

APPENDIX B

CALIFORNIA DSM MEASUREMENT ADVISORY COMMITTEE (CADMAC)

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(Effective January 1, 1993)

I. STATEMENT OF PURPOSE:

To provide a forum for presentations, discussions, and review of DSM program measurement studies underway or completed, to coordinate the development and implementation of measurement studies common to all or most of the utilities, and to facilitate the development of effective, state-of-the-art protocols for measuring and evaluating the impacts of DSM programs.

II. COMMITTEE MEMBERSHIP:

A. Regular Committee Membership:

The four major investor-owned utilities, the DRA of the CPUC, the CACD (as a non-voting member) of the CPUC, and the CEC. Other parties may be added to the membership list as discussed below under Supplemental Membership. Individuals from non-member organizations may attend committee meetings or committee-sponsored events, but these parties do not possess voting rights.

B. Supplemental Membership:

1. CADMAC will solicit applications for supplemental membership by issuing a notice to all parties in R.91-08-003/I.91-08-002 and other appropriate mailing lists by September 1 of each year. Organizations may apply for supplemental membership to the CADMAC by September 15 of each year for membership in the following calendar year. Applications should be filed with the CADMAC chairperson.
2. CADMAC will assess the applications based on the following criteria:
 - committee balance;
 - potential for conflicts of interest;
 - technical expertise; and
 - demonstrated commitment to CPUC M&E proceedings.
3. CADMAC will file an advice letter with the Commission by October 15 of each year which contains the membership applications received and CADMAC's recommendations for membership based on the criteria above.
4. Membership status of supplemental members will be reaffirmed annually by the advice letter process described above. CADMAC should assess the attendance and quality of participation of members seeking reaffirmation.
5. Supplemental members that are approved by the Commission receive voting rights only on the issue of protocol modifications or retroactive waivers.

6. The Commission will identify supplemental members with a demonstrated need for funding to support their participation. These identified members will receive the following reimbursement for all CADMAC meetings attended:
 - a. \$100 per organization for each day of each meeting held within 100 miles of the attending representative's place of business.
 - b. \$200 per organization for each day of each meeting held more than 100 miles from the attending representative's place of business.

These travel costs will be reimbursed quarterly. Costs will be split equally by the four utilities.

C. Independent Reviewers:

1. CADMAC will have an additional one to three independent reviewers with no voting rights.
2. Independent reviewers will be chosen by CACD following input and advice from all CADMAC members. Ideally, reviewers will possess a demonstrated expertise and objectivity in measurement and evaluation of DSM and no current contractual relationship with any CADMAC members, except CACD.
3. Under the direction of CACD, reviewers will attend CADMAC meetings as needed and provide input for the CACD and the CPUC in the AEAP on the following:
 - a. A utility's request for a prospective protocol change (Appendix Z applications).
 - b. Proposed consensus or nonconsensus protocol modifications.
 - c. A utility's request for a retroactive waiver in the CADMAC. If CADMAC approves the waiver, then the Independent Reviewers have no role. However, if the request for a retroactive waiver must be heard in an advice letter, the independent reviewers will report on the discussion in the CADMAC.
 - d. Review of a sample of utility load impact studies, as directed by CACD.
 - e. Expert testimony in the AEAP requested by the CPUC or the utilities to be provided under separate agreement.
4. The four investor-owned utilities will share the costs of the independent reviewers equally. The contracts of the Independent Reviewers will be for one to three years and will be staggered where feasible.

III. MEETINGS: (to be held on an as-needed basis)

A. Types of Activities Addressed:

1. Planning for Semi-Annual DSM Measurement Forums
2. Planning and scheduling for meetings to discuss status of utility measurement studies in progress (meetings to be held either jointly or between a subset of Committee members).
3. Discussion of Statewide Studies (see below): contents and contractor selection, and, on a limited basis, results.
4. Discussion and consideration of modifications and additions to adopted impact measurement protocols.
5. Discussion and consideration of prospective (Appendix Z) and retroactive waivers to the adopted protocols.

IV. SEMI-ANNUAL FORUMS: (to be held in Spring and Fall of each year)

A. Primary Topics for Presentations: (listed in order of priority)

1. Results of completed or nearly completed utility load impact or measure cost studies by utilities.
2. Results of completed or nearly completed utility analyses which compare the relative costs and improvements of alternative impact measurement methods (models, survey design, etc., which represent alternatives to adopted measurement protocols).
3. Devices used or available to measure load impacts at the end use level.
4. Results of load impact studies from other states.
5. Updates on regulatory proceedings affecting measurement (including proposals and Committee endorsements for modifying or adding measurement protocols)

B. Participation and Attendance:

1. Utility representatives (maximum of 10 from each utility).
2. CPUC (maximum of 10)
3. CEC (maximum of 10)
4. NRDC, CIEE, TURN, LBL, SMUD, LADWP, NAESCO (maximum of two each)
5. Speakers, other than representatives of institutions of Committee members.

6. Invited guests: Maximum of fourteen, with a minimum opportunity of two from each Committee member.

C. Agreement on the Intent and Use of Utility Presentations at a Semi-Annual Forum:

1. The primary purpose of utility presentations will be to allow for an open and candid discussion of results obtained or expected from measurement studies and measurement problems encountered.
2. Utilities will present the results of completed impact studies and studies-in progress with the understanding that statements made will not be used by any party as the basis for subsequent litigation on the findings.
3. Statements or findings of a study presented at the Forums which identify problems encountered will be used by all parties as a basis to assess the reasonableness of adopted measurement protocols.

V. STATEWIDE MEASUREMENT STUDIES:

1. Modeling Standards for End Use Consumption and Load Impact Models -- Retrofit Programs:

The purpose of these studies is to assess the relative accuracy, performance and transferability of results of alternative End Use Consumption and Load Impact models being used in California and elsewhere to measure load impacts from retrofit programs. The focus of the studies is to examine the strengths and weaknesses of different varieties of load impact regression models and engineering models, and the techniques for incorporating various kinds of data from end use metering and monitoring activities. Based on the assessment, the study will make recommendations to the Advisory Committee for basic standards (protocols) to be employed in the use of these models for measuring load impacts from retrofit programs. The study will be completed biennially. The first such study completed by June 1, 1993, and will focus on the models and metered data used by California utilities in measuring load impacts from 1990-92 retrofit programs.

2. Modeling Standards for End Use Consumption and Load Impact Models -- New Construction Programs:

The purpose of these studies is to assessing and develop appropriate conventions for integrating data and Building Simulation Models used at the CEC for standards-setting purposes with billing data and other End Use Consumption and Load Impact models such load impact regression models and engineering models used to assess program impacts from utility new construction programs. The studies will include an assessment of: (a) opportunities to coordinate, on a statewide basis, the collection of on-site data and results of Building Simulation Models used in evaluating utility New Construction programs in a manner and form which will provide the CEC with timely and useful data to set new efficiency standards; and (b) appropriate conventions for using and integrating the data and results of Building Simulation Models with billing data and load impact regression models and/or engineering models. The first study will focus on the utility impact studies of 1990-92 Nonresidential New Construction programs, and will be completed by June 1, 1993.

3. Persistence Studies: The purpose of these studies is to assess alternative methods and provide estimates of useful life, effective useful life, and changes in program load impacts over time. The studies will consist of the following four types:

- a. Retention studies (and effective useful lives);
- b. Changes in load impacts due to the technical degradation of energy efficiency measures.
- c. Changes in participant group and/or comparison group annual load impacts due to spillover effects.
- d. Changes in annual gross and/or net load impacts from utility programs due to the combined effects identified above in a., b., c., plus free riders and other uncontrolled effects.

The retention studies will be completed biennially, with the first such study completed by June 1, 1993. The first study will be a scoping study, using the available data from programs implemented in 1990 through 1993. The reference point for initiating the persistence studies will be the persistence studies prepared for and in conjunction with the CEC Inventory in 1991-1992.

Whenever possible the data used for all four types of studies will be based on the data used in individual utility impact studies to measure annual load impacts from implemented programs. The results of the study should be presented in a form and format which is useful for considering additions or modifications to adopted measurement protocols for lifecycle load impacts used for shareholder earnings and (if different) for resource planning. Results of the studies will be used as a primary basis for developing and considering changes to these protocols, but the results are not binding on any party.

4. Base Efficiency Studies: The purpose of these studies is to establish common or alternative approaches, methods, and reference values for accounting for the effects of state and federal appliance efficiency standards on retrofit programs. The first study, completed by August 1, 1993, will establish simple adjustment factors which can be used by utility field personnel and/or in impact measurement studies to explicitly adjust pre-installation usage estimates (from load impact regression models, engineering models, or end use metering data) to reflect the minimum level of efficiency of equipment that would have been purchased to replace existing equipment.

5. Measure Cost Study: The purpose of these studies is to establish and maintain (a) a framework for the efficient collection and use of information on measure costs of the primary measures being promoted in utility efficiency programs, including data collected by utilities in implementing and evaluating their programs, and (b) a reference database of the costs of these measures. The study will be completed by April 1 of every even numbered calendar year. The reference point for the 1994 Measure Cost Study will be the Measure Cost Studies prepared for the CEC Inventory in 1991-92.

6. Residential High Efficiency Refrigerator Studies: The purpose of these studies is to establish protocols in Table C-3, and Tables 8 and 9 for appropriate load impact and measure cost estimation procedures for high efficiency refrigeration appliances in the residential sector. The

studies will include data and/or impact studies of utility-specific participants in historic years. Collectively, the studies will produce and will be the basis for impacts common to all utilities, or (if demonstrated otherwise), utility-specific variations to the common impact estimates. A major element of the studies will be the assessment of refrigerator sales data as a possible basis for net-to-gross ratios to be used. The first statewide study report, which will be proposed as protocols for consideration in the 1993 AEAP, will be completed no later than September 1993. The Measurement Advisory Committee will determine the scope and frequency of future studies.

7. *Residential High Efficiency Lighting Studies:* The purpose of these studies is to establish a common framework for appropriate estimation procedures for high efficiency lighting in the residential sector. The studies will include data and/or impact studies of utility-specific participants in historic years. Collectively, the studies will produce and will be the basis for impacts common to all utilities, or (if demonstrated otherwise), utility-specific variations to the common impact estimates. A major element of the studies will be the assessment of measured data on hours of operation of lighting equipment, participant behavioral changes (if any) attributable to the use of the high efficiency lighting equipment, variations (if any) in customer behavior attributable to product differences. Any study element which is related to persistence and useful life issues will be coordinated with the statewide persistence studies). The first statewide study report will be completed no later than January 1994. The Measurement Advisory Committee will determine the scope and frequency of future studies.

8. *Quality Assurance Standards for Direct Metering and Monitoring Equipment:* The purpose of this study is to establish and maintain a set of professional standards on products and procedures to be used when using end use metering and monitoring equipment to measure and evaluate the impacts of energy efficiency investments. The study group and sources of information will include representatives and information provided by NAESCO and ASHRAE. The first study will be completed by July 1, 1993, and will be expanded and/or updated on an-as-needed basis, to be determined by the MAC.

9. *Measure Retention Study - Residential Direct Assistance Programs:* A one-time statewide study will be conducted to assess the retention of evaporative cooling measures, attic and ceiling insulation, low flow showerheads, door weather stripping, caulking, and water heater blankets. This study will replace all other previously specified persistence studies for all utility Residential Direct Assistance Programs and will be completed by March 1, 1999.

10. *Special Studies:* The purpose of these studies is to allow for additional analysis of program impacts (load or measure cost) beyond the utility-specific studies and statewide studies. Special studies include additional analyses and extensions of planned or completed studies, and may include such additions or extensions in support of the CEC Inventory project. In the event of a lack of consensus, proposals for a special study will be pursued in the AEAP.

VI. UTILITY RESPONSIBILITIES:

1. Committee Chair, on an annual, rotating basis.
2. Committee Chair responsibilities: Scheduling and arrangements for Committee Meetings and Semi-Annual Forums; written minutes prepared and distributed for any agreements reached on DSM Measurement Advisory Committee matters (meetings will be scheduled and noticed through the Clearinghouse).

3. Funding, from authorized M&E budgets, for statewide measurement studies, with one utility to serve as administrator of contracts.
4. Funding of DRA verification studies, up to 1% of each utility's authorized Measurement and Evaluation budget, as reported in the Annual DSM Summaries, with carryforward/carryover of funds between and within authorized funding periods; one utility to serve as administrator of funds.
5. The allocation of costs among the investor owned utilities to fund the statewide studies will be determined on a case-by-case basis.
6. The allocation of costs among the investor-owned utilities to fund the 1% DRA verifications studies will be determined as follows: the annual authorized M&E budget of each utility divided by the annual M&E budgets of all four utilities.
7. The coordination of contracts and consultant contractual arrangements for statewide studies conducted in conjunction with the CEC Inventory and the CADMAC.

VII. DRA VERIFICATION STUDIES:

The purpose of these studies is to allow for the review of load impact and measure cost studies which the utilities have completed and used as a basis for claiming shareholder earnings.

Verification activities include the hiring of consultants to: (1) review utility measurement plans and projects; (2) review and analyze completed measurement studies; (3) review and assess any utility proposals for pre-specified assumptions to be used in programs eligible for shareholder earnings; (4) review and assess proposed changes or additions to adopted measurement protocols; and (5) provide expert testimony on behalf of the DRA in CPUC proceedings.

DRA is solely responsible for the selection of consultants and for the terms and conditions of consultant contracts, but will try to accommodate suggestions from other parties. In general, DRA will select consultants who are not under contract with a utility Committee member and who agree not to enter into a contract with any of these utilities for a period of time after the completion of the verification contract.

DRA is solely responsible for the determination of the type of verification review to be undertaken, but will try to accommodate suggestions from the CEC or other non-utility parties. Per D.93-05-063, DRA (or its consultant) should expand efforts to conduct on-site verification of customer participation, proper equipment installation, and program costs, as warranted. For load impact studies on New Construction Programs, DRA will accommodate CEC recommendations regarding the choice of studies which should be subjected to detailed consultant review, and rely on CEC personnel to assist in the review the results of the contractor report.

When the results of the verification review include a written consultant report, these results will be shared, upon request, with other parties. If and when DRA intends to use a written consultant report in an AEAP to challenge a utility earnings claim, the consultant verification report will be made available no later than one month prior to scheduled hearings.

VIII. VOTING RIGHTS AND PROCEDURES:

1. Each Committee member is entitled to one vote which must be exercised in person at CADMAC meetings.
2. When consensus on a proposal is sought and required, a vote in favor, opposition or abstention is required from each regular Committee member (absence does not constitute agreement, disapproval or a vote to abstain).
3. Consensus is achieved when all members who are entitled to vote and are present on the proposal have either agreed or abstained.
4. Proposals requiring full Committee consensus:¹
 - Changes in Committee Chair, Voting Rights and Procedures, Committee Purpose, and Utility Responsibilities; and,
 - Committee endorsements of changes or additions to adopted impact measurement protocols (actual changes adopted by the Commission in the AEAP).
 - Committee endorsements of minor technical retroactive waivers to the adopted protocols and selection criteria to be used for selecting which parallel load impact study, method, or combination will be used as the basis for its earnings claim. If consensus is not obtained, the utility can opt to file an advice letter. The advice letter shall contain a record of the CADMAC vote taken and a summary of the reasons for the yes and no votes.
5. Any utility requesting a retroactive waiver must give all CADMAC members 14 days notice prior to the CADMAC meeting.
6. Proposals requiring consensus of only the utility members of the Committee (input and support from other Committee members will be sought but agreement not required):
 - delineation of scope of a statewide study for purposes of preparing RFPs and completing the studies; and,
 - contractor selection and cost sharing for statewide studies.

IX. COMMITTEE DURATION

The CADMAC shall sunset when there is no longer an earnings claim in the AEAP, unless further extended by Commission order.

¹ Supplemental members receive voting rights only on the issue of prospective protocol modification or retroactive waivers. Independent reviewers do not receive voting rights.