Section 5 Innovative Peak Load Reduction Program Element — 2003 Supplemental Report

5.1 BACKGROUND OF PROGRAM ELEMENT

First created by AB 970 with a budget of $8 million and a savings goal of 32 MW, the Innovative Peak Load Reduction (IPLR) program element was continued under SB 5X with an additional budget of $41 million. A funding reallocation in March 2002 ultimately raised the final budget to approximately $51 million. The corresponding savings goal for the SB 5X portion of the IPLR program is 120 MW.

The IPLR offers incentives for a broad range of peak demand reduction projects that are not provided for in the other SB 5X program elements. This program element pays participants up to $250 per kW saved, plus a bonus to grant recipients for any savings that were attained in time to help alleviate the peak shortage anticipated for the summer of 2001.

Funding for IPLR projects is provided via three mechanisms: (1) small grants, (2) large grants, and (3) third-party administrator contracts. Each mechanism represents a segment, or sub-element, of the program. Eligible projects generate peak demand savings through a variety of means, including: energy-efficient equipment retrofits, process improvements, installation of generation equipment, building envelope improvements, and curtailment programs.

5.2 STATUS OF PROGRAM ELEMENT

Under AB 970, ten projects were contracted and completed; representing 32.0 MW of verified demand savings and expending a total of $5,410,940 in funds. Under SB 5X, there are 255 projects under contract, some of which are complete, representing a total verified savings of 105.1 MW and a total expenditure of $25,366,833 in SB 5X funds.

Table 5-1 compares each sub-element's reported savings—that is, the total operational demand savings reported by program participants to the Energy Commission as of March 31, 2003—with the verified savings, which Nexant calculated, based on the results of the analysis of samples of program projects. It also shows the corresponding weighted realization rate, or the relationship between the verified savings and the reported savings.

Table 5-1: Peak Load Reduction Capability by Program Segment

Segment	Reported savings (MW)	Verified savings (MW)	Realization rate (weighted)
Large	54.4	53.3	98.1%
Small	27.6	27.3	98.9%
Third	67.9	56.4	83.0%
Totals	**149.9**	**137.0**	**91.4%**

Table 5-2: Peak Load Reduction Capability by Funding Source

Funding	Program goals (MW)	Reported savings (MW)	2001 Verified savings (MW)	2002 Verified savings (MW)	Realization rate (2002) (weighted)
AB970	32.0	35.6	23.6	32.0*	89.7%
SB5X	120.0	114.3	NA	105.1	91.9%
Totals	**152.0**	**149.9**	**23.6**	**137.0**	**91.4%**

* Peak demand savings from AB 970-funded projects have been adjusted for persistence of savings.

Table 5-2 shows the association of verified savings to funding source. Details on Nexant's method for determining savings verification and associated findings are discussed later in this chapter.

Of the 39[1] projects in the original sample set, three dropped out during the fourth quarter of 2002: Fleetwood Travel Trailer, Fresno Veterans Administration Medical Center, and Victoria's Secret. These projects represent a lost potential demand reduction of 30 kW, 203 kW, and 1,710 kW, respectively. Nexant intentionally over-sampled subpopulations to assure that the precision of the calculated verified savings was not affected by any dropouts and/or missing data. The loss of these projects does not affect the precision of the verified savings.

Of the eight AB 970 projects included in the sample set, all but one reported that their projects are still installed and operational, and are delivering the same level of savings as at the end of 2001. More details are provided in the Persistence Verification discussion, provided in Section 5.7.4.

Table 5-3 shows the contracted peak demand savings for each of the program's five defined customer types: commercial, government, industrial, institutional, and residential. The commercial customers represent the largest portion of contracted peak demand savings in the program element. These customers include corporations, general partnerships, limited liability companies, limited partnerships, and sole proprietors. Table 5-3 also shows that each program segment had one or more business types not participating. This is represented by "NA" in the columns.

Industrial participants represent the second largest portion of contracted demand savings, due to the contributions from a single project, the San Joaquin Valley Energy Partners. With approximately 22 MW of contracted demand savings, this project is the largest individual contributor to the IPLRP.

Nexant based its MV&E activities, including determination of verified savings and cost-effectiveness values, on the subpopulations of project types by technology.

[1] Nexant listed 41 projects in the Third Quarter report sample. This was in error; two listed projects were from AB 970 were not actually in the sample.

Table 5-3: Contracted Demand Savings by Customer Type (MW)

	Program segment			
Business type	**Large grant**	**Small grant**	**Third-party administrator**	**Total**
Commercial	32.5	38.1	46.6	**117.1**
Government	9.2	7.2	NA	**16.4**
Industrial	25.1	0.7	16.5	**42.3**
Institutional	6.7	4.5	NA	**11.2**
Residential	NA	0.1	25.8	**25.9**
Totals	**73.5**	**50.5**	**88.9**	**212.9**

5.3 MV&E APPROACH

Nexant's approach to verifying the demand impact of the program varies by project type. In general, Nexant calculates the difference between peak demand *before* a project is installed (the baseline demand) and the peak demand *after* the project is installed (post-installation demand). Nexant collects data necessary to make calculations from project implementers (during site inspections) and from load metering conducted both before and after installation.

Due to the number and diversity of projects in this program, it has not been feasible to directly monitor and analyze the demand savings and the performance of the entire population of sites. Therefore, Nexant performed direct MV&E activities on a representative sample of projects and then extrapolated these results to estimate the peak demand impacts and program compliance over the entire population.

Sample populations had to be large enough to meet the statistical goal of determining the program's peak load impacts at 80 percent confidence and 20 percent precision levels. Nexant therefore chose the sample population to achieve results with an 80 percent certainty that the demand savings extrapolated from sampled sub-populations would be within 20 percent of the actual savings for the population-at-large. Generally, the approach for the sampling methodology is to expend analytical efforts in the direction of the greatest demand savings. By performing detailed analysis on large-impact project groups, the greatest degree of precision and confidence can be achieved with the available effort.

To report on the success of the individual program segments, the sampling plan measured projects from each program segment and addressed two major concerns: (1) that the sample sizes remain at levels to achieve confidence and precision levels as noted above, and (2) that reporting is possible by segment. Nexant derived the sample populations as follows:

1. Divided the total population of projects into the three program segments (small grant, large grant, and third-party).
2. Divided each program segment subpopulation into the four technology types (lighting, generation, curtailment, and other), for a total of 12 sub-populations.

3. Selected sample projects from each of the 12 sub-populations. Projects with large expected impacts, compared to the others in the sub-population, received more attention than those with smaller impacts and a project with more variance received more attention than one with smaller variance. The product of this stratified sampling approach is a specific number of projects, targeted for sampling in each of the 12 sub-populations.
4. Selected appropriate subsamples within sample projects. Some sample projects have multiple sites; in such cases it was necessary for Nexant to select a sample of sites at which to perform direct measurements or calculations of demand impacts. For instance, if a selected lighting project was a large retail store chain implementing efficiency retrofits at all of its California locations, then a sample of stores from the chain would be measured and the results applied to all stores in the chain that were undergoing this efficiency retrofit.

The purpose of this sampling methodology is to provide a comprehensive evaluation of impact at the *program level*, while ensuring that results can be reported at the *segment level*. Accuracy and precision of reported values at the segment level might differ from those of the program level. Actual levels of confidence and precision are determined from the data collected; as a result, they were not known at the program level or the segment level until after the sample was measured. Figure 5-1 illustrates the stratification of project types for sampling.