

Historical Perspective of California Energy Efficiency Measurement



Athena Besa

San Diego Gas & Electric Company

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Pre-1994 M&E Activities

- DSM programs have been implemented in California since the 1970s.
- Programs started with information and audit service programs.
- Most evaluations were more “process” oriented.
- Utilities measured the effects of their DSM programs based on various program parameters (customer satisfaction, no. of units distributed, etc.).



The Move Towards Verification of Savings

- August 1991—California PUC instituted Rulemaking to establish rules governing the evaluation, funding and implementation of DSM programs.
- February 1992—PUC decision initiated a shift from basing shareholder earnings on pre-specified (“ex ante”) savings to post-installation (“ex post”) measured savings. This impacts the incentive mechanism.



M&E Issues Addressed

- Pre-implementation Measurement: methodologies for estimating program load impact parameters for DSM programs prior to implementation.
- Post-implementation Measurement: methodologies for measuring DSM program impacts after program implementation.
- Incorporating the Results of Measurement Studies:
 - Improving M&E Protocols
 - Adjusting DSM savings forecasts
 - Adjusting shareholder incentive



Ex Post M&E Protocols

- Approved M&E Protocols in May 1993.
- Program Year 1994 was the transition period for application of the M&E Protocols.
 - Each utility selected programs to subject to the new M&E Protocols and studies were evaluated by Division of Ratepayer Advocates (DRA).
 - Provided opportunity to work out the “kinks” in the implementation of the M&E Protocols.
- M&E Protocols were to be fully implemented for Program Years 1995, 1996 and 1997.
- Process Evaluations were still conducted and useful for improving overall program performance.



M&E Protocol Features

- First Year Load Impact Evaluations used to verify first year savings and measure cost.
 - Regression Analysis
 - Metering & Monitoring
- Persistence and Measure Retention Studies used to verify lifecycle savings.
- Reporting Requirements for Forecasting and Incentive Claims
- Load Impact & Retention Study Schedules
- Quality Assurance guidelines for statistical, engineering, self-report methodologies for estimating program impacts.



M&E Protocol Features (Cont'd)

- California DSM Measurement Advisory Committee (CADMAC)—forum for presentation, discussions and review of DSM measurement studies, implementation of statewide studies, improvement of M&E Protocols.
- Protocol Waiver process in place should there be Protocol-implementation issues.



Market Transformation: Post-1997 Measurement Activities

- California's 1996 Electric Restructuring led to a shift in focus for achieving energy efficiency—short-term focus was to effect transformation in the market that would lead to a sustainable energy efficiency market that would deliver energy efficiency to customers into the future.



Market Effects and Market Transformation

- CADMAC created a Market Effects Subcommittee in 1997 to implement market effects studies for various programs.
- Evaluation activities were focused on developing methodologies to measure market effects, market indicators and market transformation.



Market Effects and Market Transformation (con'd)

- Between 1998 and 2001, energy efficiency programs were designed to accelerate market transformation.
- Incentive mechanisms were based on milestones that were indicators of market effects.
- Measurement activities were dedicated to studying these market effects thus leading to a new genre of M&E studies.
- No specific M&E protocols in place for these studies but other methodologies from other disciplines were used to study market indicators and market effects.



Post-Market Transformation

Years: 2001 Through 2005

- The California Energy Crisis which climaxed in 2001, refocused energy efficiency activities on resource acquisition.
- Utilities started conducting targeted load impact evaluations as energy savings and demand reductions needed to be updated.
- Utilities continued to conduct market studies and market potential studies to assist in the development of energy efficiency programs.
- 2004 California Evaluation Framework provides a consistent, systemized, cyclic approach for planning and conducting evaluations of California's energy efficiency programs.



2006 and Beyond

- Commission adopted energy efficiency goals that would be based only on verified “installed” savings in September 2004.
- A new energy efficiency administration structure was adopted that separated the M&E responsibilities (Joint CPUC and CEC staff) and program implementation (Utilities).
- New policy rules and M&E emphasize verification of installed savings.
- Commission approved new generation of M&E Protocols.



2006 and Beyond Protocols

- Impact Evaluation Protocols
 - Used for gross and net KWH, KW and therm savings
 - Engineering & Statistical models
- Measurement & Verification Protocols
 - On-site collection of data
- Emerging Technologies Protocols
- Codes & Standards Protocols
- Effective Useful Life protocols
 - Retention, Technical Degradation
- Process Evaluation Protocols
- Market Effects Protocols
- Protocols are available on:
 - <http://www.cpuc.ca.gov/PUC/energy/electric/Energy+Efficiency/rulemaking/eeEvaluation.htm>



2006-2008 EM&V

- Utilities are managing their own Process Evaluations.
- CPUC Staff are managing several EM&V studies and activities that meet the different studies laid out in the Protocols.
- Various M&E Studies are available on:
www.calmac.org