop avoided cost estimates. He noted that earlier tests more clearly identified benefits associated with individual measures, but that this got dropped from the tests when the California Energy Efficiency Board replaced the standard total resources test with the Public Purpose Test in the late 1990's as part of its market transformation policy development effort.

Bob Burt questioned the recommendation to offer evaporative coolers in a limited number of climate zones. He asked why the team believed we should put in more expensive high efficiency air conditioners if evaporative coolers could do the job at a lower cost. Fred explained that the rules being proposed by the team were consistent with earlier CPUC decisions on when to install evaporative coolers vs replacement air conditioners. Replacement air conditioners would be installed in those climate zones where evaporative coolers would not found to be effective.

Bob Burt questioned the recommendation to drop caulking and door weatherstripping as separate measures and to include them as needed as minor home repairs. He suggested that one reason the SoCalGas installation costs for these measures were low might be that they did not include expected "windshield" drive time related costs which most contractors would include in their bids, which could drive the apparent cost effectiveness of these measures down. He suggested that the homes that need these measures the most would be prevented from getting them because they would be the ones precluded by the cap. The Team reminded Burt that under the current program rules, LIEE Program Managers can approve exceeding the minor home repairs cost cap on an individual home basis, where needed.

Fred Sebold noted that parties are invited to provide additional input to the Team by e-mail. Comments should be sent to Fred at fred@rer.com on or before February 24, 2003. Jeorge Tagnipes agreed to send a notice out to the service list letting parties know they can still provide comments to the team up to this deadline.

January 23, 2003 Sempra Building, San Diego

Attendees:
Josie Webb, CPUC
John Morgan, CPUC
Fred Sebold, Itron / RER
Brenda Gettig, Itron / RER
Don Wood, Sempra Utilities
Dave Rogers, Sempra Utilities
Tom Cousins, Sempra Utilities
Kevin McKinley, Sempra Utilities
Henry DeJesus, Sempra Utilities
Anita Hart, Southwest Gas
Via telephone:
Karen Degannes, CPUC
Jeorge Tagnipes, CPUC
Gilbert Escamilla, CPUC
Susan Brown, Latino Issues Forum
Mary O'Drain, PG&E
Angela Jones, Vanward Consulting (for SCE)

Fred Sebold again summarized how the project team did its preliminary measure analysis study. He noted that by the time the team does its final analysis, we hope to have the results of the PY2001 LIEE Programs Impact Study currently being conducted by Xenergy. The final round of measure assessment tests will use updated measure energy savings estimates produced by that study. He noted that the project team had been ordered to study the cost effectiveness of current program measures, and that the team had not examined any new measures which might potentially be added to the program in the future in this study.

Josie Webb expressed concern that some of the non-energy benefits (NEBs) developed for use in the measure cost effectiveness analysis did not adequately represent California conditions. She suggested that some of the data used to develop these is from studies done in the Eastern United States. She said the model should be using California data, and that this was especially true for weather data, since the conditions in California differ from those on the east coast. She recommended that the RRM Working Group look into this matter again. Angela Jones pointed out that some survey data used in the NEB analysis were gathered in California, and that estimates gathered from the literature were adapted to California as much as possible. She noted that some of the factors the group used from east coast studies in developing NEBs have not yet been studied on the west coast, and that these factors were not based on east coast weather climate data. She noted that California labor cost estimates were used in developing the NEBs, and other California related factors were used when available. She also noted that she didn't object to doing additional work on LIEE program or measure NEBs, but that the Commission should understand that it could be expensive and take time. Kevin McKinley suggested that the RRM Working Group take another look at how we currently calculate NEBs, to see if there is a less complex or costly way to estimate these.

Karen Degannes commented on the measure lifetimes used in the measure analysis. She expressed concern that some recommendations to drop measures may have been made because their cost effectiveness was not evaluated over a long enough time period. Fred Sebold noted that measure lifetimes are continually evaluated for reasonableness, and that the ones used in this analysis are the latest available Commission-approved measure lifetime estimates. Ms. Degannes agreed to review these.

Karen Degannes also questioned whether or not environmental adders and recognition of peak load benefits were included in the avoided costs used in this analysis. Fred noted that individual measure's environmental effects are reflected in their energy savings estimates to a large degree, since many environmental impacts are associated with burning fossil fuels. He indicated that the avoided cost estimates also include environmental adders capturing some environmental effects. The Team also noted that peak period marginal costs were averaged into the avoided cost estimates, but with weights representing the distribution of usage across rate periods, and that this did not recognize the fact that individual energy efficiency measures have different time-of-use distributions of impacts. It was suggested that this be mentioned in the final report.

Karen Degannes expressed some concern about having utilities administer energy efficiency programs, because their concern for bottom-line profitability might provide a disincentive for them to run programs well. Angela Jones noted that utilities are in the business to provide good customer service and therefore are very interested in delivering effective energy efficiency programs to their customers. Don Wood noted that the low-income weatherization

program initiated by SDG&E in the early 1980s was the first ratepayer funded community weatherization program in the nation. He noted that SDG&E asked the Commission for authorization to run the program, it had not been ordered to implement the program. He noted that SDG&E's motivation for starting that program was to help its poor and elderly customers solve their energy problems in the most efficient manner possible, and had little to do with maximizing the utility's bottom line. Susan Brown noted that the CPUC has carefully examined the role of the utilities operating these programs in earlier proceedings, and came to appropriate conclusions.

Karen Degannes commented that since the analysis was done with measures at a disaggregated level (i.e. by fuel type, housing type, and climate zone), the measures should be reaggregated and the analysis done at that level also. In response, Fred stated that this would not affect the results since decisions on measures are being made on the basis of disaggregated results.

Susan Brown questioned why the report recommended dropping whole house fans, evaporative cooler maintenance and evaporative cooler covers. She was concerned that measures might be dropped purely on a dollar basis without considering non-cost benefits such as comfort and reduction of hardship. Fred noted that non-cost related NEBs were included in the analysis and that measures were recommended to be dropped only if they were found to be not cost effective after including NEBs in the analysis.

Angela Jones suggested that the benefits used in the cost-effectiveness analysis are subject to limited precision, since individual measures are disaggregated in the analysis by climate zone, fuel type, and housing type. She suggested that this concern be noted in the final report so that parties understand the nature of the information as they use it to make decisions.

Bob Burt expressed concern that some of the measures recommended to be dropped were those that gave the most "bang for the buck." The Team responded that the purpose of the analysis was to identify which measures were more or less cost effective, and to recommend dropping only those that proved to be the least cost effective, so that we would be installing a higher cost effectiveness measure mix in more homes using limited program funds.

Fred again announced that additional comments might be submitted by parties via email (to fred@rer.com). Comments must be received by February 24th in order to be included in the April 1st final report filing.

Appendix D

Comments Submitted from California Insulation Contractors Association

I. Issues Resolved

1. We believe that the Team Reply's further discussion and explanation on the issue of climate zones, as a basis for measure selection, provides a reasonable resolution of this issue. We note that climate zones are now used almost exclusively to govern Attic Insulation installation. But the most cursory review of the cost effectiveness tables shows numerous other measures which are very cost effective only in some climate zones. Where there are dramatic differences, climate zone differentiation should be considered in future program cost effectiveness reviews.
2. We accept tqhe need for closure on 2003 program matters, so our only remaining issue in this case on Attic Insulation is to seek reconsideration of the requirement that new insulation only go in 'naked attics' (see Section III, below). This aborts our previous comment that all changes in Attic Insulation be deferred to the Needs Assessment, which has the charge of specifically considering Attic Insulation.
3. We understand that our proposal that the greater peak load costs be formally measured and the value of their reduction be recognized in the Utility Test is under study in a different proceeding. The discussion on this issue in the Team Reply is fatuous. Of course, bill savings overlap peak savings. But all data developed in California will show that the cost of providing power at the peak is significantly higher than the average costs recognized the current avoided cost projections. So it is proper to give peak savings a separate analysis. The Team comments at the San Diego Workshop to the effect that peak load costs are averaged into general avoided costs used for analysis precisely fails to recognize the vital point. This process reduces the value of peak load savings. Any analysis will show that peak costs are greater, even without market price distortion caused by possible manipulation and by the ISO's ridiculous bid process.

II. Why Do We Standardize?

4. The ICA has strongly supported the fundamental concept of LIEE Standardization. This is because we do not believe that there should be differences between LIEE

programs simply because of different management attitudes or historical developments in different utilities.

a) Equity is the strongest argument for Standardization. Low income people with similar situations should be treated the same. We see three other potential benefits from Standardization:
b) The most important added widespread benefit we see from Standardization is in the fact that crews which work in different utility areas need not learn new rules for each area.
c) But we note that many crews work for contractors who stay in certain defined areas. For them, there is no objective benefit to Standardization unless it makes a change which:
    1) fosters better service to their customers or
    2) reduces their cost of providing that service.

5. We believe that the foregoing criteria should be used where there is a suggested deviation from Standardization for any LIEE requirement, keeping in mind that customer equity should come first. It is obvious that the current practice of restricting some measures (or their detailed implementation) to certain climate zones clearly meets the first criterion while ensuring compliance with the statutory charge for cost effectiveness. It also fosters better service to LIEE customers by allowing some measures to be installed, even if they are not cost effective in the whole service territory. Similarly, there is clear objective basis for the practice of providing different rules for different types of structure. Clearly, the customers in mobile homes, single family homes and multiple home structures have different energy needs and means of meeting them. The program should (and does) recognize those differences. While we believe that further study might well expand the existing differences in these current deviations from rigorous Standardization practice, that should be left to future study. These Comments will be restricted to things closely related to those changes in practice currently under consideration,

III. Utility Differences Should be Recognized

6. An important principle in connection with the need to recognize when rigorous Standardization is not called for is that, where differences between utilities create significant effects on customer benefits, they should be recognized.
7. The most obvious case where there are significant differences between utilities is the case of single fuel utilities. Commission practice now recognizes implicit differences of this sort. This is easy to see by a simple comparison of the Edison and SoCalGas programs.
8. But the current recommendations fail to recognize another significant difference between utilities: where a measure is cost effective in one utility and not in others. It is apparent, from a study of the cost effectiveness tables, that caulking is cost

effective in the SoCalGas area and not in other service territories. Further examination clearly shows the reason: contractors there bid considerably lower to provide this measure than elsewhere. We raised this issue in our Opening Comments (paragraph 13 b)), pointing out that "Standardization does not seem an appropriate excuse for robbing SoCalGas customers of the benefits of their contractor's low costs." This is an important issue that we neglected to mention during the Workshop, so there was no opportunity to develop any verbal 'give and take' on it.

9. The measure cost effectiveness tables show that caulking in SoCalGas was cost effective in almost all climate zones and very close in the rest. We believe that there is no reasonable basis for denial of a cost effective measure to customers of one utility, simply because it is not cost effective in other service territories. Since the Team Reply Comments do not address this issue, the Commission must decide the matter from the written record. We believe that this is an equity issue that deserves careful consideration. While there now happens to be only one dramatic example, others could easily arise. The principle is important. *ICA recommends that, where differences between utility service territories create significant differences in cost effectiveness, that LIEE customers be given the benefit of those differences where they support a measure. In the current case, caulking in almost all SoCalGas climate zones is such an example.*

IV. Fuel Differences Can Have Dramatic Impacts

10. The LIEE statute clearly calls out bill saving as a major objective of the program. We believe that a major impact this should have on the program is in the recognition that some homes must rely on electricity if they are to receive utility service. In addition, it is customary in some areas for multifamily builders to save on their first costs by making no provision for gas service, even if it is locally available, meaning that their tenants must rely on electricity for cooking, space heating and cooling. It is not a coincidence that many multifamily homes built in this way end up serving low income people. They are less desirable locations. So an important element of our constituency consists of people who must accept the higher cost of electric cooking and space conditioning and, for some, also for electric hot water heating.

11. This means that measures which could well fail to meet cost effectiveness tests for homes with gas service, will often be serious bill savers for those which use electricity for the same function; meaning that they would pass the needed single prong of the present two prong test for measure retention. This is an important part of the reason why the cost effectiveness of the Edison program is higher. They restrict most of their program action to all-electric homes, which tend to automatically generate greater bill savings for a given measure. But the problem also arises in dual-fuel utilities; for their customers in remote areas or in homes built without gas access.

The purpose of this comment is to support proper cost effectiveness analysis for such homes. In the past, this was resolved by the weird process of assuming that all homes had an energy cost that approximated the overall 90/10 gas/electric service split. This gave an undeserved benefit to gas service and inappropriately penalized electric. Happily, this has been dropped. However, the current situation, where the difference tends to be blandly ignored in program planning for dual fuel utilities, is worse.

12. This is not a highly technical issue. It is easy for a contractor (or inspector) to tell if a home must use electricity to serve a measure. So if a particular measure is supposed to be available only in those homes where it is electric, it is not difficult to administer that element of the program.
13. Only one of the program changes currently under consideration is directly affected by this issue. The Proposal recommends dropping Outlet Gaskets as a measure, even though they are cost effective in electric homes (Proposal, p 3-2). The comment there seeks further input in the Workshops, which apparently did not occur. We plead being overwhelmed by the number of issues to be resolved, but we should have raised this issue, as it is a current example of the fuel-used issue, which we believe to be important. *As a part of a Commission Decision that should declare policy with respect to deviations from Standardization (because the issue is before us in this case), we believe that such deviations should be authorized between homes where a measure is served with or without electricity. In the current Proposal, Outlet Gaskets are the only example of this case and they should be retained for electric homes.*

V. 'Partial Attics' Should Not Be Orphans

14. The current proposal would require that all new Attic Insulation only go into homes with 'Naked Attics,' those without any attic insulation whatever. In the original Proposal, this was based on the assertion that new insulation in an attic with a small layer of existing insulation "may create a safety hazard" (emphasis added). With all the years of experience we have on attic insulation, there is no excuse for the declaration that there is a possible existence of a safety problem. Investigation of the history should either verify or kill this assertion. Since call backs are expensive, contractors have a serious incentive to avoid any damage in a customer's attic. We have not heard anything about a problem of this sort.
15. The only added justification for this policy given in the Workshop was the assertion that there are not many partial attics out there. To use the vernacular, "This don't show me much." That there may be just a few, does not justify denying them the benefits of the service. If there really are only a few, their impact upon program budgets will be small.
16. We pointed out in our Opening Comments that the Needs Assessment has the duty of reviewing Attic Insulation requirements and recommended that there be no changes in the current rules in this matter until that Study is completed. We now recognize

that the Needs Assessment completion is a while down the road. So we accept that there may be justification for a temporary change in the rules pending that time. *However, we see no basis for denial of a valuable service to homes with partial insulation. This is simplification for its own sake, denying a valuable and cost effective benefit to at least a few of our customers. We recommend that Attic Insulation installation continue to be available to homes with partial insulation in accord with the current rules.*

VI. 'Windshield Time' Is A Real Cost

17. 'Windshield time' is the cost of having a crew available and moving it from one home to another. Depending upon the situation, this cost could be at much as $80 per home. With the current tendency to provide an 'Outreach" payment, effectively a separate bid item for home qualification, it is still likely that contractors will also recover part of the windshield cost from frequently bid items, so as to spread it as far as possible. Where there is a separate bid item for home qualification (a serious part of the cost of the program), the bid on that item is likely to include much of the cost of windshield time. But we must recognize that each contractor has different bid tactics, so any item not specifically recognized in the bid schedules may be spread in different ways, partly depending upon custom and competitive pressures in different utility areas. *This is the basis for our contention that elimination of caulking and weatherstripping may not save the anticipated funds.* We note that the Proposal calls for elimination of caulking and weatherstripping on the basis that they are not cost effective. As noted above, caulking <u>is</u> cost effective in the SoCalGas area. But we note that these measures routinely score high in customer surveys, especially with older customers, on the basis of the added comfort they provide. *In addition to the fact that their elimination may not save the anticipated amounts, we recommend that these measures be retained on the basis of their comfort benefit.*

VII. Evaporative Coolers Deserve Better Program Support.

18. The response in the Workshop to our suggestion that Evaporative Coolers be used where ever they are cost effective, instead of Electric Air Conditioners, was that "*Replacement air conditioners would be installed in those climate zones where evaporative coolers would not be found to be effective.*" (fifth paragraph page 3). This comment does not reflect the published test results. In nearly every case, evaporative coolers are MORE cost effective than electric air conditioners in the those climate zones where they are appropriate. Nor does this reflect the actual proposed action, "*that high efficiency room air conditioners be offered in all residence types in climate zones 11,12,13,14 and 15*." (Proposal page 3-3). This Proposal completely ignores

Evaporative Coolers. The first argument for this is that there are unquantified non-energy health and safety benefits in these extreme climate zones. In general, evaporative coolers provide the same benefits, usually with the added benefit of adding beneficial moisture to the naturally excessively dry air.

19. The second argument offered is ***"peak load reduction benefits."*** This argument is reiterated when Evaporative Coolers are discussed (Proposal, page 3-5). This is ridiculous. To install a device which uses more electricity for the same function on the argument that it saves peak load stands logic on its head. It is probably true that an efficient replacement air conditioner uses less load at peak than an older air conditioner it replaces. But an Evaporative Cooler would use still less in any climate area to which it is suited.

20. As stated in our Opening Comments, it is bad management practice for a severely cost-constrained program to fail to use the most economical measure that is cost effective. We also note that PG&E managed to pay a lot less for evaporative coolers than did some of the others, though still getting good bill savings, so perhaps some coordination between program managers is called for. It is our memory that the PG&E Evaporative Cooler was a packaged device that was designed to fit in a window, which would reduce both acquisition and installation cost. *We recommend that Evaporative Coolers be specified where the climate fits their requirements.*

VIII. Occasional 'Cap Breaking' Is Small Comfort To Those Left Out

21. At the Workshop, one of our arguments in favor of keeping caulking was answered with the assertion that "The Team reminded Burt that under the current program rules, LIEE Program Managers can approve exceeding the minor home repairs cost cap on an individual home basis, where needed." (Workshop Summary, 2d par p 4). This is a very small consolation for dropping caulking and weatherstripping for all homes. It is reasonable to assume that the administrative difficulties of such action will make it comparatively rare. As noted above, there is a good argument for keeping caulking in the SoCalGas area regardless of the merits of a general abandonment of the measure. Our discussion favors keeping it and weatherstripping for all service territories.

IX. Other Issues

22. With respect to Winegar's discussion (raised in the Feb. 21st Workshop) on duct seal payment (which made the point that the current minimum threshold leakage required of duct sealing caused contractors to skip most homes0, we have some sympathy for the contract administrator. An effort to reward on the basis of improvement made in each home would involve a monitored prior test. Such a procedure would create

scheduling problems and would add to the measure cost and to its administrative cost, making it even harder to cost-justify. *We suggest that a better solution is a less rigorous thresh hold measurement for payment.*

Respectfully submitted,
Bob Burt for ICA