

**BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA**

Annual Earnings Assessment Proceeding (AEAP)
Application of Pacific Gas and Electric Company for
Approval of Energy Efficient Shareholder Incentives for
Third Claim for Incentives for 1998 Accomplishments for
Pre-1998 Programs, and for Recovery of Costs for the 2002
Interruptible Load Programs.

Application 03-05-002

And Related Matters.

Application 03-05-003
Application 03-05-004
Application 03-05-009

**INFORMATIONAL FILING BY
CALIFORNIA DSM MEASUREMENT ADVISORY COMMITTEE (CADMAC)**

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CALIFORNIA DSM MEASUREMENT ADVISORY
COMMITTEE

Dated: August 26, 2003

RECEIVED

AUG 29 2003

MICHAEL D. MONTOYA

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Pursuant to the directive of the Commission in D.93-05-063, and the February 16, 1994 Ruling of Administrative Law Judge (ALJ) Meg Gottstein, the California Demand-Side Management (DSM) Measurement Advisory Committee (CADMAC) submits its informational update on statewide measurement and evaluation (M&E) study plans (Attachment 1), and a description of retroactive waivers to the DSM M&E protocols agreed to by all CADMAC members (Attachment 2).

Decision 93-05-063, at mimeo page 78, requires that CADMAC submit a report in the Annual Earnings Assessment Proceeding (AEAP) describing all retroactive waivers approved by CADMAC and the rationale for supporting such waivers. In the 1996 Annual Earnings Assessment Proceeding, CADMAC recommended that these filings be made annually. This recommendation was adopted in D.96-12-079.

CADMAC INFORMATIONAL UPDATE

Waivers

There were no measurement waivers addressed during the measurement year from June 2002 through May 2003. For the upcoming measurement year, covering June 2003 through May 2004, CADMAC approved, through a consensus vote, a retroactive waiver for the joint ninth year retention evaluation study of Pacific Gas and Electric Company ("PG&E") and Southern California Edison's ("SCE") Pre-1998 Energy Efficiency Programs for Nonresidential New Construction. The waiver permits PG&E and SCE to use the same "whole building" methodology for the 9th-year persistence study for the Program Year 1994 and 1996 Nonresidential New Construction programs as the waiver approved in 1998 for the 4th-year persistence studies for the same programs. Attachment 2 contains the cumulative summary of report of all CADMAC waivers approved since 1995 and a complete copy of the waiver approved in the last year.

On-going Statewide Studies

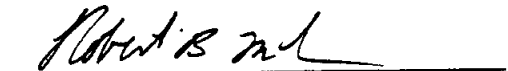
For the period June 2003 through May 2004, CADMAC continues to wait for the final results of one statewide study that is an extension of the Statewide Measure Performance Study, Phase III-B. This study covers compressors and compressed air distribution systems measures. Attachment 1 contains the cumulative Persistence Subcommittee report as of 2001. There are no updates for 2001 or 2002. All other subcommittees are now inactive.

This informational update is provided on behalf of and with the unanimous consent of all CADMAC members, by this year's CADMAC chair, Valerie Richardson of PG&E. It is being mailed to all parties on the service list of the Annual Earnings Assessment Proceeding A.02-05-002, A.02-05-003, A.02-05-004 and A/02-05-005.

Respectfully submitted,

CALIFORNIA DSM MEASUREMENT ADVISORY COMMITTEE (CADMAC)

By 
Valerie Richardson, Chair

By 
Robert B. McLennan, Attorney

August 26, 2003

ATTACHMENT 1

CADMAC SUBCOMMITTEES AND STATEWIDE STUDIES

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OVERVIEW OF CADMAC SUBCOMMITTEES

The following subcommittees produced reports and provided advice to CADMAC on modifications to the Measurement Protocols:

- Retrofit Modeling Subcommittee
- New Construction Modeling Subcommittee
- Persistence Subcommittee
- Measure Cost Subcommittee
- Residential High Efficiency Refrigerators Subcommittee
- Residential High Efficiency Lighting Subcommittee
- Metering and Monitoring Subcommittee
- Special Studies Subcommittee
- Market Effects Subcommittee

All the subcommittees except the Persistence Subcommittee have been inactive since 1999 and no longer have members. No further activity is expected from these subcommittees.

Previous informational filings have outlined the membership and studies of all the subcommittees. This informational filing provides a report only on the one remaining active subcommittee.

Summary tables of all the CADMAC statewide studies and their budgets since 1993 are also provided.

PERSISTENCE SUBCOMMITTEE

- CHAIRPERSON:** Rafael Friedmann (PG&E)
- MEMBERS:** Jim Green (SCG)
Pierre Landry (SCE)
Rob Rubin (SDG&E)
Adrienne Kandel (CEC)
- GOAL:** To assess alternative methods and provide estimates of useful life, effective useful life, technical degradation factors (TDFs), and changes in program load impacts over time.
- MEETING SCHEDULE:** Meetings will be held as needed. The schedule is tentative and can change depending on members' availability.
- WORK IN PROGRESS:** "Statewide Measure Performance Study: Residential and Nonresidential Sectors, Phase III-B," Proctor Engineering Group (Project 2032P)
- REPORTS PUBLISHED:** "DSM Measure Life Project - Master Tables of Measure Life Estimates and Final Report," Energy Management Services, September 1993 (Project 2022P)
- "Statewide Measure Performance Study: Residential and Nonresidential Sectors," Proctor Engineering Group, April 1996 (Project 2023P)
- "DSM Program Spillover Effects -- Review of Empirical Studies and Recommendations for Measurement Methods," Cambridge Systematics, Inc., June 1994 (Project 2024P)
- "Statewide Measure Performance Study: Residential and Nonresidential Sectors, Phase II," Proctor Engineering Group, March 1998 (Project 2027P)
- "Statewide Measure Performance Study: Residential and Nonresidential Sectors, Phase III-A," Proctor Engineering Group, March 1999 (Project 2028P)
- "Statewide Direct Assistance Program Measure Retention Study," Megdal & Associates, March 1999 (Project 2029P)
- "Summary of Persistence Studies: Assessments of Technical Degradation Factors," Proctor Engineering Group, February 1999 (Project 2030P)
- "Negative Technical Degradation factors: Supplement to Persistence Studies," Proctor Engineering Group, October 1998 (Project 2031P)

PROJECT 2021P

Title: Scoping Study Review

Objective: To review the CCIG Scoping Study on persistence methodologies prior to starting statewide work.

Contractor: None (internal to subcommittee)

Method: Literature review

Start date: June 1993

Finish date: June 1993

Current status: Review completed

Budget (by year): \$0.

Committed (by year): \$0

PROJECT 2022P

Title: DSM Measure Life Project (Per Appendix B: Item V.3.a.)

Objective: The purpose of this project was to attempt to obtain consensus among California's investor-owned utility companies, on the "effective useful life" of each DSM measure contained in the utilities' Advice Filings. The project involved the creation of a database of DSM measure life estimates.

Contractor: Energy Management Services

Method: Series of interviews/meeting with the utilities to refine the database and obtain consensus on as many measure life estimates as possible.

Start date: June 11, 1993

Finish date: August 16, 1993

Current status: Project completed; filed per ALJ's request

Budget (by year): \$31,400 (1993)

Committed (by year): \$31,400 (1993)

PROJECT 2023P

Title: Statewide Measure Performance Study: Residential and Nonresidential Sectors

Objective: Assessment of changes in load impacts due to technical degradation of energy efficient measures relative to standard efficiency measures. Phase I studied 13 measures.

Contractor: Proctor Engineering Group

Method: Collection and assessment of performance data on selected demand side management measures from secondary and primary sources, including engineering studies, interviews with manufacturers and technical experts, and on-site visits.

Analysis of performance data: development of measure performance curves by energy-efficiency-measures for the residential and nonresidential sectors (stratified by market segments, where applicable).

To perform the same type of analyses on the final set of measures in order to comply with Table 9A (1996).

Start date: March 1995

Finish date: April 1996

Current status: Completed

Budget (by year): Funded by utilities: \$150,000

Committed (by year): \$0 (1996)

PROJECT 2024P

Title: Review of Empirical Studies for DSM Program Spillover Effects (Per Appendix B: Item V.3.c.)

Objectives: Provide a critical review of past and current empirical studies in the area of DSM program spillover effects.
Recommend the most promising approaches for future studies.

Contractor: Cambridge Systematics, Inc.

Method: Literature review
Discussion of estimating methodology for spillover effects

Start date: October 7, 1993

Finish date: June 30, 1994

Current status: Report published

Budget (by year): \$30,000 (1993)

Committed (by year): \$25,000 (1994)

PROJECT 2025P

Title: Coordination of Utility Measure Retention Studies for Pre-1994 Programs

Objective: To compile retention data from 1990-1993 programs in order to consider additions or modifications to adopted measurement protocols for lifecycle load impacts.

Contractor: Various contractors for each utility

Method: PG&E: 1990-1993 Nonresidential Measure Retention Study
SCG: 1990-1991 Residential Persistence Study
SDG&E: 1990-1993 Nonresidential Measure Retention Study
SCE: Effective Measure Life; Commercial Sector Lighting DSM Measures

Start date: January 1994

Finish date: December 1994

Current status: SCG (completed), SDG&E (completed), PG&E (completed), SCE (completed).

Budget (by year): To be funded by utilities

Committed (by year): N/A

PROJECT 2026P

Title: Statewide Multi-Year Billing Analysis

Objective: Estimate net savings by testing a multi-year billing analysis approach for a specific utility program for at least 3 years.

Contractor: Quantum Consulting

Method: Develop and test a multi-year billing analysis approach to estimate net savings for PG&E's Nonresidential Energy Efficiency Incentives Programs—Commercial Lighting end use.

Discern program effects from the numerous other independent economic, social, and physical factors that also influence energy consumption over time. Focus is on persistence of gross savings and how net savings would change over time.

Start date: December 1997

Finish date: August 1998

Current status: Completed; this study was overseen by the Market Effects Subcommittee.

Budget (by year): Funded by utilities: \$200,000

Committed (by year): \$0 (1997)

PROJECT 2027P

Title: Statewide Measure Performance Study: Residential and Nonresidential Sectors, Phase II

Objective: Assessment of changes in load impacts due to technical degradation of energy efficient measures relative to standard efficiency equipment. Phase II studied 12 additional measures.

Contractor: Proctor Engineering Group

Method: Collection and assessment of performance data on selected demand side management measures from secondary and primary sources, including engineering studies, interviews with manufacturers and technical experts, and on-site visits.

Analysis of performance data: development of measure performance curves by energy-efficiency-measures for the residential and nonresidential sectors (stratified by market segments, where applicable).

To perform the same type of analyses on the final set of measures in order to comply with Table 9A (1997).

Start date: November 1996

Finish date: March 1998

Current status: Completed

Budget (by year): Funded by utilities: \$150,000

Committed (by year): \$0 (1997)

PROJECT 2028P

Title: Statewide Measure Performance Study: Residential and Nonresidential Sectors, Phase III-A

Objective: Assessment of changes in load impacts due to technical degradation of energy efficient measures relative to standard efficiency equipment. Phase III-A performs additional studies of two measures from the previous Phase I and Phase II studies: commercial direct expansion air conditioners and energy management systems.

Contractor: Proctor Engineering Group

Method: Collection of data from a representative sample of equipment from (a) laboratory testing and (b) on-site visits.

Analysis of performance data: development of measure performance curves by energy-efficiency-measures for the residential and nonresidential sectors (stratified by market segments, where applicable).

To perform the same type of analyses on the final set of measures in order to comply with Table 9A (1997).

Start date: June 1998

Finish date: March 1999

Current status: Completed

Budget (by year): Funded by utilities: \$217,500

Committed (by year): \$0 (pre-1998)

PROJECT 2029P

Title: Statewide Direct Assistance Program Measure Retention Study

Objective: Assessment of overall retention rates of five weatherization measures plus evaporative cooling measures installed under the four utilities' residential Direct Assistance Programs.

Contractor: Megdal & Associates

Method: Perform 250 on-sites across the four utility service territories to determine whether the measures are in place and operable.

Compute the historic percent retention as a function of time for each measure at the statewide level and, as possible, at the utility service territory level.

Compare retention results for each service territory and attempt to identify factors leading to any apparent difference in measure retention based on program design, and empirical and anecdotal data gathered during on-site inspections.

Start date: June 1998

Finish date: March 1999

Current status: Completed

Budget (by year): Funded by utilities: \$150,000

Committed (by year): \$0 (pre-1998)

PROJECT 2030P

Title: Statewide Measure Performance Study: Summary of Persistence Studies: Assessments of Technical Degradation Factors

Objective: Summarize and consolidate final technical degradation factor (TDF) tables from the three Persistence Studies (Projects 2023P, 2027P and 2028P).

Contractor: Proctor Engineering Group

Method: Collection and assessment of performance data on selected demand side management measures from secondary and primary sources, including engineering studies, interviews with manufacturers and technical experts, on-site visits, and laboratory testing.

Analysis of performance data: development of measure performance curves by energy-efficiency-measures for the residential and nonresidential sectors (stratified by market segments, where applicable).

To perform the same type of analyses on the final set of measures in order to comply with Table 9A (1998).

Start date: June 1998

Finish date: February 1999

Current status: Completed

Budget (by year): \$0: Funded by utilities through Project 2028P budget

Committed (by year): \$0 (pre-1998)

PROJECT 2031P

Title: Statewide Measure Performance Study: Negative Degradation Factors: Supplement to Persistence Studies

Objective: Four measures from the three Persistence Studies (Projects 2023P, 2027P and 2028P) were determined to have negative technical degradation factors (TDFs) relative to standard efficiency equipment. These were estimated.

Contractor: Proctor Engineering Group

Method: Collection and assessment of performance data on selected demand side management measures from secondary and primary sources, including engineering studies, interviews with manufacturers and technical experts, on-site visits, and laboratory testing.

Analysis of performance data: development of measure performance curves by energy-efficiency-measures for the residential and nonresidential sectors (stratified by market segments, where applicable).

To perform the same type of analyses on the final set of measures in order to comply with Table 9A (1998).

Start date: June 1998

Finish date: October 1998

Current status: Completed

Budget (by year): \$0: Funded by utilities through Project 2028P budget

Committed (by year): \$0 (pre-1998)

PROJECT 2032P

Title: Statewide Measure Performance Study: Residential and Nonresidential Sectors, Phase III-B

Objective: Further assessment of the technical degradation of the Compressors and Compressed Air Distribution Systems measure studied under Phase II (Project 2027P). However, the TDF used for resource value calculations is set at 1.0 by the Protocols and will not be changed by the results of this study.

Contractor: Proctor Engineering Group

Method: Collection of data from a representative sample of equipment from laboratory testing and on-site visits.
Analysis of performance data: development of measure performance curves for the nonresidential sectors (stratified by market segments, where applicable).
Provide extended metering and specific recommendations to participating customers to increase their energy efficiency, and monitor resulting usage patterns.

Start date: June 1998

Finish date: December 2001

Current status: Research underway

Budget (by year): Funded by utilities: \$229,000

Committed (by year): \$0

**REPORT ON MARKET EFFECTS STUDIES
COMPLETED BY UTILITY MEMBERS¹**

Report Title	Utility Sponsor	Study ID No.	RFP Mailed Out	Date Contract Signed	Due Date for Draft/Received	Due Date for Final report/Received	Contract Amount (\$000)	YTD Expenditures ² (\$000)
1. Market Effects of Residential New Construction Programs	PGE SCE	3301 3501	May 1996	Aug 1996	Feb 1997	Apr 1997	\$100	\$100
2. Market Effects of Residential Appliance Rebate Programs (CFL and HE Refrigerators)	PGE SDGE	3302 3902	Apr 1997	May 1997	Nov 1997	May 1998	\$250	\$250
3. Market Effects of CEEI Lighting Programs	PGE SDGE	3303 3903	Apr 1997	May 1997	Nov 1997	May 1998	\$400	\$400
4. Market Effects of Pacific Energy Center	PGE	3304	May 1997	Jun 1997	Nov 1997	May 1998	\$80	\$40
5. Market Effects of PGE Program on Supermarket Market	PGE	3305	Jun 1997	Jun 1997	Nov 1997	Jun 1998	\$150	\$70
6. Commercial/Industrial Customer Decision Baseline	PGE	3306	Jun 1997	Jul 1997	Nov 1997	Jun 1998	\$100	\$30
7. Market Effects of High Quality CFB Program	SCE	3502	NA ³	Aug 1996	Oct 1997	Jun 1998	\$90	\$45
8. Market Effects of DOE Labeling Program/Appliances	SCE	3503	NA ⁵	Sep 1996	Jun 1997	Feb 1998	\$25	\$25
9. Market Effects of Customer Technology Center	SCE	3504	May 1997	Jun 1997	Oct 1997	Feb 1998	\$60	\$80
10. Market Effects of SCE Commercial & Industrial Programs	SCE	3505	Jan 1997	Jan 1997	Sep 1997	Mar 1998	\$239	\$200
11. Market Effects of Agricultural Testing Program	SCE	3507	Dec 1996	Mar 1997	Aug 1997	Feb 1998	\$125	\$125
12. Market Effects of Residential Information Program	SCG	3701	NA ⁵	NA ⁵	NA ⁵	Jun 1998	\$150	\$90
13. Market Effects of Residential New Construction	SCG SDGE	3702 3904	NA ⁵	NA ⁵	NA ⁵	Jun 1998	\$150	\$60
14. Indirect Costs and Benefits of SDG&E Commercial Lighting program	All utilities	3901	Jun 1998	Jul 1998	Feb 1997	Apr 1997	\$70	\$70

¹ Per 1996 AEAP Decision D.96-12-079.

² Year-to-Date Expenditures as of June 1, 1997

³ NA: Not Available

CADMAC STATEWIDE SUBCOMMITTEE PROJECTS OVERVIEW

SUBCOMMITTEE	PROJECT	NO.	DUE DATE (Per Appendix B)	START DATE	FINISH DATE	BRIEFING TO CADMAC
Retrofit Modeling	Conventions	2001M	June 1993/95	Mar 1994	Dec 1994	Dec 1994.
	Sample Size	2002M	Not specified	Jun 1996	Dec 1996	Dec 1996
	Side-by-Side Comparison	2003M	Not specified	Cancelled	Canceled	Canceled
	Improved Choice Models	2005M	Not specified	May 1996	Dec 1996	Dec 1996
	Engineering Models	2006M	Not specified	Jun 1996	May 1998	May 1998
New Construction Modeling	Conventions	2011N	June 1993	Apr 1994	Jun 1994	Jul 1994
	Res. Baseline	2012N	Not specified	Nov 1993	Apr 1995	Jun 1995
	Comm. Baseline Matrix	2013N	Not specified	Mar 1995	Jun 1995	Aug 1995
	Comm. Baseline Assessmt	2014N	Not specified	Cancelled	Cancelled	Cancelled
	Res. Baseline - Quant.	2015N	Not specified	Oct 1994	Mar 1995	Apr 1995
Persistence	Scoping Study Review	2021P	June 1993	Jun 1993	Jun 1993	
	Measure Life	2022P	August 1993	Jun 1993	Aug 1993	Aug 1993
	Performance	2023P	Not specified	Mar 1995	Apr 1996	Apr 1996
	Spillover	2024P	Not specified	Oct 1993	Jun 1994	Jun 1994
	Coordination Retention	2025P	Not specified	Jan 1994	Dec 1994	
	Multi- Year Billing Analysis	2026P	Not Specified	Jul 1997	Jul 1998	Aug 1998
	Performance, Phase II	2027P	Not Specified	Nov 1996	Aug 1997	May 1998
	Performance, Phase III	2028P	Not Specified	May 1998	Dec 2001	Jan 2002
Base Efficiency	Rating Matrix	2031B	August 1993	May 1993	Mar 1994	Jun 1994
	Methods Review A	2032B	Not specified	May 1993	Jun 1994	Jun 1994
	Methods Review B	2033B	Not specified	Cancelled	Cancelled	Cancelled
	Avg. Appliance Efficiency	2034B	Not specified	Mar 1994	Oct 1994	Nov 1994
	Net Savings	2035B	Not specified	Feb 1995	Mar 1996	Mar 1996
	Spillover	2036B	Not specified	Cancelled	Cancelled	Cancelled
Measure Cost	1994 Measure Cost Study	2041C	April 1994	Jan 1994	Nov 1994	Jan 1995
	Indirect Cost Scoping ⁴	2042C	Not specified	Cancelled	Cancelled	Cancelled
	Indirect Cost Pilot	2043C	Not specified	Cancelled	Cancelled	Cancelled
	1996 Measure Cost Study	2044C	April 1996	Feb 1996	Dec 1996	Dec 1996
Residential Refrigerators	Scoping Study - Impact	2051R	Sept 1993	Aug 1993	July 1994	Sep 1994
	SCE Load Data	2052R	Not specified	Sep 1994	April 1995	Jun 1995
	1994 Impact Evaluation	2053R	Not specified	Oct 1995	Feb 1996	
Residential Lighting	Lighting Protocols	2061L	Jan 1994	Aug 1993	Feb 1994	May 1994
	Transferability	2062L	Not specified	Cancelled	Cancelled	Cancelled
	1994 Impact Evaluation	2063L	Not specified	Sept 1995	Feb 1996	
Metering & Monitoring	Metering Protocols	2071E	July 1993	Jul 1993	Dec 1993	Apr 1994
Special Studies	Collaborative Summary	2081S	Not specified	Jan 1994	Aug 1994	Aug 1994
Market Effects	Market Trains Scoping Study	2091T	Not specified	Feb 1996	Jul 1996	Jul 1996
	Indirect Costs & Benefits Study	2092T	Not specified	May 1996	Apr 1997	May 1997
	RNC Market Trans Study	2093T ⁵	Not specified	May 1996	Mar 1997	Apr 1997
	Summary of 1997 Mkt Eff Studies	2094T	Not specified	Oct 1997	Sep 1998	Sep 1998

⁴ This study evolved into Project 2043C.

⁵ Project 2093T is also referred to as Study ID No. 3301 (PGE) and Study ID No. 3501 (SCE).

1993 - 2002 CADMAC STATEWIDE STUDIES BUDGET

PROJECT	Actual 1993	Actual 1994	Actual 1995	Actual 1996	Actual 1997	Est 1998-2002	Act+Est 93-'02
RETROFIT MODELING							
Conventions (2001M)	\$0	\$50,000	\$0	\$0	\$0	\$0	\$50,000
Sample Size (2002M) (1)	\$0	\$0	\$0	\$20,000	\$0	\$0	\$20,000
Side-by-Side Comp. (2003M) (2)	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Improved Choice Models (2004M)	\$0	\$0	\$0	\$50,000	\$0	\$0	\$50,000
Quality Assurance Guidelines (2005M)	\$0	\$0	\$0	\$5,000	\$0	\$0	\$5,000
NEW CONSTRUCTION							
Conventions (2011N)	\$0	\$60,243	\$0	\$0	\$0	\$0	\$60,243
Res. Baseline (2012N)	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Comm. Base Matrix (2013N)	\$0	\$20,000	\$20,000	\$0	\$0	\$0	\$40,000
Comm. Base On-Site (2014N) (4)	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Res. Base Quant. (2015N)	\$0	\$0	\$0	\$0	\$0	\$0	\$0
PERSISTENCE							
Scoping Study Rev. (2021P)	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Measure Life (2022P)	\$31,400	\$0	\$0	\$0	\$0	\$0	\$31,400
Performance (2023P) (4)	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Spillover (2024P)	\$0	\$25,000	\$0	\$0	\$0	\$0	\$25,000
Coordination Retention (2025P) (4)	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Multiyear Billing Analysis (2026P) (4)	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Performance II (2027P) (4)	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Performance III (2028P) (4)	\$0	\$0	\$0	\$0	\$0	\$0	\$0
DAP Measure Retention (4)	\$0	\$0	\$0	\$0	\$0	\$0	\$0
BASE EFFICIENCY							
Rating Matrix (2031B)	\$20,000	\$5,000	\$0	\$0	\$0	\$0	\$25,000
Methods Review A (2032B)	\$25,000	\$3,900	\$0	\$0	\$0	\$0	\$28,900
Methods Review B (2033B)	\$0	\$0	\$20,000	\$0	\$0	\$0	\$20,000
Avg. App. Efficiency (2034B)	\$0	\$10,000	\$0	\$0	\$0	\$0	\$10,000
Net Savings (2035B)	\$0	\$20,000	\$80,000	\$0	\$0	\$0	\$100,000
Spillover (2036B)	\$0	\$0	\$0	\$0	\$0	\$0	\$0
MEASURE COST							
Measure Cost Study (2041C)	\$0	\$200,000	\$0	\$0	\$0	\$0	\$200,000
Indirect Cost Scoping Study (2042C) (3)	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Indirect Cost Pilot Study (2043C) (3)	\$0	\$0	\$50,000	\$0	\$0	\$0	\$50,000
Measure Cost Study (2044C)	\$0	\$0	\$0	\$200,000	\$0	\$0	\$200,000
RES. REFRIGERATORS							
Scoping Study (2051R)	\$35,000	\$25,000	\$0	\$0	\$0	\$0	\$60,000
SCE Load Data (2052R)	\$0	\$10,000	\$10,000	\$0	\$0	\$0	\$20,000
1994 Impact Eval. (2053R) (4)	\$0	\$0	\$0	\$0	\$0	\$0	\$0
RESIDENTIAL LIGHTING							
Lighting Protocols (2061L)	\$38,000	\$25,000	\$0	\$0	\$0	\$0	\$63,000
Transferability (2062L)	\$0	\$0	\$0	\$0	\$0	\$0	\$0
1994 Impact Eval. (2063L) (4)	\$0	\$0	\$0	\$0	\$0	\$0	\$0
METERING/MONITORING (2071E)							
	\$60,000	\$0	\$0	\$0	\$0	\$0	\$60,000
COLLAB.SUMMARY (2081S)							
	\$0	\$30,000	\$0	\$0	\$0	\$0	\$30,000
MARKET EFFECTS							
Market Transformation Scoping Study (2091T)	\$0	\$0	\$0	\$60,000	\$0	\$0	\$60,000
Indirect Costs & Benefits (2092T)	\$0	\$0	\$0	\$70,000	\$0	\$0	\$70,000
RNC Market Transformation (2093T) (4)	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Summary of Market Effects Studies (2094T)	\$0	\$0	\$0	\$0	\$11,807	\$123,243	\$135,050
TOTAL	\$209,400	\$200,243	\$170,000	\$405,000	\$11,807	\$123,243	\$1,119,693

Notes for 1993 - 2002 CADMAC Statewide Studies Budget pages:

1. Proposed project concept and dollar amount approved by CADMAC, September 1994. Scope of work has been expanded.
2. Project no longer necessary/canceled
3. This study evolved into Project 2092E
4. Only participating utilities will fund – not part of CADMAC statewide studies budgets.
5. Funded by the DRA 1% fund for DRA review activities

ATTACHMENT 2

**INFORMATIONAL UPDATE
ON
RETROACTIVE WAIVERS**

**SUMMARY LISTING OF RETROACTIVE WAIVERS
APPROVED BY CADMAC, 1995 - PRESENT**

UTILITY	PROGRAM YEAR	PROGRAM NAME	DESCRIPTION OF WAIVER	DATE APPROVED BY CADMAC	DATE FILED WITH CPUC
PG&E	PY94	Residential & Nonresidential New Construction	Delay first year load impact studies for one year; studies that support the second earnings claim will be filed in the 1997 AEAP. PG&E's second earnings claim will be delayed for one year for these two programs.	11/30/94	4/3/95
SDG&E	PY94	Commercial EEI - Gas Cooking End Use	Evaluate gas cooking end use under Table C-9 instead of Table C-4 because of limited number of participants	3/15/95	4/3/95
SDG&E	PY94	Commercial/Industrial Energy Management Services	Delay first year load impact evaluation for one year from 1996 to 1997. No earnings claim will be made for the PY94 EMS Program.	3/15/95	4/3/95
SDG&E	PY94	Agricultural Energy Management Services	Use engineering model to estimate savings adjusted by a realization rate, drop comparison group requirement, and drop retention study requirement.	3/15/95	4/3/95
SCE	PY94	Residential New Construction	Omit the PY94 studies and replace them with a study that will assist SCE and CEC in assessing the new construction sector. To be completed by 8/31/96.	3/15/95	4/3/95

UTILITY	PROGRAM YEAR	PROGRAM NAME	DESCRIPTION OF WAIVER	DATE APPROVED BY CADMAC	DATE FILED WITH CPUC
SCE	PY94	Nonresidential New Construction	Delay first year impact evaluation and second earnings claim for one year. Impact evaluation to be completed no later than 2/28/97; second earnings claim to be filed with 1997 DSM Annual Report, along with second earnings claim for 1995 programs.	3/15/95	4/3/95
SCG	PY94	Residential New Construction	Delay first year load impact evaluation and second earnings claim for one year. Impact evaluation to be filed on 3/1/97 as opposed to 3/1/96.	6/21/95	9/29/95
PG&E	PY94	Residential New Construction	Omit the PY94 studies and replace them with a small study that will assist PG&E and CEC in assessing the new construction sector. To be completed by 8/31/96. The small study will be the same study that SCE and CEC are performing. This waiver supersedes the 1994 Residential New Construction waiver adopted 1/30/94 and filed 4/3/95.	9/20/95	9/29/95
SCG	PY95	Commercial New Construction	Delay first year load impact evaluation and second earnings claim for one year. Impact evaluation to be filed on 3/1/98 as opposed to 3/1/97.	10/18/95	4/23/96
SDG&E	PY94	Commercial Energy Efficiency Incentives	Use Industrial Protocols Table C-5 in place of Commercial Protocols Table C-4 for the purpose of evaluating load impacts and net-to-gross ratio of measures installed in San Diego military bases.	1/17/96	4/23/96

UTILITY	PROGRAM YEAR	PROGRAM NAME	DESCRIPTION OF WAIVER	DATE APPROVED BY CADMAC	DATE FILED WITH CPUC
PG&E	PY94	Residential Weatherization and Residential Appliance Efficiency Incentives	Delay first year load impact evaluations and second earnings claims for one year. Impact evaluations will be filed on 3/1/97 as opposed to 3/1/96.	2/21/96	4/23/96
SDG&E	PY94	Residential New Construction Miscellaneous Measures	Waive first year retention study requirement for compact fluorescent fixtures and multi-family dwelling measures.	2/21/96	4/23/96
SCE	PY94	Commercial Energy Efficiency Incentives - CFL Manufacturer's Rebate Program	Use the same measurement method as used for residential CFB manufacturers' rebate program instead of Table C-4; use Table C-9 default net-to-gross ratio if necessary.	2/21/96	4/23/96
SCE SDG&E	PY94	Residential High Efficiency Lighting Statewide Study	Use Table C-3B methodology to determine the net-to-gross ratio.	2/21/96	4/23/96
SCE PG&E	PY94	Residential New Construction	Combine SCE and PG&E individual studies into a joint study to be completed by 3/1/97.	5/15/96	6/2/97
SCG	PY95	Industrial Energy Management Services	Use mail and/or telephone surveys to produce estimates of the pre-installation usage, base usage, and first year load impacts for the participant group. Waive the comparison group requirement.	7/10/96	6/2/97
SCE	PY95	Residential Energy Management Services	Replace first year impact study for the Mail-In Energy Use Profile component of the program with a second year load impact study of the PY93 component.	8/20/96	6/2/97
SDG&E	PY95	Agricultural Energy Efficiency Incentives	Use 0.75 net-to-gross ratio in lieu of using a comparison group. Report load impacts per horsepower as the DUOM for the motors installed under this program. Evaluate heating measures	9/19/96	6/2/97

UTILITY	PROGRAM YEAR	PROGRAM NAME	DESCRIPTION OF WAIVER	DATE APPROVED BY CADMAC	DATE FILED WITH CPUC
			as a separate end use with on-site verification of engineering estimates. Treat exit signs as a miscellaneous measure.		
PG&E	PY94	Residential Appliance Efficiency Incentives - Refrigeration	Allow net savings to be estimated using a 0.97 net-to-gross adjustment based on results of SCE/ SDG&E evaluation rather than collect primary data from customers in PG&E's service territory.	9/19/96	6/2/97
PG&E	PY95	Agricultural Energy Efficiency Incentives	Allow use of (1) Simplified Engineering Models supported by telephone and field data collection to estimate impacts for lighting and pumping end uses if the billing analysis does not yield robust results; (2) self-reported and trade ally survey analysis results to estimate net-to-gross; (3) an attempted census for the pumping and lighting end uses; (4) the commercial lighting DUOM for lighting end use; and (5) use a common denominator (same as used in ex ante) for DUOM value for pumping end use.	10/18/96	6/2/97
SCE	PY95	Commercial/Industrial/Agricultural Energy Efficiency Incentives	Waive the requirement for impact studies due to low participation in the CEEI Program, no participation in the IEEI or AEEI Programs, and no shareholder rewards.	11/13/96	6/2/97
PG&E	PY95	Commercial Energy Efficiency Incentives - Refrigeration	PG&E will perform two net-to-gross analyses and upon filing indicate which method will be used to collect earnings. The DUOM for the refrigeration end use is changed to "per project."	12/18/96	6/2/97

UTILITY	PROGRAM YEAR	PROGRAM NAME	DESCRIPTION OF WAIVER	DATE APPROVED BY CADMAC	DATE FILED WITH CPUC
SDG&E	PY95	Commercial Energy Efficiency Incentives - Measures in Military Bases	Use Industrial Protocols Table C-5 in place of Commercial Protocols Table C-4 for the purpose of evaluating load impacts and net-to-gross ratio of measures installed in San Diego military bases.	12/18/96	6/2/97
SCE	PY95	Nonresidential DSM Bidding	Waive the requirement for first year load impact and persistence studies of this program and treat as a skipped year due to low participation and no earnings.	1/15/97	6/2/97
SDG&E	PY94	Nonresidential New Construction	Allow use of the "whole building" DUOM instead of reporting impacts on a per square foot basis per end use as prescribed in the previous version of the Protocols	2/19/97	6/2/97
PG&E SCE	PY94	Nonresidential New Construction	Allow use of a reduced sample which, although below the minimum listed in the Protocols, was drawn at a level of 90/10 precision based upon estimated square footage. Report load impact results on a "whole building" level.	2/19/97	6/2/97
SCE	PY96	Industrial & Agricultural Energy Management Services	Substitutes two market effects studies for the Protocol-required load impact studies.	5/21/97	6/2/97
SDG&E	PY96	Commercial/Industrial/Agricultural Energy Management Services	Delays the first year load impact evaluations for one year from 1997 to 1998.	5/21/97	6/2/97
SCG	PY95	Nonresidential New Construction	(1) use Simplified Engineering model, (2) change sample size, and (3) use discrete choice analysis because 95% of savings is contributed by cooking measures versus whole building, which is what the Protocols prescribe.	6/18/97	6/3/98

UTILITY	PROGRAM YEAR	PROGRAM NAME	DESCRIPTION OF WAIVER	DATE APPROVED BY CADMAC	DATE FILED WITH CPUC
SCG	PY96	Commercial Energy Management Services	Allow use of telephone survey of larger sample rather than on-site survey of smaller sample prescribed by Protocols. (1) use a default 0.75 net-to-gross ratio in lieu of using a comparison group; (2) change the DUOM for motors to "load impacts per horsepower;" (3) evaluate lighting measures as a separate end use, and (4) treat process and exterior lighting end uses as miscellaneous measures per Protocols Table C-9.	6/18/97	6/3/98
SDG&E	PY96	Agricultural Energy Efficiency Incentives	(1) Use two engineering analyses for gross savings estimation for water pumping: (a) a "true-up" to overcome potential upward bias in the <i>ex ante</i> algorithm used for variable speed drives as applied to pumping measures, and (b) an independent engineering estimate developed from on-site and metered data by an engineering firm specializing in hydraulic services. (2) Treat HVAC as a non-miscellaneous end use, per the Protocols rule that end uses contributing to more than 15% of sector net resource benefits be subjected to <i>ex post</i> evaluation. (3) Use "load impacts per acre foot of water pumped" as the DUOM for pumping and "load impacts per square foot of conditioned space" for HVAC. (4) Use the 0.75 default net-to-gross ratio for pumping and	6/18/97	6/3/98
SCE	PY96	Agricultural Energy Efficiency Incentives	(1) Use two engineering analyses for gross savings estimation for water pumping: (a) a "true-up" to overcome potential upward bias in the <i>ex ante</i> algorithm used for variable speed drives as applied to pumping measures, and (b) an independent engineering estimate developed from on-site and metered data by an engineering firm specializing in hydraulic services. (2) Treat HVAC as a non-miscellaneous end use, per the Protocols rule that end uses contributing to more than 15% of sector net resource benefits be subjected to <i>ex post</i> evaluation. (3) Use "load impacts per acre foot of water pumped" as the DUOM for pumping and "load impacts per square foot of conditioned space" for HVAC. (4) Use the 0.75 default net-to-gross ratio for pumping and	7/22/97	6/3/98

UTILITY	PROGRAM YEAR	PROGRAM NAME	DESCRIPTION OF WAIVER	DATE APPROVED BY CADMAC	DATE FILED WITH CPUC
PG&E	PY96	Agricultural Energy Efficiency Incentives	<p>HVAC end uses.</p> <p>(1) use a Simplified Engineering Model supported by telephone surveys and on-site data collection to estimate the gross impacts for indoor lighting end use and Customized Incentive Program measures, (2) perform an <i>ex ante</i> algorithm review to estimate the gross impact for pump adjustments which represent less than 0.1% of the pumping end use avoided cost, (3) use discrete choice analysis including participant and non-participant survey data, backed up with self-report analysis, to estimate net-to-gross effects, and (4) specify the Designated Unit of Measurement (DUOM) for agricultural indoor lighting to be the same as commercial lighting for Agricultural EEI measures.</p>	7/22/97	6/3/98
SCE	PY96	Nonresidential New Construction	<p>(1) Use a reduced sample size that meets precision requirements. (2) Waive the requirement for use of 9 months of billing data and allow use of short-term whole premise metering data or reduced amounts of billing data for calibration of building simulation models (DOE-2). (3) Use two different methodologies to estimate program net savings impacts and specify selection criteria to determine which of the two estimates will be used to calculate earnings for this program.</p>	8/20/97	6/3/98
SDG&E	PY96	Nonresidential New Construction	Exempted from the Table 5 sampling	8/20/97	6/3/98

UTILITY	PROGRAM YEAR	PROGRAM NAME	DESCRIPTION OF WAIVER	DATE APPROVED BY CADMAC	DATE FILED WITH CPUC
SCE	PY96	Residential Appliance Efficiency Incentives - Space Conditioning End Use	<p>requirements, that is, the sample size and random sample methodology, for first year load impact study. SDG&E was allowed to supplement the PY95 NRNC study sample (both participants and non-participants) with a sample of PY96 participants and a selected non-participant group. The resulting combined PY95 and PY96 sample will be used for the PY96 NRNC first year load impact study. PY97 will then be a skipped year and the PY96 study results will be used to modify the second earnings claim for PY97.</p> <p>Waives the requirement to conduct a first year impact study and subsequent persistence studies because (1) the program was very small and the low number of installations made the measure non cost-effective, (2) SCE completed a PY94 study of achieved savings that documents claimed savings were achieved, and (3) the usefulness of another study is questionable from the perspective of its worth for future program planning directions.</p>	9/24/97	6/3/98
PG&E	PY96	Nonresidential New Construction	<p>(1) use a reduced sample size to achieve requisite precision and confidence levels, (2) use short-term whole premise metering in addition to or instead of billing data for calibration of DOE-2 building simulation models and eliminate the requirement for a minimum of 9 months of billing data, and (3) use</p>	9/24/97	6/3/98

UTILITY	PROGRAM YEAR	PROGRAM NAME	DESCRIPTION OF WAIVER	DATE APPROVED BY CADMAC	DATE FILED WITH CPUC
PG&E	PY96	Agricultural Energy Management Services	<p>two different methodologies to estimate program net savings impacts and specify selection criteria to determine which of the two estimates will be used to calculate earnings for the program.</p> <p>(1) estimate gross impacts using telephone surveys collection to determine installation rates, then multiply these rates by the average EEI impact for the same measures, (2) use discrete choice analysis including participants and nonparticipants, backed up with self-report analysis, to estimate net-to-gross effects or use a default net-to-gross ratio of 0.75 in trade for a study of market transformation effects, and (3) submit a market effects study on April 30 to the Market Effects Subcommittee.</p>	7/22/97 and subsequently on 11/21/97	6/3/98
PG&E	PY96	Commercial Energy Efficiency Incentives - Lighting End Use	<p>use a Simplified Engineering Model supported by telephone surveys and on-site data collection to estimate the gross impacts for indoor lighting end-use and Customized Incentive (CI) Program measures, (2) perform an ex ante algorithm review to estimate the gross impact for pump adjustments which represent less than 0.1% of the pumping end-use avoided cost, (3) use discrete choice analysis including participant and non-participant survey data, backed up with self-report analysis, to estimate net-to-gross effects, and (4) specify the DUOM for agricultural indoor lighting to be the</p>	11/21/97	6/3/98

UTILITY	PROGRAM YEAR	PROGRAM NAME	DESCRIPTION OF WAIVER	DATE APPROVED BY CADMAC	DATE FILED WITH CPUC
			same as commercial lighting for AEEI measures for the 1996 first year evaluation.		
SCE	PY96	Nonresidential DSM Bidding Pilot	(1) use a sample of facilities for metering "chain" facilities projects, (2) use the self-report interview methodology for developing the net-to-gross ratio, and (3) extend the deadline for study completion to May 1, 1998.	12/17/97	6/3/98
SCE	PY96	Residential Refrigerator Recycling	(1) Use a combination of data from a secondary source and independently developed DOE test results to estimate unit energy consumption for appliances retired by the program. (2) Replicate customer survey methods used in 1994 to develop the required net-to-gross ratio. (3) Extend the deadline for study completion to May 1, 1998.	12/17/97	6/3/98
SDG&E	PY96	Residential New Construction	Waives the requirement for the first year load impact evaluation required by Table 8A of the Protocols, instead, applying the net load impact results from the PY94 RNC first year load impact evaluation to PY96.	1/21/98	6/3/98
SDG&E	PY96	Commercial Energy Efficiency Incentives - Military Measures	Identical waiver request for PY96 to that submitted for PY94 and PY95 which allows the use of Protocols Industrial Table C-5 in place of the Commercial Table C-4 for measures installed on military bases.	2/18/98	6/3/98

UTILITY	PROGRAM YEAR	PROGRAM NAME	DESCRIPTION OF WAIVER	DATE APPROVED BY CADMAC	DATE FILED WITH CPUC
SCE PG&E	PY94 PY96	Nonresidential New Construction	<p>(1) treat the "measure" for these programs as the "whole building," rather than as a collection of separate measures, (2) use the sampling plan and whole building modeling from the 1994 and 1996 impact evaluations as the basis of the persistence study sample and models, (3) calculate a program-wide "effective useful life (EUL)" on the basis of changes in the whole building energy efficiency level over time, (4) calculate a program-wide "technical degradation factor" on the basis of a ratio between current whole building energy savings calculated using degraded equipment efficiency and the whole building energy savings calculated in the original impact study, and (5) combine the persistence studies for program years 1994 and 1996 into a single study to be filed in March, 1999. The sample for this study will be drawn from a pooled sample from the PY94 and PY96 impact studies.</p>	4/15/98	6/3/98
SCE	PY97	Residential Energy Management Services	<p>Waives the requirement for first-year load impact study of the 1997 program per M&E Protocol Table 8 A.</p>	6/17/98	6/1/99

UTILITY	PROGRAM YEAR	PROGRAM NAME	DESCRIPTION OF WAIVER	DATE APPROVED BY CADMAC	DATE FILED WITH CPUC
SCE	PY97	Agricultural Energy Efficiency Incentives	Approve a plan for analysis of 1997 AEEI program first-year impacts that includes: a) a default net-to-gross ratio of 0.75, applicable to pumping, process, and refrigeration end uses; b) an engineering analysis for estimation of gross savings in the water pumping, process and refrigeration end uses; c) process and refrigeration treated as non-miscellaneous end uses, in accord with the Protocols rule that end uses contributing to more than 15 percent of sectoral net resource benefit are to be evaluated empirically; d) the designated unit of measurement for the process and refrigeration end uses is 'load impacts per project,' consistent with the Protocols-specified DUOM for the industrial process end use.	6/17/98	6/1/99
PGE	PY97	Agricultural Energy Efficiency	Approve deviations from, or clarifications of, the Protocols for the first year impact evaluation of the 1997 AEEI program as follows: (1) use a Simplified Engineering Model supported by telephone surveys and on-site data collection to estimate the gross impacts for the refrigeration and greenhouse end-uses, and (2) conduct a market effects study in place of a net-to-gross analysis, applying a default net-to-gross ratio to the sector.	6/17/98	6/1/99
PGE	PY97	Commercial Energy Efficiency Incentives	1. Use a load impact regression model (LIRM) to estimate first year electric energy impacts. The LIRM will include	6/17/98	6/1/99

UTILITY	PROGRAM YEAR	PROGRAM NAME	DESCRIPTION OF WAIVER	DATE APPROVED BY CADMAC	DATE FILED WITH CPUC
			<p>calibrated engineering estimates of energy savings, based on interim results from the 1994 and 1995 Commercial Lighting Programs to estimate the following parameters: full load hours of operation, coincident diversity factors, HVAC interactive effects, and burned-out lamp rates.</p> <p>2. For the estimation of first year electric capacity load (kW) impacts, a calibrated engineering (CE) model will be used, based on interim results from the 1994 and 1995 Commercial Lighting Programs to estimate the following parameters: coincident diversity factors, HVAC interactive effects, and burned-out lamp rates.</p>		

UTILITY	PROGRAM YEAR	PROGRAM NAME	DESCRIPTION OF WAIVER	DATE APPROVED BY CADMAC	DATE FILED WITH CPUC
SDG&E	PY97	Commercial Energy Efficiency Incentives - Measures in Military Bases	Use Industrial Protocols Table C-5 in place of Commercial Protocols Table C-4 to evaluate gross load impacts and net-to-gross ratio of measures installed in San Diego military bases.	10/21/98	6/1/99
PGE	PY97	Commercial Energy Efficiency Incentives	Use self report-based algorithms to estimate free ridership and spillover effects for certain technologies should the discrete choice and LIRM models fail to produce statistically reliable results of net-to-gross estimates.	1/20/99	6/1/99
SCE	PY94-PY97	Residential Appliance Efficiency Incentives-Refrigerator Recycling	Conduct one fourth and one ninth year retention study to be applied to the four program years, 1994-1997	1/20/99	6/1/99
SDG&E	PY94	Commercial/Industrial Energy Efficiency Incentives Nonresidential New Construction Residential Appliance Efficiency Incentives-Refrigerators	Substitute "top ten measures" criteria in Table 9A with (1) commercial measures be identified by the top 50% of the "incentive basis" (IB) as defined in the shareholder mechanism in place at that time; and (2) that residential refrigerator measures be identified as the top 50% of gross kWh savings.	2/17/99	6/1/99
PGE	PRE-98	Modification to 3 rd and 4 th Earnings Claim Methodology	All 3 rd and 4 th earnings claim impacts be calculated as the sum of the <u>measure level</u> AEAP values as adjusted by appropriate ex post Technical Degradation Factors (TDF) and Effective Useful Life (EUL) values.	2/17/99	6/1/99

UTILITY	PROGRAM YEAR	PROGRAM NAME	DESCRIPTION OF WAIVER	DATE APPROVED BY CADMAC	DATE FILED WITH CPUC
SCE	PY96-PY97	Commercial/Industrial/Agricultural Energy Efficiency Incentives	Modify the requirement to conduct completely new and separate studies for the 1996-97 program years. Instead replace these by a continuation and supplementation of the study currently underway for the 1993-94 programs years for all three sectors.	5/20/99	6/1/99
PGE	PRE-98	Agricultural Energy Efficiency Incentives	(1) Use a Simplified Engineering Model supported by telephone surveys and on-site data collection to estimate the gross impacts for the Refrigeration end-use. (2) Report results in more appropriate DUOMs. (3) Conduct a market needs study in place of a net-to-gross analysis, applying a default net-to-gross ratio to the sector.	5/20/99	6/1/99
PGE	PRE-98	Commercial Energy Efficiency Incentives—Net-to-Gross Analysis	Allow the use of self-report based algorithms to estimate free ridership and spillover effects for certain technologies should the discrete choice and LIRM models fail to produce statistically reliable results of net-to-gross estimates.	5/20/99	6/1/99
PGE	PRE-98	Commercial Energy Efficiency Incentives—Traffic Signal	Follow Table C-4 of the Protocols, which was developed primarily for the lighting and HVAC end uses for traffic signals.	5/20/99	6/1/99
PGE	PRE-98	Commercial Energy Efficiency Incentives—Process End Use	For the estimation of first year gross kW, kWh, and therm impacts, project-specific engineering models will be utilized. The engineering analysis will be applied to projects representing at least 70% of the total kW, kWh, and therm savings for the process end use. In addition, verification of installation will	5/20/99	6/1/99

UTILITY	PROGRAM YEAR	PROGRAM NAME	DESCRIPTION OF WAIVER	DATE APPROVED BY CADMAC	DATE FILED WITH CPUC
			<p>be conducted for all projects in the evaluation sample. This approach is consistent with acceptable methods outlined in the Protocols Table C-5 for the Industrial process end use. For the estimation of first year net impacts, customer self-report data will be used to construct project-specific net-to-gross ratios. These net-to-gross ratios will be multiplied by gross impacts to provide net impact estimates. A comparison group will not be used. This approach is consistent with acceptable methods outlined in the Protocols Table C-5 for the Industrial process end use. Define the DUOM for the process end use as the number of projects rebated, where a project is uniquely defined as the combination of customer control number and application number.</p>		

UTILITY	PROGRAM YEAR	PROGRAM NAME	DESCRIPTION OF WAIVER	DATE APPROVED BY CADMAC	DATE FILED WITH CPUC
PGE	PRE-98	Commercial Incentives—Lighting	<p>1. For the estimation of first year electric energy impacts, a load impact regression model (LIRM) will be performed. In addition, the LIRM will include calibrated engineering estimates of energy savings, based on interim results from the 1994 and 1995 Commercial Lighting Programs to estimate the following parameters: full load hours of operation, coincident diversity factors, HVAC interactive effects, and burned-out lamp rates.</p> <p>2. For the estimation of first year electric capacity load (kW) impacts, a calibrated engineering (CE) model will be used, based on interim results from the 1994 and 1995 Commercial Lighting Programs to estimate the following parameters: coincident diversity factors, HVAC interactive effects, and burned-out lamp rates.</p>	5/20/99	6/1/99
PGE	PRE-98 (PAID '98)	Agricultural Energy Efficiency Incentives—Green house Heat Curtain End Use	<p>1. For the estimation of first year electric energy impacts, allow the use of Simplified Engineering Models (as specified in Appendix A, page A-2 of the Protocols) supported by census on-site data collection to estimate gross impacts for the Greenhouse Heat Curtain end use.</p> <p>2. For the estimation of first year electric energy impacts, allow reporting of results in more appropriate DUOMs for the Greenhouse Heat Curtain end use. The results for this end use will be</p>	10/20/99	6/1/00

UTILITY	PROGRAM YEAR	PROGRAM NAME	DESCRIPTION OF WAIVER	DATE APPROVED BY CADMAC	DATE FILED WITH CPUC
			reported on a per project basis and on a relevant per unit basis. For the Greenhouse Heat Curtain end use, the proposed per unit DUOM would be "Load impacts per square foot of heat curtain installed".		
PG&E	PRE-98 (PAID '98)	Nonresidential New Construction	Achieve requisite precision and confidence levels with a reduced sample size. Permit the use of short-term whole premise metering in addition to or instead of billing data for calibration of building simulation models (DOE-2) and eliminate the requirement for a minimum of nine months of billing data	10/19/99	6/1/00
PG&E	PRE-98 (PAID '98)	Nonresidential New Construction - Industrial	Analyze the gross savings for the new construction industrial projects using a methodology that is consistent with the industrial retrofit methodology using measure-specific analysis instead of whole-building analysis. Analyze the net savings for the new construction industrial projects using a methodology that is consistent with the industrial retrofit methodology using a self-reported net-to-gross analysis instead of a non-participant sample.	12/15/99	6/1/00
PG&E	PY95	Power Savings Partners -DSM Bidding Program	Use of existing summary of site specific M&V reports, supported by random verification, is sufficient to support PG&E's 1995 PSP Program third earnings claims.	2/16/00	6/1/00

UTILITY	PROGRAM YEAR	PROGRAM NAME	DESCRIPTION OF WAIVER	DATE APPROVED BY CADMAC	DATE FILED WITH CPUC
SCE	PY95	DSM Bidding Program	Omit the fourth and ninth year retention studies for the 1995 Nonresidential DSM Bidding Program. SCE will provide an analysis of the Annual Power Savings Reports submitted by the program participants for the 1995-97 programs that will assist in addressing retention issues for the 1996-97 program years	12/15/99	6/1/00
SCE	PRE-1998 PAID IN 1999	Nonresidential New Construction	Permit a smaller sample size, based on model-based sampling, that is designed to meet the precision requirements specified in Table 5 with a lower sample size than Table 5 requires. The sample size will be based on precision for energy savings estimates, rather than annual energy use, since estimating energy savings is the objective of the study.	6/16/99	6/1/00
PGE	PRE-1998/ PAID IN 1999	Nonresidential New Construction	Permit use of a self-report method of net-to-gross ratio estimation, as is permitted for the Industrial Energy Efficiency Incentives Program, rather than a non-participant sample method.	1/24/01	6/1/01
SDG&E	PY94	Residential Appliance Efficiency Incentives—Refrigerators; Commercial Energy Efficiency Incentives; Industrial Energy Efficiency Incentives; Nonresidential New Construction	Allow determination of which measures must be included in retention studies by using incentive basis for the nonresidential programs and gross energy savings for the residential program, rather than net resource value as the ranking criterion required by the Protocols. The Protocols require the top 50% of measures (or the top 10) as ranked by net resource value to be included.	1/24/01	6/1/01

UTILITY	PROGRAM YEAR	PROGRAM NAME	DESCRIPTION OF WAIVER	DATE APPROVED BY CADMAC	DATE FILED WITH CPUC
PGE	PY96	Residential (Multi-family) Lighting	Allow the continued use of the ex ante expected useful life (EUL) in lieu of conducting a new sixth year retention study for the 1996 Residential Lighting Program. Results of the third year and sixth year retention studies for the 1994 and 1995 programs, and the results of the third year retention study for the 1996 program determined that the ex ante estimates of useful life are very conservative estimates.	3/20/02	6/03/02
SCE	PY97	Residential Lighting	Allow the continued use of the results of the 1994 program studies (Study ID Nos. 524 and 535) in lieu of conducting new third and sixth year retention studies for the 1997 Residential Lighting Program.	3/20/02	6/03/02
PG&E& SCE	PY94-95 & PY96-97	Nonresidential New Construction	Allow continued use of protocol deviations approved for the fourth year retention study on April 15, 1998. The methodology used for the fourth year study will be applied to the ninth year persistence study.	7/30/03	8/25/03

**SOUTHERN CALIFORNIA EDISON
AND
PACIFIC GAS & ELECTRIC
NONRESIDENTIAL NEW CONSTRUCTION PROGRAM
PERSISTENCE STUDIES
(Study ID Numbers 548/554 and 323-R2)**

Summary of Request

This waiver requests adjustments by Southern California Edison (SCE) and Pacific Gas & Electric (PG&E) to the Protocols for the persistence study requirements for their Nonresidential New Construction Programs. SCE and PG&E seek approval to continue to use the sampling plan and whole building modeling from the 1994 through 1997 fourth year persistence study as the basis for the ninth year persistence study sample and models. This requires the following Protocol deviations:

1. Treat the measure for these programs as the whole building, rather than as a collection of separate measures.
2. Calculate a program-wide effective useful life (EUL) on the basis of program participant buildings and rebated components which are no longer in service (partially or fully).
3. Calculate a program-wide technical degradation factor on the basis of a ratio between current whole building energy savings calculated using degraded equipment efficiency and the whole building energy savings calculated in the original impact study.
4. Combine the persistence studies for program years 1994 through 1997 (including the program payments made in 1998 and 1999 and called PY98 and PY 99) into a single study to be filed in March 2004. The sample for this study will be drawn from the pooled sample of PY94 and PY96 participants used in the fourth year persistence studies.

In the remainder of this waiver, items (1) to (4) above are referenced by their item number.

This waiver is requesting to continue using the protocol deviations that were approved for the fourth year persistence studies on April 15, 1998. The protocols and methodology used for the fourth year persistence study will be applied to the ninth year persistence studies to be filed in March 2004.

Proposed Approach

SCE and PG&E propose to continue to use the methodology from their fourth year nonresidential new construction persistence studies. This proposed methodology will build on the sampling, data collection and analysis methods of the fourth year persistence studies and original impact studies, and the rich database generated in these studies. This approach will provide the most accurate and cost-effective approach to evaluating persistence.

The methodology that is being proposed for this study is summarized below:

- The ninth year persistence study sample frame will be identical to the fourth year persistence sample.
- A telephone survey will be performed on the sample for the fourth year persistence study. Respondents will be asked about changes to their facilities (or portions thereof) that had participated in the NRNC program. Changes in these participating facilities will trigger an on-site survey to examine the status of equipment installed under the NRNC program. Changes triggering an on-site survey will include: a) the facility being removed from service, b) change of tenant, or c) removal or modification of equipment installed under the NRNC program.
- A DOE-2 simulation will be performed for all sampled sites as follows. The original DOE-2 runs for each facility will be modified to reflect the results of the statewide performance study. The efficiencies of installed equipment will be adjusted based on the performance study and the DOE-2 run re-simulated to determine whole building impacts resulting from the performance change.
- In addition, for sites where significant facility alterations have occurred (as determined through the telephone survey and subsequent on-site survey), these changes will be reflected through appropriate modification and re-simulation of the original DOE-2 model. Energy simulations will be based on the original footprint of the participant buildings except as follows: a) additions to the buildings will not be included in calculations of energy savings, and b) spaces removed from service will be subtracted from calculated energy savings
- The results of the modified DOE-2 simulations will be statistically expanded to

the participant population. Statistical expansion of savings estimates will be based on the original footprint of participant buildings except as follows: a) additions to buildings will not be used in expanding energy savings estimates, and b) spaces removed from service will be reflected in the expansion of energy savings estimates. Program gross and net results will be then be factored up or down to reflect persistence effects.

Rationale

The proposed approach will continue to utilize the databases, on-site audits, simulation models and methodology developed for the fourth year persistence studies. The proposed approach will seek to identify changes to the buildings, which may have eliminated some or all of the original buildings' energy systems, or which could degrade their energy performance. These effects will be quantified through use of the DOE-2 models. The results, determined from the previous persistence study sample of buildings, will be expanded to the program population using the same expansion factors that were in the fourth year studies.

This approach to determining persistence will pose a minimum of inconvenience to customer facilities, and will make good use of the expensive and highly detailed information that was previously gathered. We believe it is the most efficient method for arriving at accurate persistence information for new buildings.

Proposed Waiver

In following this proposed approach, SCE and PG&E seek CADMAC approval to deviate from the Protocols in the following specific ways:

(1) Treat the measure for these programs as the whole building, rather than as a collection of separate measures

Parameter

Table 9A for Nonresidential New Construction, Measures Included in Retention and Performance Studies.

Protocol Requirement

The Protocols specify that the "Top 10 Measures" be included.

Waiver Alternative

For Nonresidential New Construction programs, the Impact Measurement Protocols specify, in Table C-8, that the End Use Element is the Whole Building,

and that the measures are "all lighting hardware efficiency improvements combined, and all HVAC combined". The designated unit of measurement is the load impact per building. Table 9A should be modified to specify "Whole Building Performance", rather than "Top 10 Measures", to be consistent with the previously adopted revisions which are reflected in Table C-8.

Rationale

The proposed approach continues to use the methodology that was approved and utilized for the fourth year Nonresidential New Construction persistence studies.

(2) Calculate a program-wide effective useful life (EUL) on the basis of program participant buildings that are no longer in service (partially or fully)

Parameter

The Net Resource Benefits are to be calculated as the product of:

1st year net impacts x effective useful life x technical degradation factor

according to Table 10, Note 3b. The effective useful life (EUL) parameter in this calculation is addressed here for nonresidential new construction programs.

Protocol Requirement

The Protocols' definition in Appendix A of EUL speaks of the median number of years that the measures installed under the program are still in place and operable. In the case of the SCE and PG&E nonresidential new construction programs, where the whole building is the measure, an appropriate interpretation of this definition is needed.

Waiver Alternative

SCE and PG&E propose to interpret the definition of EUL, in the case of this program, to mean the effective useful life of the new buildings (or portions thereof) that participated in their programs, and to translate reductions in the program participant building stock into reductions in program savings over time.

Rationale

The proposed approach continues to use the methodology that was approved and utilized for the fourth year Nonresidential New Construction persistence

studies.

(3) Calculate a program-wide technical degradation factor on the basis of a ratio between current whole building energy savings and the whole building energy savings calculated in the original impact study

Parameter

The Net Resource Benefits are to be calculated as the product of:

1st year net impacts x effective useful life x technical degradation factor

according to Table 10, Note 3b. The technical degradation factor (TDF) in this calculation is addressed here for nonresidential new construction programs.

Protocol Requirement

The Protocols definition in Appendix A of TDF is: A scalar to account for time and use related change in the energy savings of a high efficiency measure or practice relative to a standard efficiency measure or practice. In the case of the SCE and PG&E nonresidential new construction programs, where the whole building is the measure, an appropriate interpretation of this definition is needed.

Waiver Alternative

SCE and PG&E propose to interpret the definition of TDF, in the case of this program, to mean the relative degradation in energy savings of the new buildings that participated in their programs over time.

Rationale

The proposed approach continues to use the methodology that was approved and utilized for the fourth year Nonresidential New Construction persistence studies.

(4) Combine the persistence studies for program years 1994 through 1997 (including the projects completed in 1998 and 1999 called PY98 and PY99 in the AEAP) into a single study to be filed in March, 2004. The sample for this study will be drawn from the pooled sample of PY94 and PY96 participants used in the fourth year persistence studies.

Protocol Requirement

Table 9A specifies that ninth-year retention studies for program years 1994 and 1995 should be combined and submitted in March, 2004 for the fourth earnings

claim. Similarly, retention studies for program years 1996 and 1997 should be combined and submitted in March 2006.

Waiver Alternative

SCE and PG&E propose to do a combined persistence study for program years 1994 through 1997 (including participants whose projects were completed in 1998 and 1999). The study sample will consist of the pooled samples used in the fourth year retention studies for these same programs. The results will be submitted in March, 2004..

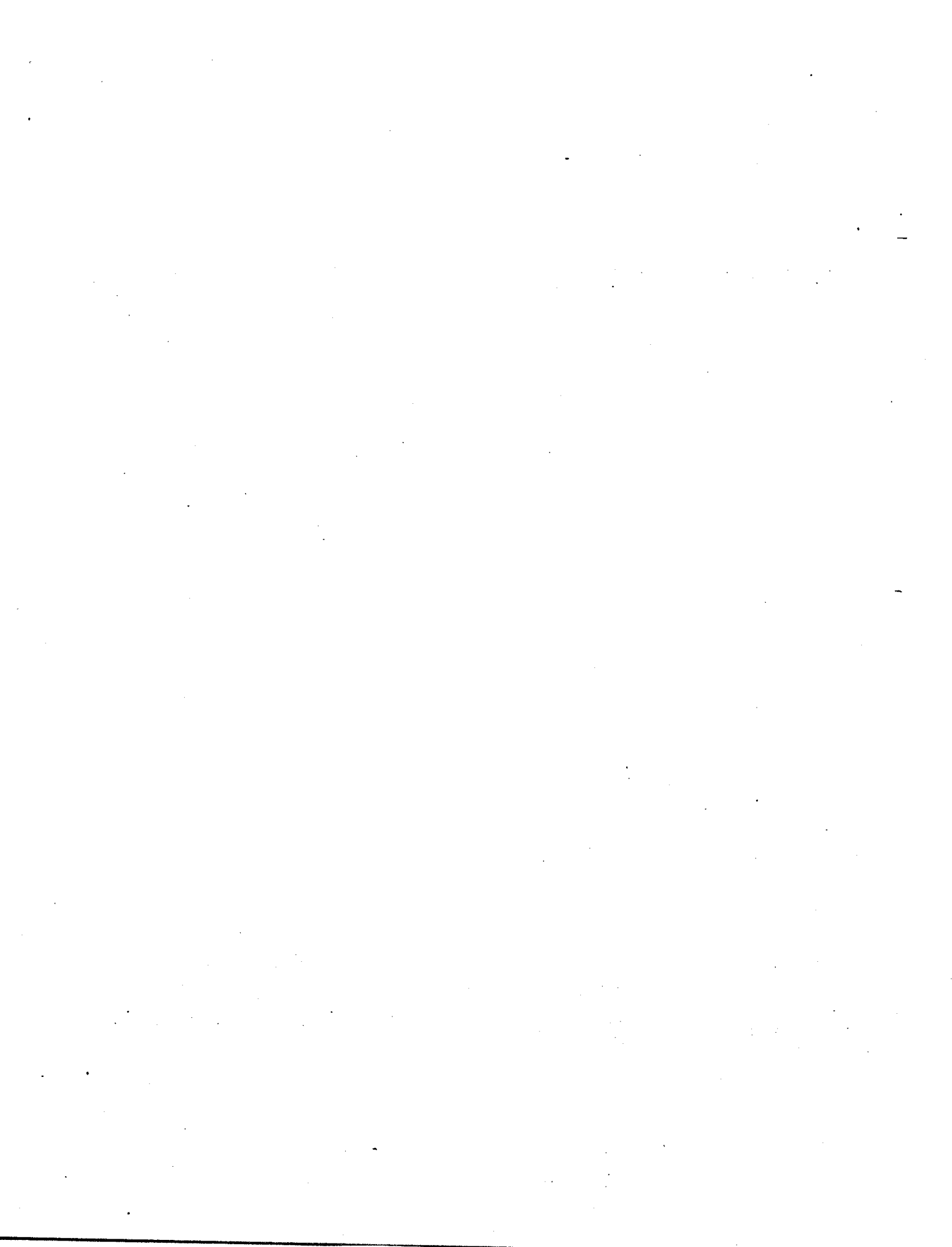
Rationale

The proposed approach continues to use the methodology that was approved and utilized for the fourth year Nonresidential New Construction persistence studies.

Table A

Summary of Retroactive Waiver for Studies 548/554 and 323-R1

Parameters	Protocol Requirements	Waiver Alternative	Rationale
Measures to be included in retention study	Table 9A: include top 10 measures or 50 percent of resource value	Make persistence studies consistent with the designated unit of measurement for the fourth year persistence studies by using whole building analysis instead of top 10 measures. Use whole building analysis methodology developed for PY94 through PY97 fourth year persistence studies.	New construction program addressed whole building performance. Impact measured whole building performance. Measure-by-measure approach is not appropriate here.
Effective Useful Life (EUL)	Table 9A, Section 3: data should be collected (using telephone, on-site, or mail surveys) and used to estimate a survival function for each measure. Effective useful life (EUL) is determined from the survival function.	Interpret to mean effective useful life of the whole-building energy efficiency level in new buildings that participated. A building's energy savings survival function is determined from data on its removal from service and changes in its energy using equipment. Effective useful life (EUL) is determined from the survival function.	Approach would quantify loss of program savings due to buildings taken out of service or remodels that affect the overall energy efficiency of the building. Lost savings can be expanded to program population using statistical methods developed for impact studies.
Technical Degradation Factor (TDF)	Table 9A, Section 4: technical degradation factor is to be determined at a measure level by the statewide performance study.	Interpret to mean degradation in energy and demand savings over time of new buildings that participated. Savings losses will be calculated for whole buildings, using existing DOE-2 models with individual equipment	Approach would quantify loss of program savings due to performance degradations of equipment, as identified by the statewide performance study. This methodology will provide a more accurate estimate of technical



<p>degradation at a whole building level.</p>	<p>degradation included in model.</p>		<p>Combined persistence studies</p>
<p>Under proposed methodology, needed data and models are not available for PY95, PY97, and 1999-completed projects. Combining PY94 and PY96 samples allows for more robust sample, more accurate estimation of survival function, and reduced costs.</p>	<p>Combine PY94-95 and PY96-97 studies (the latter including buildings completed in 1998-99). Sample will be identical to the pooled sample used for the fourth year persistence studies, which was drawn from PY94 and PY96 participants.</p>	<p>Table 9A, Section 2: retention studies for PY94 and PY95 to be done by 2004; retention studies for PY96 and PY97 to be done by 2006.</p>	

CERTIFICATE OF SERVICE BY U.S. MAIL AND ELECTRONIC MAIL

I, the undersigned, state that I am a citizen of the United States and am employed in the City and County of San Francisco; that I am over the age of eighteen (18) years and not a party to the within cause; and that my business address is Pacific Gas and Electric Company, Law Department B30A, 77 Beale Street, San Francisco, California 94105.

I am readily familiar with the business practice of Pacific Gas and Electric Company for collection and processing of correspondence for mailing with the United States Postal Service. In the ordinary course of business, correspondence is deposited with the United States Postal Service the same day it is submitted for mailing.

On the 26th day of August 2003, I served a true copy of:

**INFORMATIONAL FILING BY
CALIFORNIA DSM MEASUREMENT ADVISORY COMMITTEE (CADMAC)**

by placing it for collection and mailing, in the course of ordinary business practice, with other correspondence of Pacific Gas and Electric Company, enclosed in a sealed envelope, with postage fully prepaid, addressed to:

All parties and State service on the official service lists for A.03-05-002 et al. and A. 00-05-002 et al.

By Electronic mail - serving the enclosed via e-mail transmission to each of the names listed on the official service list for A.03-05-002 et al. and A. 00-05-002 et al.

I certify and declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Executed on this 26th day of August 2003 at San Francisco, California.



LINDA S. DANNEWITZ