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AB970, AB29x and SB5x PEAK LOAD REDUCTION PROGRAMS 2001 ANNUAL REPORT

Executive Summary

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AB970, AB 29x and SB 5x
Peak Load Reduction Programs
December 2001 Annual Report

Executive Summary

Submitted to:

California Energy Commission and the
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Executive Summary

California's need for peak load reduction has grown since the state restructured its electrical power industry in 1996. Between 1996 and 1999, peak demand in California increased by 5,522 MW while only 672 MW of net capacity was added. In 2000, projections for the summer of 2001 paired an installed capacity of 45,602 MW with a peak summer demand of 52,586 MW. It became clear that construction of new generation and transmission capacity that would make up the difference could not be ready by the summer of 2001.

In response to this situation, the California Legislature passed Assembly Bill 970 (AB 970) in August 2000 and Assembly Bill 29X (AB 29X) and Senate Bill 5X (SB 5X) in April 2001. These bills allocate nearly $900 million to state agencies to fund efforts that would reduce peak electric demand. The California Energy Commission (CEC) received $330 million of this funding to create and augment grant, loan, and rebate programs. The CEC offered 12 such programs—called *program elements*—under an umbrella program known as the Peak Load Reduction Program (PLRP). The PLRP was launched in two phases: the first began after the passage of AB 970 in late fall of 2000, while the second, authorized by SB 5X and AB 29X, began in May 2001.

Nexant, Inc., has been retained by the CEC to provide independent evaluation of the peak demand savings impacts of 8 of the 12 program elements. Nexant's evaluation comprises two components: (1) the measurement and verification of peak demand savings and (2) an evaluation of the performance of both program administrators and participants.

This report presents Nexant's measurement and verification findings as of November 1, 2001; it discusses the methodologies used to determine the savings as well as the successes, lessons learned, next steps, and conclusions associated with each program element. Nexant will prepare a second annual report following the end of the 2002 peak demand period; this report will address similar topics, associated with 2002 activities, as well as present the results of the evaluation of administrator and participant performance.

Each of the eight program elements that Nexant evaluated addresses either a particular market or technology; each one is unique in terms of design, implementation, and expected savings. These eight program elements are listed and described below (the specific bill that funds the program element is in parenthesis):

- Agriculture (SB 5X). Funding is dispersed as grant payments to agricultural facilities for the costs of installing energy efficient equipment, testing and improving pump operations, installing demand-responsive systems, and enabling alternative fuel burning.
- Cool Roofs/Cool Savings (AB 970 and SB 5X). This program element offers incentives for increasing the reflectivity of roofs and other surfaces to reduce cooling (air-conditioning) loads at commercial, industrial, and public facilities.
- Demand Responsive Buildings (AB 970 and SB 5X). This program element offers funding to cover the costs of installing communications and control systems that enable

curtailment of peak load during California Independent System Operator (CAISO) called emergencies; funding also goes toward establishing access to real-time metering data for the purposes of verifying a facility's performance during such a curtailment.

- Energy Conservation Assistance Act Loan (AB 29X). Funding is used to provide low-interest loans for the costs of installing energy efficiency projects at local government facilities, public schools, and other public or non-profit facilities.
- Innovative (AB 970 and SB 5X). This program element offers grants for peak-load reduction or supply augmentation projects not provided for by any of the other program elements.
- LED traffic signals (AB 970). Funding is dispersed to municipalities, CalTrans, and other maintainers of public traffic signals to cover the costs of replacing incandescent traffic bulbs with light emitting diodes (LEDs).
- State Buildings (AB 970). This program element offers grants to state agencies and universities for the installation of energy efficiency measures or demand-responsive systems.
- Water/Wastewater (AB 970). Funds go to municipalities that implement energy efficiency, demand-responsive, load shifting, or generation projects at water pumping and wastewater treatment facilities.

Table ES-1 presents the accomplishments for each of these program elements as of November 1, 2001, in terms of project activity and verified peak demand savings.

In addition to the eight program elements listed above, the CEC offered four other elements: Water Agency Generation Retrofits (funded by SB 5X), Classroom Materials (SB 5X), Real-time Meters (SB 5X), and Municipal Utility Districts (SB 5X). These program elements were not evaluated by Nexant and are not discussed in this report.

Table ES-1: Program Summary as of November 1, 2001

Program element	Activity	Verified demand savings
Agriculture	Efficient equipment installed at 141 sites	N/a
Cool Roofs	Over nine million square feet of cool roofing material installed	3.13 MW
Demand Response	Demand-responsive systems for HVAC and lighting systems installed at 654 sites	90.66 MW
Energy Conservation Assistance Act (ECAA)	Loans granted to 84 sites	N/a
Innovative	Efficiency and demand-reduction measures installed at over 253 sites	23.6 MW
LEDs	LED traffic signals installed at 9,757 intersections throughout the state	3.9 MW
State	Efficiency and demand-reduction measures implemented at 242 sites	51.2 MW
Water/Wastewater	Efficiency and demand-reduction measures installed at 53 sites.	42.9 MW
Total		**215.39 MW**

PROGRAM SAVINGS

The demand reduction goal for the PLRP for the summer of 2001 was 465 MW,[1] of which a substantial portion was achieved. The total goal for the AB 970-funded program elements was 198 MW. Participants in AB 970 program elements reported that they achieved 265.19 MW of peak demand savings during the summer of 2001; Nexant's analyses show that the AB 970 program elements achieved a combined savings of 215.39 MW.

Nexant considered four key factors in evaluating the program elements:

- The original savings goals for the program elements as set in the legislation and defined by the CEC in their development of the program elements
- The total peak demand savings reported by program participants at the completion of their projects
- The total peak demand savings verified by Nexant based on Nexant's measurement and analysis of sample populations of projects
- The cost-effectiveness of the program elements (discussed below)

Table ES-2 summarizes the findings from Nexant's program-wide savings verification activities as of November 1, 2001. This table compares the peak savings reported by the CEC program element managers with the peak savings verified by Nexant and with the savings goals

[1] 465 MW was the goal for the eight program elements evaluated by Nexant. However, as reported in the Summer 2001 Conservation Report, the savings goal for all 12 of the CEC program elements is 1025 MW.

established by the legislature and the CEC. In some cases, the reported savings figures include minor variances from the figures reported to Nexant by program participants. The variances result from factors such as differences in reporting cutoff dates, data interpretation, etc. Several SB 5X program elements do not yet have participants, and, therefore, savings for these programs could not be verified; in Table ES-2, and "N/a" indicates such a case.

The "realization rates" listed in Table ES-2 are ratios of the peak savings as verified by Nexant to the peak savings as reported by the participants; they provide a normalized measure of program success. Savings realization rates range from 51% in the SB 5X and AB 29X program segments to 98% in the AB 970 program segments. The overall realization rate for all AB 970 program elements is 81%. The realization rate for the whole of the PLRP cannot be calculated at this time, as data reporting is incomplete and verification activities are ongoing. More complete program evaluation results will be presented in the quarterly report due to the CEC at the end of the first quarter 2002. There is further discussion of the realization rate in the following section.

The demand savings figures expected by June 1, 2002 listed in Table ES-2 originate from data provided by the CEC and collected by Nexant in December of 2001.

Most of the participants in AB 970 program elements had completed their projects by November 1, 2001, and the reported and verified peak savings listed in Tables ES-2 will not change significantly in the summer of 2002. At present, several other programs, primarily those funded by SB 5X and AB 29X, remain in various stages of implementation; thus, both the program implementation and the verification activities for these programs remain incomplete.

Table ES-2: Program Evaluation Results as of November 1, 2001

Program element	Summer 2001 savings goal (MW)	Verified savings (MW)	Reported savings (MW)	Realization rate	Savings expected by June 1, 2002
Cool Roofs	25	3.1	3.2	98%	9.8
Demand Response	65	90.7	115.9	77%	115.9
Innovative	32	23.6	31	67%	36.4
LEDs	6	3.9	4	94%	5.6
State	50	51.2	40	90%	108.2
Water/Wastewater	20	42.9	51.4	89%	51.9
Subtotal AB 970	**198**	**215.4**	**245.5**	**81%**	**327.8**
Agriculture	22	N/a	4.7	N/a	27.3
Cool Savings	15	N/a	N/a	N/a	N/a
Demand Response	120	N/a	69.7	N/a	145
Innovative	90	N/a	4.5	N/a	226.5
Subtotal SB 5X	**247**	N/a	**78.9**	**N/a**	**398.8**
ECAA Loans	20	N/a	2	N/a	8.9
Subtotal AB 29X	**20**	**N/a**	**2**	**N/a**	**8.9**
Totals	**465**	**215.4**	**326.4**	**N/a**	**735.5 MW**

Table ES-3 shows the total number of participating sites in each program element along with the number of sites that Nexant examined in order to verify the savings.

Table ES-3: Summary of Participating Sites and Examined Sites for AB 970

Program Element	Total participating sites	Sites examined
Cool Roofs	956	52
Demand Response	654	278
Innovative	253	45
LEDs	9,757	63
State	242	78
Water/Wastewater	53	7
Subtotal	**11,915**	**533**

ESTIMATES VS. IMPACTS: ANALYSIS OF RESULTS

Calculating Realization Rates

The importance of the realization rate is twofold: one, it is a useful comparison of engineering estimates to measured results, and two, it allows the results of measurements of a representative sample of projects to be generalized to the entire population of participating projects. Because directly monitoring the demand savings associated with every project site in the PLRP was impractical and not cost-effective, random samples of representative sites were identified and their savings measured. The measured demand savings at each of the sample sites was compared to the reported demand savings for that site to produce a realization rate, which is defined as the ratio of Nexant-verified demand savings to participant-reported demand savings. Realization rates from individual sites were totaled into an overall realization rate that was used to infer the peak savings impacts of the entire population of projects. The statistical techniques used to aggregate individual realization rates are described in each program element's measurement, verification, and evaluation (MV&E) plan; these plans are provided in the Appendices.

Comparable impact evaluation results for commercial retrofit programs range from 36 percent to over 200 percent of engineering estimates (i.e., reported savings). Most evaluations of commercial demand-side management programs report realization rates between 55 percent and 155 percent. The closer to 100 percent the realization rate, the more accurately the participant estimated their own peak savings.[2] The CEC's accomplishment of an overall 81 percent realization rate for the AB 970 programs is mid-range and indicates that, for the most part, participants were accurate in their estimation of demand savings. Because the realization rate is affected by many variables, such as the method used by the participant to estimate savings and the changes in the participant's energy use that are not associated with the project, extrapolating results from a sample to the population is useful.

Comparing Goals and Measurements

Within an accelerated timeframe of about four months (similar program roll-outs take 9 to12 months), contracts for more than $200 million were executed under the PLRP. The program includes numerous peak load reduction initiatives for both the public and private sectors using a full range of technologies, many of which are new to the marketplace. To put these achievements in context, California's public goods charge funds for energy efficiency programs total $270 million annually, and primary implementation responsibilities for these funds are shared between the state's four major utilities and a host of other entities, including the CEC and the Public Utilities Commission.

Figure ES-1 compares the AB 970 energy savings goals to the savings verified by Nexant. This figure illustrates the degree to which these programs exceeded their goals in total, and it demonstrates that the composition of the total savings achieved was derived from the individual program elements in different proportions than were originally expected. However, the extent to

[2] Coates, Brian and Lilly, Patrick. Long-Term Energy Savings in a Commercial Efficiency Program. Seattle City Light, 1998. Brown, M. and Mihlmester, P. Summary of California Demand Side Management Impact Evaluation Studies. California Demand Side Management Measurement Advisory Committee, 1994.

which some program elements exceeded goals more than made up for any shortfall of others, allowing the overall program to surpass its goal.

Figure ES-1: Program Element Goals and Verified Savings

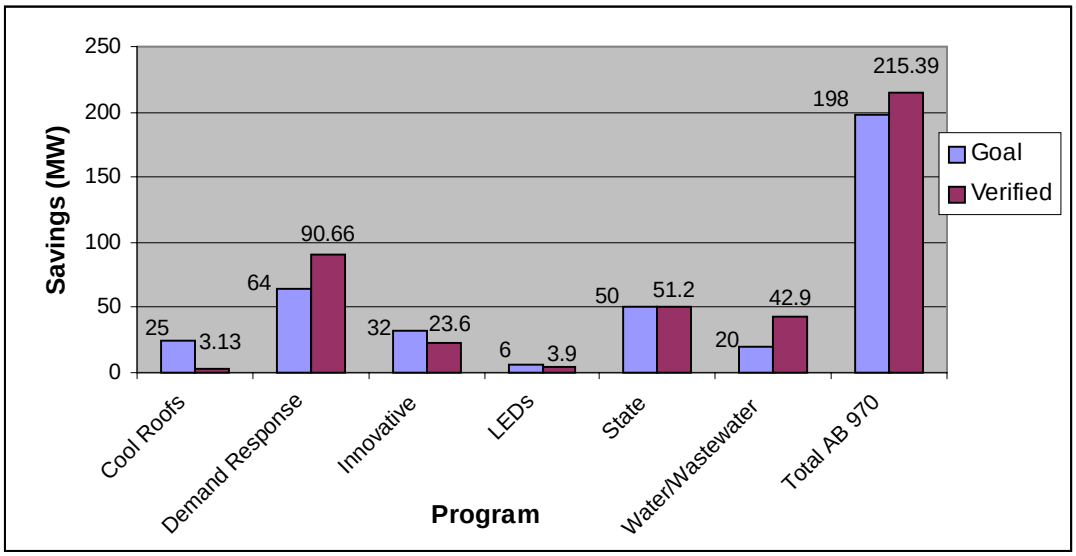
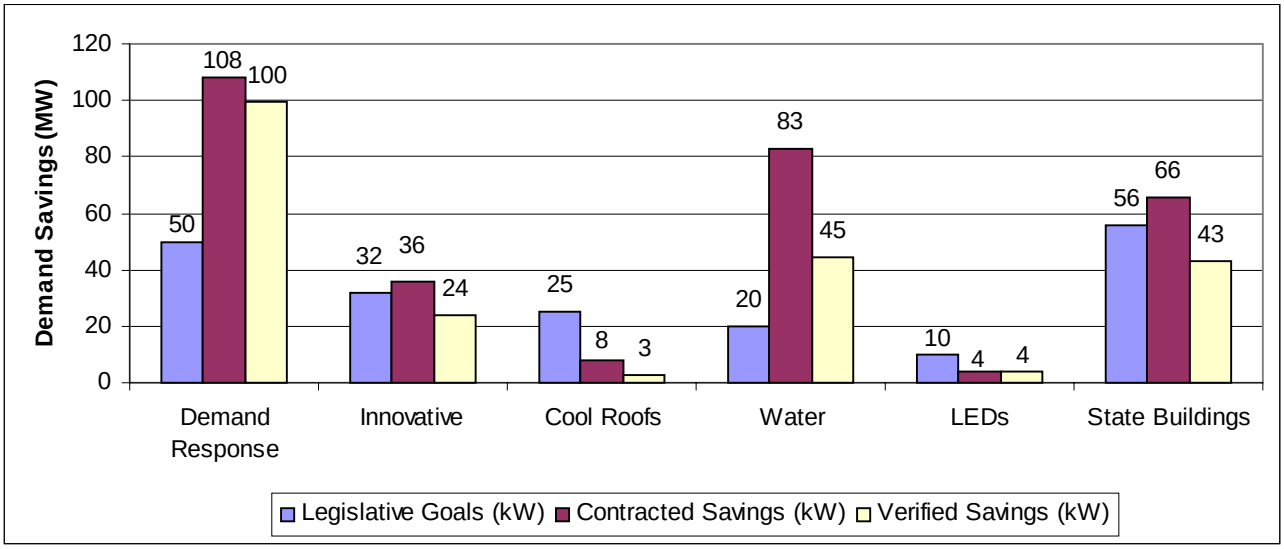


Figure ES-2 shows the savings goal, the participants' reported savings, and the documented savings (as of November 1, 2001) for each AB 970 program individually.

SB 5X and AB 29X results are not included in this discussion because the majority of the SB 5X and AB 29X projects were not implemented in time to save peak demand during the summer of 2001. Nexant will focus verification efforts on these programs in the summer of 2002.

Figure ES-2: Program Element Goals, Contracted Impacts, and Verified Savings



Savings Over Time

Overall, the program elements were successful in achieving their targeted energy savings; in some cases—i.e., Demand Response, and Water/Wastewater—they even exceeded targets.

Figures ES-3a and ES-3b illustrate the rate at which energy savings were accrued during the summer of 2001 by the AB 970 program elements. Figure ES-3a shows the savings rate for program elements achieving more than 25 MW; figure ES-3b shows the savings rate for program elements achieving less than 25 MW. These figures show that few projects were installed prior to the June 1, 2001, deadline. In almost all elements, a significant jump in project installation occurred near the project deadline, followed by additional project installations after the deadline. Certain program elements, such as Cool Roofs, initially experienced difficulty in recruiting participants, but these program elements were able to increase participation levels toward the end of the summer peak period. Late participant recruitment for some elements is expected, thereby producing slightly larger impact numbers during the summer of 2002.

Figure ES-3a: Programs with Peak Savings Greater than 25 MW

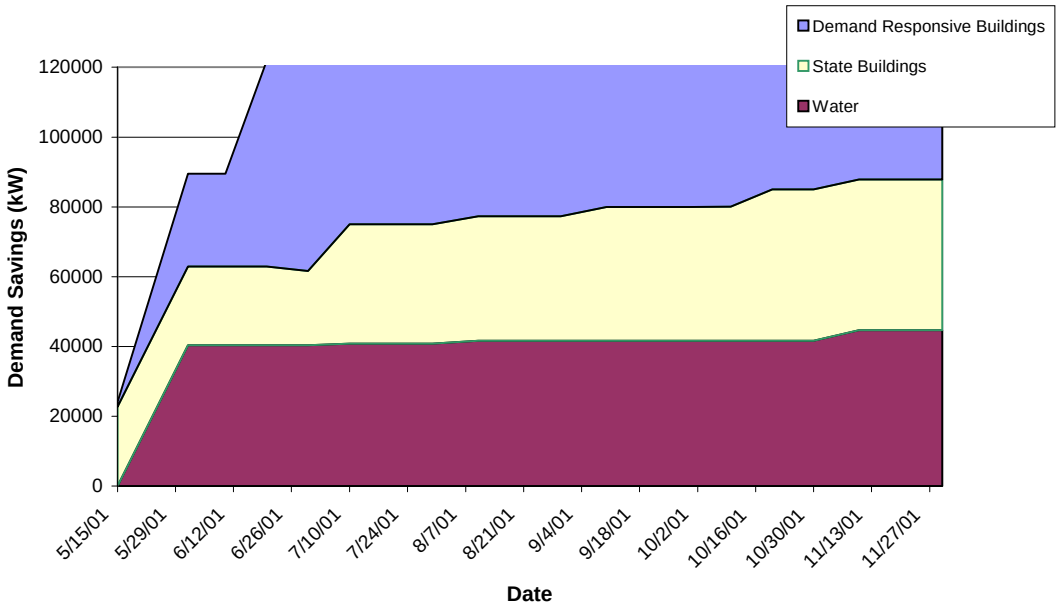
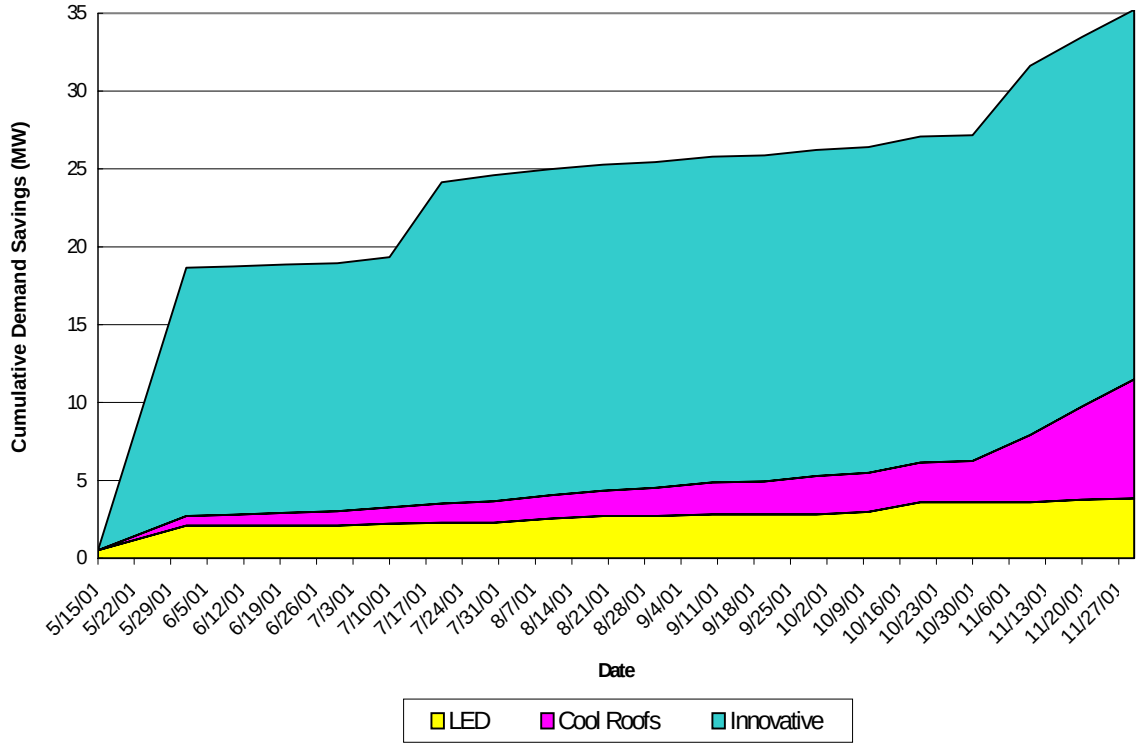


Figure ES-3b: Programs with Peak Savings Less than 25 MW



Over- and Under-Subscribed Program Elements

Participants in the AB 970-funded Innovative, LED, and State program elements each reported total savings that were close to their respective program goals (see Table E-2). Participants in the AB 970-funded Demand Response and Water/Wastewater elements reported savings that exceeded their respective goals, and administrators in the AB 970 Cool Roofs program element reported savings that were below the program element's goal.

A number of factors may have influenced the disparities between savings goals and reported savings for each of the program elements. The Cool Roofs program element was hindered by a lack of market awareness exacerbated by a slower than expected start in the contracting process, which shortened the program element's brief performance period. The Demand Response program element, on the other hand, exceeded its peak savings goal of 65 MW by nearly 40 MW. This may be the result of any one or more of the following: aggressive recruiting on the part of the CEC and the program's contractors; a fear of more blackouts; a sense of societal responsibility on the part of building owners; and the allure of subsidized equipment. The success of the water/wastewater element, which exceeded its legislated savings goal, is largely due to a single project: the Metropolitan Water District of Southern California. This project alone attained a savings goal in excess of the entire program element.

As stated earlier, many of the programs funded by SB 5X and AB 29X were still recruiting participants in November 2001. Those participants already involved in the programs had not installed their projects. Therefore, no reported savings are available for these programs.

Program Cost-Effectiveness

For each of the program elements, Nexant calculated two indicators of cost-effectiveness: the simple cost per kW and the levelized (annualized) cost per kW per year.[3] Table ES-4 presents the cost-effectiveness of each AB 970 program element.[4] These costs are based on the peak demand savings in place by November 1, 2001, and the amount of incentive the CEC has paid or plans to pay for the savings. (Not all incentives for installed projects were paid as of November 1, 2001, but are included to give a more accurate estimate of cost-effectiveness.)

The "simple costs per kW" in Table ES-4 are presented for comparison to the CEC's goal of getting peak demand savings for not more than $250/kW. The "levelized costs per kW-year" are useful for comparing the costs of market alternatives potentially available during periods of peak load constraints (e.g., self generation, spot-market purchases, etc.). Other potential measures of cost-effectiveness, such as avoided outage costs, are beyond the scope of this report.

3 Levelized costs, defined in the CEC's Standard Practice Manual: Economic Analysis of Demand-Side Management Programs, (October 2001), account for appropriately amortizing project costs over the expected useful lifetime of equipment or impact.

4 Nexant's cost-effectiveness estimates represent the marginal cost per MW/year incurred in stimulating the market, but do not include the administrative costs of launching and running the programs. Although many programs also feature significant energy impacts, it is inappropriate to estimate cost of conserved energy, as it is too soon to accurately assess the seasonal variations in energy savings that many projects' measures are expected to have.

Simple cost per kW is an impact-weighted average of all program element cost/kW values; levelized costs per kW-year are based on average project or impact lifetimes (specified in each program element section in the main body of this report). These variations are based on the expected lifespan of the respective technologies used in the program elements. A cost-effectiveness methodology is included in Appendix A of this report, and results are reported up to November 1, 2001, for each program element.

Table ES-4: Cost-Effectiveness by AB 970 Program Element

Program element	Simple cost	Levelized cost
Cool roofs	$503/kW	$50/kW-yr
Demand-responsive systems	$76/kW	$76/kW-yr
Innovative projects	$258/kW	$42/kW-yr
LED traffic signals	$1695/kW	$367/kW-yr
State buildings	$97/kW	$44/kW/yr
Water/wastewater	$66/kW	$32/kW-yr
Overall program average	$130/kW	$40/kW-yr

PEAK SAVINGS VERIFICATION METHODOLOGY

Due to variations between the program elements, different techniques were needed to analyze the data for each technology and end use. The verified savings, presented in Table ES-2, are taken from the field verification techniques that include detailed measurements, surveys, and calculations of program impacts. As noted earlier, sampling methods were used to characterize representative segments (such as building type, end-use equipment, and control strategy). Table ES-5 illustrates the types of methodological tools used to perform verification and impacts of the different program elements.

Table ES-5: Verification Methodologies by Program Element

Program element	Regression/ mathematical analysis	Direct measurement of equipment	Utility bill analysis	Nameplate information/ engineering analysis
Agriculture		X	X	X
Cool Roofs	X	X		
Demand Response	X		X	
ECAA	X	X	X	X
Innovative	X	X		X
LEDs			X	X
State Buildings		X	X	
Water/Wastewater	X	X	X	X

The methods are based on approaches used to determine demand and energy savings. Since it is impossible to measure what *would have happened* in the absence of a program, demand and energy savings can only be determined by comparing a baseline case to a measured post-retrofit case. This verification process involves defining the baseline using various techniques including pre-retrofit measurements, equipment surveys, analysis of historical meter and weather data, or developing computer simulation models. Post-retrofit performance is typically measured through direct monitoring of energy consumption.

In the following sections the verification methods used for each program element is summarized. A detailed MV&E plan for each program element is provided in the appendices of this report.

SPECIFIC PROGRAM ELEMENT HIGHLIGHTS

Agriculture (SB 5X)

- The June 2001 program start date coincided with the peak agriculture season, thereby hampering program participation levels and the completion of many projects.
- In July 2001, two projects, using low cost and easy to install advanced metering and telemetry equipment, participated in an emergency curtailment of summer peak loads.
- Nexant expects that load shifting or curtailment activities will provide a majority of the future demand savings associated with this program. Presently, however, this assumption cannot be validated because few projects are far enough along for Nexant to complete the sampling selection needed for verification purposes.

Cool Roofs (AB 970, SB 5X)

- The number of participants each program administrator was able to recruit is proportional to the size of the service area represented.
- Present estimates show an increase in the market penetration rate with twice as many square feet to be covered in the next few months than were covered in the first five months of the program's inception, with a total of over 22.5 million square feet of cool roofs contracted by November 1, 2001.
- There are fewer participants in this program than originally estimated, which can be attributed to the program's late start and slow early adoption rate.

Demand-Responsive Building Systems (AB 970, SB 5X)

- Without any Stage II curtailment days in 2001, it is unknown how well this program would have performed with sustained power shortages over consecutive days. Though the program element was apparently successful, it was largely untested in critical conditions.
- In several cases, participants reported demand savings that were greater than the savings amounts for which the administrators had originally contracted.

- Suspension of the California Independent System Operator (CAISO) Demand Responsive Program, and questions surrounding the Department of Water Resources replacement program, contributed to numerous queries being posed to the program administrators. Frustration among program participants caused by these situations was listed as a reason for a lower than expected response to the July 3 curtailment.

ECAA Loans (AB 29X)

- Loans were successful in facilitating energy conservation projects that otherwise would probably not have been executed. By providing loans to municipalities and non-profits, this program gave facilities the means to implement measures that resulted in considerable demand savings.
- For reasons to be determined, there is a seemingly high (about 20 percent) dropout rate of projects during the application and loan approval process. It would be helpful to survey potential project hosts to determine why, and when, in the process they decided to discontinue.
- The original objective of the ECCA program, which has been in operation for many years, is to save energy through both gas and electric efficiency projects. It is difficult to assess the impacts of these projects, however, for two reasons: (1) measures to conserve natural gas do not normally result in peak demand reductions and (2) the data required for justifying the loans are not sufficient for determining peak load reductions.

Innovative Projects (AB 970, SB 5X)

- Two of this element's goals are in potential conflict with one another: (1) achieving consistent, reliable peak demand savings in the short term and (2) achieving peak demand savings with innovative (relatively untested) technologies. Sometimes these goals can be achieved simultaneously, but, commonly, innovative technologies are less reliable in the short term because they require more maintenance and trouble-shooting. These opposing goals should be taken into consideration when soliciting program proposals.
- Commissioning of new renewable generation projects, which constitute a large portion of the program element's demand savings, does not necessarily yield the desired savings at the onset. This is largely due to the need for the new equipment to ramp up to full use, which takes a matter of months. Older plants that are refurbished may require up to six months in a stop-and-start commissioning process before they operate at their full capacity. Therefore, expectations for generation projects should allow extra time to address start-up delays in achieving full performance.

LED Traffic Signals (AB 970)

- This program element has been vital in transforming the LED traffic signal market. Program funds have helped offset the initial high purchase price of the LED traffic signals, and has provided municipalities with valuable experience with this new

technology, while considerably lowering municipal energy, maintenance, and bulb replacement costs in the process.

- In general, the combined benefits of LED traffic signals result in a simple payback period of only two years. This program has accelerated the deployment of LED technologies that otherwise may not have been implemented for several years.

State Buildings (AB 970)

- This program leveraged some energy management projects already in existence.
- For safety reasons, the Department of Corrections had difficulty complying with Stage II emergency curtailment procedures. The feasibility of this facility's load reduction strategies (e.g., interruption of vocational training classes) should be reviewed before considering them in any future programs of this type.
- The available, standard non-disclosure agreement was not sufficient in several cases to satisfy participants' concerns about confidentiality. The result was delays in acquisition of load data required to complete some savings verification analyses.

Water/Wastewater (AB 970)

- This program met and more than doubled the original goal of 20 MW of demand relief.
- A common problem associated with water/wastewater-aggregated loads is that not all participants fulfill their obligation to shed load. Nexant suggests a more thorough investigation of the circumstances under which these facilities can and cannot shed load.
- Waste energy recovery systems can be effective measures to generate peak period power. Using free waste methane from digester gas or landfill gas to generate electricity eliminates the uncertain operating costs associated with fossil fuel-fired generation like natural gas and diesel.

OBSERVATIONS AND RECOMMENDATIONS

The primary objective of the PLRP for the summer of 2001 was to reduce as much peak demand as possible and as quickly as possible. Despite the short timeframe available for the design and implementation of the program elements discussed here, the CEC and the participants were able to exceed the summer 2001 peak demand goals for the AB 970 program, and obtain a substantial part of the demand savings goals for the SB 5X and AB 29X program elements.

Due to the singular objective of attaining peak demand savings, several other aspects of the PLRP may have suffered. These aspects include:

- Measurement, verification, and evaluation (MV&E). Two specific improvements to the MV&E process may prove helpful for future programs. The first is the clear specification of data disclosure requirements so that measurement of program savings will not be slowed by any lack of understanding among stakeholders about what information should or could be made available for measurement. Second is the inclusion of an evaluation of the potential affect of free riders/free drivers on overall demand savings.

- Marketing and communications. As mentioned in the section titled "Over and Under-subscribed Program Elements", some elements may have failed to achieve their desired goals because there simply was not enough time to educate and advertise the benefits of the technologies being promoted.
- Program implementation efficiency. Little time for implementation often meant only the most critical information was communicated to stakeholders. The program rollout may have been more efficient if there had been more time to develop a detailed matrix for communication and understanding among participants.
- Load shifting and curtailment. Curtailment and load-shifting projects are the most effective way to achieve swift reduction of peak demand. In general, curtailment and load-shifting projects require less labor and material than efficiency projects. Although curtailment projects may not be as likely as energy efficiency measures to provide long-term savings, curtailment projects are better at providing immediate peak demand reductions.

Several recommendations from these observations are as follows:

- The free rider/ free driver issue should be more thoroughly explored.[5] To date, MV&E activities have focused on the gross impacts or the differences between the participants' baseline usage patterns before the program implementation and their patterns after program implementation. It is recommended that the magnitude and effect of both of these issues be determined.
- Had a more flexible time frame been present, it would have been beneficial to solicit some amount of customer involvement in the very early stages of the program planning. The planning process then could include design aspects such as participant recruitment and retention, installation of equipment, and verification of results. Additionally, a feedback loop could be developed to provide program highlights and information for all program participants in order to create and maintain a high level of involvement and interest.
- When incentive levels are tied to electricity market conditions, such as in the program element for demand-responsive systems, the financial compensation that will go to participants should be defined clearly and early on so that any conflicts relating to the amount or timing of payment do not arise.
- It is critical that the role and responsibility of each participant be clearly defined from the programs' inception.

[5] Free riders are defined as participants who would have taken similar peak reduction actions even in the absence of the affected program. Free drivers are participants who, as a direct result of program implementation, put into practice *additional* peak reduction measures that are not accounted for within the established program parameters.