



Progress Report on Energy Efficiency Programs in Support of the Green Building Initiative

Biennial Report Required by Executive Order S-20-04



September 2009

EXECUTIVE SUMMARY

This is the third report issued in response to the Governor's Executive Order S-20-04, the Green Building Initiative (GBI).¹ The Executive Order urged the California Public Utilities Commission (CPUC or Commission) to apply its authority over the Investor Owned Utilities' (IOUs) energy efficiency programs to help achieve the GBI's energy reduction goals and submit a biennial report to the Governor on progress toward meeting these goals. The GBI declares that all State buildings are required to reduce their grid-based electric energy (GWh and MW)² purchases 20 percent by 2015 over a 2003 baseline. Additionally, the GBI encourages all Commercial, Federal and Local Government buildings to also meet this target and has established specific numeric energy savings goals for each of the three sectors (see Table ES-1).³ IOU energy efficiency programs that focus on energy savings in the State building sector complement the energy efficiency efforts of State agencies such as the Department of General Services (DGS). State buildings also implement on-site distributed generation and leasing programs, including the CPUC's California Solar Initiative (CSI) and Self-Generation Incentive Program (SGIP) that produce energy savings towards the GBI 2015 target that are distinct from those derived from IOU energy efficiency programs.

Energy efficiency highlights and achievements in support of the GBI since the Commission's last report include:

- The conclusion of the 2006-2008 IOU Energy Efficiency program cycle, with 2,177 GWh and 449 MW in total GBI energy savings reported for all Commercial, State, and Federal and Local Government buildings for the program cycle.⁴ Approximately 3.5 percent of these savings is attributable to energy savings achieved in the State buildings sector.
- Since 2004, the IOUs report having achieved 20 percent and 17 percent of GBI energy savings targets for GWh and MW, respectively, for all Commercial, State, and Federal and Local Government buildings (see Table ES-1). Reported energy savings from 2004-2008 GBI programs also produced an estimated 2 million tons of CO₂ emissions reductions.
- For State buildings specifically, the IOUs report having achieved 18 percent and 15 percent of GWh and MW energy savings goals for that sector, respectively. The reported achievements in the State building

¹ Previous reports were issued in October 2005 and February 2008.

² GWh=GigaWatt hour; MW = MegaWatt. Although natural gas savings (MTherms) were encouraged, no target was set.

³ See <http://www.energy.ca.gov/greenbuilding/>.

⁴ All energy savings data included in this report are "IOU-reported" and have not been verified and evaluated. Differences between IOU-reported energy savings and verified savings (typically, verified and evaluated savings are lower than reported savings) are not uncommon, as the evaluation framework relies on energy savings assumptions that are updated late in the program cycle after reported data are submitted.

sector represent a three-fold increase in savings relative to the GBI target in just 18 months.

- The planning phase for the 2010-2012⁵ IOU Energy Efficiency program cycle is nearing completion, with a Commission decision on proposed programs and budgets expected in September 2009.⁶ As of July 2009, the IOUs propose approximately \$1.23 billion for energy efficiency programs related to the GBI for the 2010-2012 program cycle. These programs are projected to result in 4,140 GWh and 961 MW in total estimated first-year annual energy savings for Commercial, State, and Federal and Local Government buildings for the program cycle, including 262 GWh and 67 MW in energy savings for State sector buildings. Should these energy savings be realized, almost half of the total GBI energy savings goals for GWh and MW, and approximately 70 percent of the GBI energy savings goals for State buildings, will have been achieved.
- The IOUs' GBI programs for the 2010-2012 program cycle are projected to result in approximately 2.3 million tons of CO₂ emissions reductions, 976,000 pounds of NO_x emissions reductions, and 271,000 pounds of PM10 emissions reductions.
- As of May 2009, the California Solar Initiative reports approximately 276 MW of installed and pending projects in the Commercial and Institutional sectors. This capacity augments GBI energy savings reported for the IOU energy efficiency programs and accounts for approximately 8 percent of the total GBI energy savings goals for the Commercial and Institutional sectors.⁷
- AB 1103⁸ became effective on January 1, 2009. This bill effectively enacts an energy usage benchmarking system for all nonresidential properties, under which energy usage data must be reported to the U.S. EPA Energy

⁵ The "2009-2011" energy efficiency program cycle has been updated to the "2010-2012" energy efficiency program cycle, to reflect a lengthy planning process that has pushed the Commission decision to approve the IOUs' proposed programs into Fall 2009. Anticipating this delay, the Commission issued D. 08-10-027 in October 2008 to allow the IOUs to expend funds to continue successful 2008 energy efficiency programs through 2009 until the Commission adopts a final decision on the IOUs' energy efficiency portfolio applications for the 2010-2012 program cycle. Energy savings accrued in 2009 for those bridge-funded programs related to the GBI will be reported alongside the 2010-2012 program cycle and be reflected in the Commission's subsequent GBI Report to the Governor in September 2011.

⁶ For a full record of the 2010-2012 energy efficiency proceeding, see A08-07-021 at <http://docs.cpuc.ca.gov/Published/proceedings/A0807021.htm>. The Commission decision is expected to reduce overhead costs of the IOUs' energy efficiency programs, including those in support of the GBI, and thus total budgets will be reduced. Revised budgets will be filed by the IOUs within 60 days of the Commission decision and included in the Commission's next report on the GBI, due in September 2011.

⁷ For more information on the California Solar Initiative, including the CSI Annual Program Assessment issued in June 2009, see <http://www.cpuc.ca.gov/PUC/energy/Solar/>.

⁸ Public Resource Code Section 25402.10, available at <http://law.onecle.com/california/public-resources/25402.10.html>.

Star Portfolio Manager and, beginning in 2010, provided to prospective buyers and lenders for a building that is being sold, leased, financed, or refinanced. Benchmarking will help to improve understanding of the energy savings impacts of GBI related programs in Commercial, State, and Federal and Local Government buildings.

The GBI represents an important step in State policy action and recognizes the interactions between resource adequacy, environmental sustainability and economic efficiency. Table ES-1 illustrates the energy efficiency savings reported after 5 years of what is an 11-year initiative.

Table ES-1. IOU Reported Energy Efficiency Savings from GBI Programs, 2004-2008⁹

	Energy Savings (Net GWh)	Demand Reduction (Net MW)	Gas Savings (Net Mtherms)
California State Govt. Buildings	94	18	4.2
GBI 20% Target by 2015	531	120	na
Percentage of GBI 2015 Target Achieved	18%	15%	
Federal and Local Govt. Buildings	275	76	6.6
Commercial Buildings	3,086	569	43
Total Energy Savings 2004-2008	3,455	663	53.8
GBI 20% Target by 2015	17,705	3,985	
Percentage of GBI 2015 Target Achieved	20%	17%	

In order to meet reductions in energy usage for Commercial, State, and Federal and Local Government buildings as envisioned by the GBI and meet the necessary challenges of AB 32¹⁰, the collaborative efforts of the Commission and IOUs will continue to address the barriers that prevent the widespread adoption of energy efficiency measures.

⁹ As reported by the IOUs to the Energy Efficiency Groupware Application website, available at www.eega2006.cpuc.ca.gov.

¹⁰ "The Global Warming Solutions Act" - <http://www.arb.ca.gov/cc/ab32/ab32.htm>.

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1. INTRODUCTION

The California Public Utilities Commission (CPUC or Commission) actively supports the Green Building Initiative (GBI) by ensuring the IOUs' energy efficiency, solar and self-generation programs meet CPUC-mandated energy savings goals in parallel with offering important programs and services that enable Commercial, State, and Federal and Local Government ("Commercial and Institutional") buildings to achieve the GBI goals. The GBI represents an important step in state policy action and recognizes the interactions between resource adequacy, environmental sustainability, and economic efficiency. Achieving the reductions in energy use for State and Commercial Buildings as envisioned by the GBI and meeting the necessary challenges of AB 32 will require addressing the barriers that prevent widespread adoption of energy efficiency measures.

The four largest investor-owned utilities (IOUs) in California are Pacific Gas and Electric (PG&E), San Diego Gas and Electric (SDG&E), Southern California Edison (SCE), and Southern California Gas (SCG). Each of the IOUs serve customers located in their respective geographic areas, with PG&E and SDG&E providing electric and natural gas services, SCE providing electric service, and SCG providing natural gas services. These utilities serve over two thirds of total electricity demand and over three quarters of natural gas demand throughout California. The IOUs play a key role as administrators of ratepayer-funded energy efficiency programs related to the GBI and overseen by the CPUC. This report provides an update regarding progress made towards the GBI goals, including the reported energy savings from the IOUs' energy efficiency programs in support of the GBI for the 2006-2008 program cycles, and IOU-projected GBI energy savings for 2010-2012.

2. GBI ENERGY SAVINGS FOR THE 2006-2008 PROGRAM CYCLE

2.1 Background

The primary purpose of the IOU energy efficiency programs is to meet the energy savings goals established by the Commission, which were most recently updated in July 2008.¹¹ For the 2006-2008 program cycle, the IOUs implemented a set of programs targeted at the Commercial and Institutional sectors encompassed by the GBI. These programs achieve energy savings through a combination of outreach programs (to inform building owners and operators of opportunities to improve energy efficiency) and a diverse mix of program delivery methods including rebates and incentives to offset the costs of investing in and installing energy efficient technologies. These programs operate within a program cycle lasting three years, but produce sustained

¹¹ D. 08-07-047, available at: http://docs.cpuc.ca.gov/WORD_PDF/FINAL_DECISION/85995.PDF.

energy savings that last beyond both the end date of the GBI and the life of installed measures or adopted practices. Of the approximately \$2.1 billion in ratepayer funding authorized for the 2006-2008 program cycle, some \$700 million¹² or nearly one-third was budgeted for resource and non-resource programs that the IOUs identified as contributing to GBI goals.¹³

IOUs are given the authority to design programs in a manner that best achieves the CPUC's goals. Customer participation in the IOU energy efficiency programs is voluntary, and the incentives and other benefits of participation are used to enlist the customer in the program(s). A significant portion of the entire portfolio of voluntary programs across all IOUs targets the Commercial sector, both in terms of budgets and energy savings. The GBI energy savings data presented in this report encompass the range of IOU energy efficiency programs that target the Commercial and Institutional sectors.

In 2007, the Commission directed the IOUs to report on GBI achievements by market segment on a quarterly basis and post these reports on the Energy Efficiency Groupware Application (EEGA) website.¹⁴ The EEGA website is a public repository of IOU-submitted reports on energy efficiency programs and achievements. In the quarterly reports the IOUs track the energy savings achievements of GBI programs and include information on energy savings for Commercial and Institutional buildings and compare these reported figures to energy savings targets for the period.

Program examples include:

- **PG&E's Express Efficiency Program**, which pays specific rebates for selected measures that provide specific electric or gas energy demand savings. The primary end-uses and/or services targeted by the program include lighting, HVAC, motors and other end uses.
- **SCE's Industrial Energy Efficiency Program**, which is structured to address the process industry's reluctance to alter elements of a working production system for reasons other than product output or quality. The primary end-uses and/or services targeted by the program include lighting, HVAC, motors and other end uses within the industrial sector.

¹² See D05-09-043, which authorized IOU portfolios and budgets for the 2006-2008 program cycle, at http://docs.cpuc.ca.gov/published/FINAL_DECISION/49859.htm.

¹³ Resource programs use incentives to encourage customers to adoption or install specific energy efficiency technologies and/or measures. These programs produce measurable energy savings that occur as a result of such customer behavior. Non-resource programs include marketing, education and outreach efforts that provide education for customers on the benefits of energy efficiency and do not necessarily produce energy savings that are measurable and/or attributable to the adoption of a specific measure or technology. Energy savings and expenditures detailed in this report are for resource programs.

¹⁴ See www.eega2006.cpuc.ca.gov.

- **SDG&E's California Department of Corrections Partnership**, which offers incentives for retrofit projects, continuous commissioning, and educational training for prison and youth facilities. The primary end uses and/or service targeted by the program include lighting, HVAC, gas measures and other end uses within the sector.
- **SCG's Sustainable Communities Demo/City of Santa Monica**, which is designed to promote sustainable development, showcase energy efficient design and building practices, and encourage local developers to incorporate clean on-site energy generation systems in their multi-family and commercial construction projects. The program encourages the adoption of high performance energy efficiency and demand reduction technologies, water conservation, transportation efficiencies and waste reduction strategies.

2.2 IOU Reported Expenditures for GBI Programs, 2006-2008

For the 2006-2008 program cycle, the IOUs budgeted approximately \$495 million in incentives for programs that would produce measurable energy savings in pursuit of the GBI targets. These programs produce sustained energy savings that last beyond both the end date of the GBI and the life of installed measures or adopted practices. Of those funds, the IOUs spent approximately \$358 million.¹⁵ As illustrated in Table 1, nearly 72 percent of the total funds allocated for GBI programs across all IOUs were budgeted for the Commercial sector, and approximately 85 percent of those funds were spent. Although just 61 percent of budgeted funds in the State sector were spent, the \$45.9 million allocated for that sector accounted for only 9 percent of the total GBI budget for all IOUs in 2006-2008.¹⁶

¹⁵ For this report, expenditures and energy savings are those reported to the EEGA website between Jan. 1, 2006 and Dec. 31, 2008. Although the Commission, in Decision 08-10-027, authorized bridge funding to allow successful programs from the 2006-2008 program cycle to continue into 2009 until a decision on the IOU-proposed portfolios for the 2010-2012 program cycle has been issued, the energy savings from those programs will be considered as achievements of 2010-2012 programs.

¹⁶ For the 2006-2008 program cycle, the Commission approved fund-shifting rules that afforded the IOUs greater latitude in allocating funds among budget categories within programs, among programs within a category, and among categories. Consequently, by the end of the program cycle, expenditures and energy savings may fall short of targeted expenditures and projected energy savings as IOUs shift funds from programs and categories faced with certain constraints and offering limited energy savings to programs and categories that produce greater energy savings vis a vis the energy savings goals for the program cycle. Additionally, present economic conditions and State budget constraints have limited the IOUs' ability to implement GBI programs for the State sector and realize projected energy savings.

Table 1. IOU Reported Expenditures for GBI Programs, 2006-2008¹⁷

	Expenditures	Target Expenditures	% of Target
<u>SDG&E</u>			
California State Govt. Buildings	\$527,325	\$15,126,109	3%
Federal and Local Govt. Buildings	\$3,409,404	\$19,650,236	17%
Commercial Buildings	\$32,724,801	\$81,236,863	40%
Total	\$36,661,530	\$116,013,208	32%
<u>SCG</u>			
California State Govt. Buildings	\$1,926,221	\$154,843	1244%
Federal and Local Govt. Buildings	\$239,024	\$2,813,017	8%
Commercial Buildings	\$8,678,116	\$2,632,175	330%
Total	\$10,843,361	\$5,600,035	194%
<u>PG&E</u>			
California State Govt. Buildings	\$13,267,961	\$12,706,000	104%
Federal and Local Govt. Buildings	\$19,582,196	\$29,042,000	67%
Commercial Buildings	\$87,265,367	\$106,413,000	82%
Total	\$120,115,524	\$148,161,000	81%
<u>SCE</u>			
California State Govt. Buildings	\$12,519,417	\$17,967,045	70%
Federal and Local Govt. Buildings	\$13,884,061	\$54,382,679	26%
Commercial Buildings	\$164,499,159	\$153,656,984	107%
Total	\$190,902,637	\$226,006,708	84%
Total California State Govt. Buildings	\$28,240,924	\$45,953,997	61%
Total Federal and Local Govt. Buildings	\$37,114,685	\$105,887,932	35%
Total Commercial Buildings	\$293,167,443	\$343,939,022	85%
Total GBI Program Funding	\$358,523,052	\$495,780,951	72%

2.3 IOU Reported Energy Savings for GBI Programs, 2006-2008

The Commission directed the CPUC Energy Division to verify the costs and installations of IOU energy efficiency program activities, update the parameters used to estimate program energy savings and benefits, and publish reports that calculate the earnings the utilities are eligible to claim.¹⁸ This typically results in verified energy savings that are lower than those initially reported by the IOUs to the EEGA website.¹⁹ The energy savings used in this report to measure progress towards meeting the GBI energy savings goal are IOU-reported and have not been verified or evaluated by the Commission. Additionally, the programs identified by the IOUs in support of the GBI do not account for the reduction in grid-based energy purchases from the achievements of distributed generation or demand response programs in the Commercial and Institutional building

¹⁷ As reported by the IOUs to the EEGA website.

¹⁸ See D.05-01-055, D.05-04-051, D. 07-09-043, and D. 08-01-042, at www.cpuc.ca.gov.

¹⁹ See www.eega2006.cpuc.ca.gov.

sectors. The energy savings from the distributed generation and demand response programs that are distinct from the IOUs' GBI energy efficiency programs include those from the California Solar Initiative (CSI), the Commission's \$2.2 billion program initiated in January 2007 that aims to install 1,940 MW of solar capacity by the end of 2016.²⁰ As of May 2009, a total of 373 MW of installed and pending capacity has been achieved via the CSI. Approximately 276 MW, or 74 percent, of this capacity is represented by installed and pending projects in the Commercial and Institutional sectors. This capacity augments the energy savings reported for the IOU energy efficiency programs that support the GBI and, although distinct from the GBI, accounts for approximately 8 percent of the total GBI energy savings goals for the Commercial and Institutional sectors (See Table 3).²¹

For the period between January 1, 2006, and December 30, 2008, the IOUs reported estimated energy savings of approximately 2,177 GWh and 449 MW from GBI programs across all sectors.²² For State buildings specifically, the IOUs reported energy savings of 76 GWh and 15 MW, which represent approximately 55 percent and 59 percent of the IOUs' GBI energy savings targets for that sector in the 2006-2008 program cycle. Reported GBI energy savings in the State sector ranged from 12 percent of targeted GWh savings in SDG&E's service area to 114 percent of targeted MW savings in SCE's service area (See Table 2). Note that in the Commission's previous report on the GBI, which included energy savings data for the first half of the 2006-2008 program cycle, the IOUs had achieved only 604 GWh and 110 MW in energy savings across all sectors, and negligible savings of 4 GWh and less than one MW for State buildings. Energy savings in the second half of the program cycle were nearly four times those reported in the first half of the program, indicating a very slow ramp-up of program activity in which the bulk of energy savings occur in the latter half of the program cycle.

²⁰ The Commission's CSI is part of a larger \$3.3 billion statewide effort, that includes the California Energy Council and publicly-owned utilities, to install a total of 3,000 MW of new solar by the end of 2016.

²¹ For more information on the California Solar Initiative, including the CSI Annual Program Assessment issued in June 2009, see <http://www.cpuc.ca.gov/PUC/energy/Solar/>.

²² GWh (Gigawatt hours), MW (Megawatts), and MTherms (Millions of Therms). Although the GBI only targets "grid-based" GWh and MW energy savings, a 20% reduction in natural gas use is encouraged and those savings are reported here for reference.

Table 2. IOU Reported Energy Savings for GBI Programs, 2006-2008²³

	Energy Savings			Demand Reduction			Gas Savings		
	(Net GWh)	Target	% of IOU Target	(Net MW)	Target	% of IOU Target	(Net MTherms)	Target	% of IOU Target
SDG&E									
California State Govt. Buildings	4	35	12%	1	6	14%	0.0	1.0	0%
Federal and Local Govt. Buildings	26	72	36%	6	14	44%	0.1	2.5	5%
Commercial Buildings	308	297	104%	58	40	144%	3.1	0.4	701%
Total	339	403	84%	65	60	108%	3.2	4.0	81%
SCG									
California State Govt. Buildings	-	-	-	-	-	-	1.3	0.2	621%
Federal and Local Govt. Buildings	-	-	-	-	-	-	0.3	3.8	7%
Commercial Buildings	-	-	-	-	-	-	25.7	3.5	726%
Total	-	-	-	-	-	-	27.3	7.5	362%
PG&E									
California State Govt. Buildings	25	50	51%	4	10	39%	2.2	0.5	426%
Federal and Local Govt. Buildings	75	109	69%	30	25	123%	1.0	1.1	92%
Commercial Buildings	785	378	208%	139	95	147%	5.3	3.6	147%
Total	885	537	165%	173	130	134%	8.4	5.2	163%
SCE									
California State Govt. Buildings	47	54	87%	10	9	114%	-	-	-
Federal and Local Govt. Buildings	70	169	41%	19	47	41%	-	-	-
Commercial Buildings	836	943	89%	181	236	77%	-	-	-
Total	953	1,166	82%	211	292	72%	-	-	-
Total California State Govt. Buildings	76	138	55%	15	25	59%	3.5	1.7	199%
Total Federal and Local Govt. Buildings	171	350	49%	56	86	65%	1.4	7.4	19%
Total Commercial Buildings	1,929	1,617	119%	378	371	102%	34.1	7.6	450%
Total Energy Savings 2006-2008	2,177	2,106	103%	449	481	93%	38.9	16.7	233%

2.4 IOU Reported Energy Savings for GBI Programs, 2004-2008

The energy savings reported by the IOUs for 2006-2008 can be added to those accrued during the 2004-2005 energy efficiency program cycle and provide an estimate of the percentage of the GBI energy savings goals that have been achieved at this point, nearly halfway to 2015.²⁴

For the entire 2004-2008 period, reported energy savings from GBI programs of 3,455 GWh and 663 MW represent an estimated 20 percent and 17 percent of the total GWh and MW reduction goals, respectively, for the Commercial and Institutional building sectors (Table 3). In the previous Commission Report to the Governor on the GBI, which included data reported to the mid-point of the 2006-2008 program cycle, the IOUs reported having achieved approximately 11 percent of GWh and 9 percent of MW GBI energy savings goals for the Commercial and Institutional sectors since 2004. As illustrated in Table 3, with 6 program years remaining in the Initiative, the IOUs' reported energy savings are at 18 percent of GWh and 15 percent of MW energy savings

²³ As reported by the IOUs to the EEGA website.

²⁴ 2004-2005 GBI energy savings data is available at <http://www.cpuc.ca.gov/NR/rdonlyres/256C9E57-13B9-4E2E-A245-543A25B864F2/0/out.html>.

goal for State Buildings. In the Commission’s prior report, issued in February 2008, these figures were 3.7 percent and 4.5 percent, respectively.²⁵ This improved performance in the latter half of the program cycle is typical and attributable to any of a number of factors, including: delays in initial program design, implementation and contracting; the time required to build awareness; and, the time required for projects to mature to the point where they produce claimable savings.

Table 3. IOU Reported Energy Savings from GBI Programs, 2004-2008²⁶

	Energy Savings (Net GWh)	Demand Reduction (Net MW)	Gas Savings (Net MTherms)
California State Govt. Buildings	94	18	4.2
GBI 20% Target by 2015	531	120	na
Percentage of GBI 2015 Target Achieved	18%	15%	
Federal and Local Govt. Buildings	275	76	6.6
GBI 20% Target by 2015	1,239	279	na
Percentage of GBI 2015 Target Achieved	22%	27%	
Commercial Buildings	3,086	569	43
GBI 20% Target by 2015	15,935	3,586	
Percentage of GBI 2015 Target Achieved	19%	16%	
Total Energy Savings 2004-2008	3,455	663	53.8
GBI 20% Target by 2015	17,705	3,985	
Percentage of GBI 2015 Target Achieved	20%	17%	

2.5 IOU Reported Energy Savings for GBI Programs by End Use, 2004-2008

Table 4 illustrates the IOU reported energy savings from GBI programs by end use classification. Approximately 75 percent of the energy savings are attributable to HVAC and lighting programs, with lighting programs comprising more than half of all energy savings for both MW and GWh. Though these energy savings are commendable, the reliance on lighting measures is an issue that must be remedied in future IOU planning efforts if these short-term energy savings are to become integral to a long-term market-transformation effort, or to achieve sustained levels of savings over time.²⁷

²⁵ See “Energy Efficiency Programs in Support of the Green Building Initiative – February 2008,” available at <http://www.cpuc.ca.gov/NR/rdonlyres/256C9E57-13B9-4E2E-A245-543A25B864F2/0/out.html>

²⁶ As reported by the IOUs to the EEGA website. Specific GBI targets for GWh and MW are taken from the “Green Building Action Plan Back-up Technical Document – Rationale, Specific Actions and Timeline,” available at http://www.energy.ca.gov/greenbuilding/ab2160/documents/resource_docs/GBI_RATIONALE_ACTIONS_TIMELINE_2004-09.PDF.

²⁷ The “California Long Term Energy Efficiency Strategic Plan” (“The Plan”) was prepared collaboratively by the IOUs, the CPUC, and other stakeholders and adopted by the Commission in September 2008. The Plan highlights the central role of energy efficiency in meeting the challenges of climate change and the State’s future energy needs. The Plan also identifies the short-term nature of utility programs that produce easily-quantified, low-cost, near-term energy savings (such as replacing incandescent bulbs with compact fluorescents) and articulates the need for energy efficiency strategies designed to achieve a set of long-term energy efficiency resource goals. See <http://www.californiaenergyefficiency.com/docs/EEStrategicPlan.pdf>.

Table 4. IOU Reported Energy Savings for GBI Programs by End Use, 2004-2008²⁸

	Summer Peak (net MW)	% of Total	Energy Savings (net GWh)	% of Total
Nonresidential				
HVAC	123	21%	419	13%
Lighting	336	56%	1,791	58%
Office			2	0%
Process	29	5%	149	5%
Refrigeration	43	7%	376	12%
Other	64	11%	377	12%
Total	595	100%	3,114	100%

2.6 Estimated CO₂ Emissions Reductions from 2004-2008 GBI Programs

AB 32 requires that the state’s global warming emissions be reduced to 1990 levels by 2020. This reduction will be accomplished through an enforceable statewide cap on global warming emissions that will be phased in starting in 2012. The energy savings goals established by the Commission for 2009-2020 are to be considered by the California Air Resources Board (CARB) as that agency embarks on the implementation of AB 32 and provide guidance for the Commission’s long-term procurement planning process. Consequently, the energy savings achieved by GBI programs are an integral component of the State’s long-term energy savings and greenhouse gas emissions reductions goals.

Based on the energy savings reported for 2004-2008 and illustrated in Table 3, an estimated 2 million tons of CO₂ emissions reductions have been achieved as a result of energy efficiency programs implemented in support of the GBI during that time period.²⁹

²⁸ As reported by the IOUs to the EEGA website.

²⁹ The estimated CO₂ emissions reductions for 2004-2008 are calculated from energy savings reported for the five-year period. This is in contrast to the emissions reductions projected to occur in the 2010-2012 program cycle, as discussed in Section 5, which were determined based on annual averages extrapolated from the E3 Calculator. In estimating CO₂ emissions reductions for 2004-2008, emissions rates of 1,279lbs CO₂/MWh and 117lbs CO₂/MMBtu were used. These figures are from U.S. EPA and are available at www.epa.gov/climatechange/emissions/ind_assumptions.html.

3. NON-RESOURCE PROGRAMS IN SUPPORT OF THE GBI

For the 2006-2008 program cycle, the IOUs developed, in collaboration with the CPUC, marketing, education and outreach (ME&O) programs that are tailored to the specific needs of building owners and operators and recognize the diversity of concerns and institutional environments. Although these non-resource programs do not directly produce measurable energy savings, they inform building owners and operators of the compelling economic benefits of energy efficiency and should lead to the adoption of energy efficiency measures.

For 2006-2008, the IOUs budgeted approximately \$43 million in California ratepayer funds for non-resource programs that support the goals of the GBI.³⁰ In addition, some \$300 million was budgeted for ME&O programs to support general customer demand-side programs. Of the \$300 million, \$176 million was budgeted for IOU public education and outreach programs.³¹ Approximately one-third of the \$176 million funded statewide promotion of energy efficiency through the Flex Your Power Program (FYP) while the remainder targeted educational efforts focused in individual IOU service areas.

In 2006-2008, the Flex Your Power program was a significant component of the Statewide Marketing and Outreach programs and enhanced the outreach that targeted the Commercial and Institutional Building sectors. One of the main education components is the best practice guides that are specific to each sector and available on the FYP website.³² These include the “Local Governments Best Practices Guide” for the Institutional Sector and “A Guide for Hotels: Boosting Profits with Energy Efficiency & Conservation” for the Commercial Sector. The FYP program also solicits nominees for its Flex Your Power awards to highlight innovative green building techniques, especially energy efficiency, within the Commercial and Institutional sectors.

In addition to the FYP focus on the Commercial and Government sectors, seven energy efficiency information programs implemented by third parties address the Commercial sector. Third party programs complement the utility programs and utility-government partnership programs that round-out the IOUs’ energy efficiency portfolios, and include PG&E’s Builder Energy Code Training and SDG&E’s Business Energy Assessment programs. IOU energy efficiency education centers also offer courses and training for commercial architects, designers and building contractors as well as HVAC contractors.

The CPUC is taking steps to ensure that the public is able to utilize centralized on-line resources to understand the full range of energy efficiency efforts, program elements, best practices and lessons learned to speed the adoption of energy efficient practices.

³⁰ See D05-09-043, which authorized IOU portfolios and budgets for the 2006-2008 program cycle, at http://docs.cpuc.ca.gov/PUBLISHED/FINAL_DECISION/49859.htm.

³¹ Ibid.

³² See <http://www.fypower.org/> for Best Practices Guides for all three sectors.

The CPUC is collaborating with the IOUs to develop an Energy Efficiency Web Portal (EE Web Portal) that will provide a single integrated point of access to a multitude of energy efficiency information. The web portal will be a user-centered, interactive resource that allows users to easily navigate multiple points of data, applications, and information systems. The web portal will link with other websites, including those of the IOUs' and other government agencies, and will be presented on the CPUC's website (www.cpuc.ca.gov).

4. THE 2010-2012 PROGRAM CYCLE

4.1 IOU Proposed Budgets for GBI Programs in the 2010-2012 Energy Efficiency Program Cycle

For the 2010-2012 energy efficiency program cycle, the IOUs have proposed a total budget of \$1.23 billion for programs that will produce energy savings for the GBI. This represents nearly 30 percent of the total proposed IOU portfolio budgets for the 2010-2012 program cycle.³³ Table 5 illustrates that, as was the case for the GBI programs in the 2006-2008 program cycle, the focus of IOU efforts overwhelmingly favors the Commercial sector, with more than two-thirds of the proposed budgets allocated to GBI energy savings in Commercial buildings. The Commission's final approval of the IOU proposed portfolios and budgets is expected in Fall 2009, and is anticipated to reduce overhead costs of the IOUs' energy efficiency programs, including those in support of the GBI, and thus total budgets will be reduced. Consequently, the proposed budgets reported in Section 4 are not final and revised budgets, to be filed by the IOUs within 60 days of the Commission's decision, will be included in the Commission's next report on the GBI, due in September 2011.

Table 5. IOU Proposed GBI Program Budgets, 2010-2012

	SDG&E(1)	SCG(1)	PG&E(1)	SCE(2)	Total
Budgets					
California State Govt. Buildings	\$51,544,395	\$40,611,920	\$17,332,226	\$40,070,355	\$149,558,896
Federal and Local Govt. Buildings	\$51,544,395	\$24,194,336	\$29,241,653	\$97,199,080	\$202,179,464
Commercial Buildings	\$53,106,346	\$21,602,085	\$126,203,457	\$682,308,052	\$883,219,940
Total	\$156,195,136	\$86,408,341	\$172,777,336	\$819,577,487	\$1,234,958,300

(1) Budgets contain incentives to participants only

(2) The budget per GBI sector is derived using an allocation of the corresponding energy savings

³³ The IOUs' most recent proposed budgets, filed in July 2009, total approximately \$3.9 billion. See A08-07-021 at <http://docs.cpuc.ca.gov/Published/proceedings/A0807021.htm>. The Commission issued D. 08-10-027 in October 2008 to allow the IOUs to expend funds to continue successful 2008 energy efficiency programs through 2009 until the Commission adopts a final decision on the IOUs' energy efficiency portfolio applications for the 2010-2012 program cycle. Energy savings accrued in 2009 for those bridge-funded programs related to the GBI will be counted towards the 2010-2012 program cycle and be reflected in the Commission's subsequent GBI Report to the Governor in September 2011.

4.2 IOU Projected Energy Savings from GBI Programs, 2010-2012

The \$1.23 billion proposed by the IOUs for GBI related program budgets is expected to produce approximately 4140 GWh, 961MW, and 104 MTherms in first-year annual energy savings during the 2010-2012 program cycle. As illustrated in Table 6, the bulk of the savings for GWh and MW are again seen in the Commercial sector, with energy savings in the State sector accounting for 6 percent and 7 percent , respectively, of the total GWh and MW energy savings for the program cycle..

Table 6. IOU Projected Energy Savings from GBI Programs, 2010-2012

	Energy Savings (Gross GWh)	% of IOU Total	Demand Reduction (Gross MW)	% of IOU Total	Gas Savings (Gross MTherms)
SDG&E(1)					
California State Govt. Buildings	132	33%	46	33%	5
Federal and Local Govt. Buildings	132	33%	46	33%	5
Commercial Buildings	136	34%	47	34%	5
Total	399	100%	139	100%	14
SCG(1)					
California State Govt. Buildings					39
Federal and Local Govt. Buildings					23
Commercial Buildings					21
Total					82
PG&E(1)(2)					
California State Govt. Buildings	9	1%	2	1%	2
Federal and Local Govt. Buildings	57	9%	30	19%	1
Commercial Buildings	603	90%	126	80%	5
Total	669	99%	157	100%	8
SCE(1)					
California State Govt. Buildings	122	4%	19	3%	
Federal and Local Govt. Buildings	292	10%	86	13%	
Commercial Buildings	2,658	86%	561	84%	
Total	3,072	100%	665	100%	
Total - California State Govt. Buildings	262	6%	67	7%	45
Total - Federal and Local Govt. Buildings	481	12%	161	17%	28
Total - Commercial Buildings	3,396	82%	733	76%	30
Total GBI Energy Savings	4,140	100%	961	100%	104

(1) Program Impacts are first year annual for the 2010-2012 program cycle

(2) Forecast program impacts are derived from 2006-2008 3rd quarter GBI accomplishments

Should these forecasted annual energy savings be realized during the cycle and added to the energy savings already reported for 2004-2008, approximately 45 percent and 42 percent of GBI GWh and MW energy savings goals, respectively, will have been achieved across all sectors of the of the GBI. Moreover, the IOUs will have made significant

progress towards achieving the GBI's goal of a 20 percent reduction in grid-based energy use by State buildings, with approximately 68 percent of the GWh savings goal and 71 percent of the MW savings goal reached by the end of the 2010-2012 program cycle.

4.3 IOU Projected GHG Emissions Reductions from GBI Programs, 2010-2012

Table 7 illustrates the projected first-year annual GHG emissions reductions associated with IOU GBI programs for the 2010-2012 program cycle. Based on the projected energy savings for GBI programs highlighted in Table 6, IOUs project approximately 2.3 million tons of CO₂, 976,000 pounds of NO_x, and 271,000 pounds of PM₁₀ in emissions reductions from GBI programs for the State, Federal and Local Government, and Commercial building sectors. Should these projected CO₂ emissions reductions be realized, they would account for approximately 1.3 percent of CARB's 2020 reduction target.

Table 7. IOU Projected GHG Emissions Reductions from GBI Programs, 2010-2012(1)

	CO2 (000s of tons)	Nox (000s of lbs)	PM10 (000s of lbs)
SDG&E			
California State Govt. Buildings	58	34	6
Federal and Local Govt. Buildings	58	34	6
Commercial Buildings	60	35	7
Total	177	103	19
SCG			
California State Govt. Buildings	75	145	
Federal and Local Govt. Buildings	45	86	
Commercial Buildings	40	77	
Total	161	309	
PG&E			
California State Govt. Buildings	10	15	0
Federal and Local Govt. Buildings	24	12	3
Commercial Buildings	243	96	29
Total	277	122	32
SCE			
California State Govt. Buildings	67	18	9
Federal and Local Govt. Buildings	161	42	21
Commercial Buildings	1,462	383	189
Total	1,690	443	219
Total - California State Govt. Buildings	211	211	16
Total - Federal and Local Govt. Buildings	288	174	30
Total - Commercial Buildings	1,805	591	225
Total Emissions Reductions	2,304	976	271

(1) Emissions reductions are first-year annual for 2010-2012.

5. CONCLUSION

In 2004, the Governor's Executive Order establishing the Green Building Initiative (GBI) clearly identified the need to improve energy efficiency in the Commercial and Institutional building sectors of the State and set a realistic but challenging energy savings target. As discussed in Section 3, the significant and recent progress made within the State Building sector towards the achievement of GBI energy savings targets still leaves substantial energy savings unclaimed across all sectors at the mid-point of the Green Building Initiative timeframe. Projected energy savings are not always realized, as evidenced by the IOU-reported energy savings for 2006-2008 GBI programs. As highlighted in Table 2, while 119 percent of IOU-projected savings were reported in the Commercial sector, only 55 percent and 49 percent of IOU-projected savings were reported for the State and Federal/ Local Government sectors, respectively. Should the projected energy savings across all sectors be realized from the 2010-2012 program cycle, total savings across all sectors would still be nearly 50 percent short of the GBI target with only 3 years remaining in the Initiative. In order to achieve the remaining energy savings as envisioned by the GBI and to meet the challenges of AB 32, it will be necessary to address barriers that hinder more widespread adoption of energy efficiency measures.

For State Buildings, financing the up-front costs of energy efficiency measures has represented the primary barrier in achieving greater energy savings.³⁴ Annual State budget constraints have limited the ability of State Building operators to implement building retrofits and retro-commissions or even perform investment grade audits to explore the full range of cost-effective energy efficiency measures and programs. Although significant energy savings were achieved in the State Building sector in 2006-2008 and are forecast for the 2010-2012 program cycle, the continued absence of adequate and sustainable funding streams and financing mechanisms, as identified by the most recent meeting of the Green Action Team³⁵ in May 2009, remains a concern for the implementation of the IOUs' proposed GBI State sector programs. This issue is exacerbated by the present economic conditions, which have affected the State's ability to secure credit; budget constraints; and specific contracting issues between the State and IOUs that in combination may limit the ability to realize increased energy savings in the State Buildings sector.³⁶

In the Commercial Building sector, although some financing options exist in the form of business loans, and the IOUs will implement a pilot program for on-bill financing in the 2010-2012 program cycle, financing the up-front costs of retrofits and retro-commissions remain as the most significant challenge to advancing the goals of the GBI. While Class A building owners, typically large corporations and Real Estate Investment

³⁴ Personal communication with Roy McBrayer, Program Manager for the GBI at the California Department of General Services (DGS).

³⁵ See <http://www.green.ca.gov/GreenActionTeam/meetings.htm>.

³⁶ Personal communication with Roy McBrayer.

Trusts (REITs) with multiple properties under one management structure, are beginning to recognize the economic and competitive advantages represented by adopting energy efficiency measures for their buildings, this is less true among Class B and Class C owners, whose buildings tend to be older, individually managed, and feature more diverse occupancies.³⁷ These owners may be either unaware of the reduced operating costs that energy efficiency opportunities bring, and subsequently invest in other aspects of their business, or unable to finance necessary energy efficiency measures, which underscores the need for effective marketing and outreach and additional means of financing upfront costs in order to realize project energy savings.

³⁷ Class A buildings are defined as investment-grade properties built after 1980, greater than 10 stories, and featuring attractive design, modern mechanical systems and quality workmanship that allows them to attract the highest rents. Class B buildings generally have an ordinary design and receive lower rents or sale prices compared to Class A buildings. Class C buildings are no-frills buildings that offer basic space and command lower rents or sale prices compared to other buildings in the same market. Class C buildings are characterized by a diverse occupancy, such as a strip mall, for example. (See http://www.sustainca.org/programs/green_buildings/overview.)