

**PGE2012 CODES AND STANDARDS**

2006 - 2008

1. Projected Program Budget	\$5,070,912
2. Projected Net Program Impacts	
MWh	
MW (Summer Peak)	
Therms	
3. Program Cost Effectiveness	
TRC	
PAC	

Savings estimates from Codes and Standards (C&S) program activities to be conducted during the remainder of 2005, 2006, 2007, and 2008 are not available. Estimated savings can be produced after draft Codes and Standards Enhancement (CASE) studies have been developed and the California Energy Commission (CEC) decides which CASE studies to approve for consideration during future Title 24 and Title 20 rulemakings. PG&E's draft CASE studies for the next Title 24 building standards rulemaking will be available in late 2005 and early 2006. Draft CASE studies for the next Title 20 appliance standards rulemaking will be available in 2006. Estimated savings will be reassessed, as appropriate, depending on acceptance or rejection by the CEC or modifications resulting from stakeholder input.

Despite significant uncertainties, it is reasonable and conservative to assume that PG&E's future efforts will produce large savings in 2009 and beyond. During 2006, 2007, and 2008, PG&E plans to conduct a level of effort similar to that for the last round of building and appliance standards.

The statewide C&S program conducted activities in previous program years that culminated in enhancements to Title 24 and Title 20 standards. New Title 24 standards adopted in 2003 become effective in October 2005 while new Title 20 standards adopted in 2004 become effective in 2006 and 2007. Energy savings attributable to PG&E relative to its portfolio goals for energy, demand, and gas are as follows.

PG&E	2006			2007			2008		
	Goal	C&S	C&S %	Goal	C&S	C&S %	Goal	C&S	C&S %
Energy (GWh/yr)	829	76	9%	944	143	15%	1,053	237	23%
Demand (MW/yr)	180	22	12%	205	44	22%	228	71	31%
Gas (Mtherm/yr)	13	1.9	15%	15	3.5	24%	17	5.0	29%

Source: Mahone, Douglas. 2005. Codes and Standards Program Savings Estimate: For 2005 Building Standards and 2006/2007 Appliance Standards.

Note: The energy savings above have not been included elsewhere in PG&E's submissions pending Commission resolution of attribution issues.

The projected C&S program impacts are not included in the total portfolio cost-effectiveness calculations, but the projected program budget is included in the total portfolio cost-effectiveness calculations.

4. Program Descriptors

This is an existing statewide program.

5. Program Statement

PG&E advocates improvements to energy efficiency building codes and appliance standards through the statewide C&S program. CASE studies for energy efficiency improvements are developed for promising design practices and technologies and are presented to standards and code-setting bodies. While most program resources are employed to support standards development processes conducted by the CEC, in particular, Title 24 and Title 20, the program also monitors and intervenes, as appropriate, in proceedings outside California that potentially impact state standards. The US Department of Energy (USDOE) conducts federal appliance standards proceedings, for example, that preempt California's state standards.

In response to stakeholders who typically oppose code enhancements, PG&E provides affirmative expert testimony at public workshops and hearings and conducts supporting research and analysis throughout the public rulemaking process. Following adoption, the program supports training for strategic interventions that improve compliance with new codes and standards.

PG&E participates in and monitors development of standards and product ratings that are referenced directly or indirectly by California standards. For example, C&S personnel regularly attend meetings conducted by the American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE), the National Fenestration Rating Council (NFRC), and the Cool Roof Rating Council (CRRC).

The program develops voluntary guidelines that shape future codes and standards consistent with other voluntary efforts such as incentive programs. Information surveys are conducted in support of future code upgrade cycles. Part of the budget is set aside for future innovative initiatives.

6. Program Rationale

The C&S program is an innovative addition to the utilities' portfolios in recent years. While the traditional portfolio is comprised of incentive and information programs that

customers may or may not choose to participate in, compliance with building and appliance standards is mandatory. Since the market for energy efficiency products and services is composed of groups with distinct behaviors (for example, early adopters who respond to voluntary programs and laggards that do not respond), this relatively new and involuntary program component is essential to maximizing portfolio energy savings and transforming markets.

The transfer of technologies and practices from traditional voluntary programs to codes and standards comprises an exit strategy for traditional portfolio activities and creates a continuous improvement cycle. While voluntary programs are essential to establishing market acceptance, adoption into code is required to complete the market transformation process; otherwise, incentives may be needed indefinitely to sustain market share. Code adoption captures market changes from California's diverse energy efficiency programs (including the CEC's Public Interest Energy Research (PIER) program, Emerging Technologies program, information, and incentive programs) for the benefits of society.

The obligation of builders and manufacturers to comply with California building and appliance standards automatically overcomes market barriers, such as split incentives, that are otherwise difficult to overcome. Codes set minimum requirements for builders who compete on the basis of first cost and argue that investments in energy efficiency might reduce tenant affordability. However, enhancements to codes that require inclusion of cost-effective measures during construction reduce monthly energy bills, in turn, reducing the total cost of living for all customers.

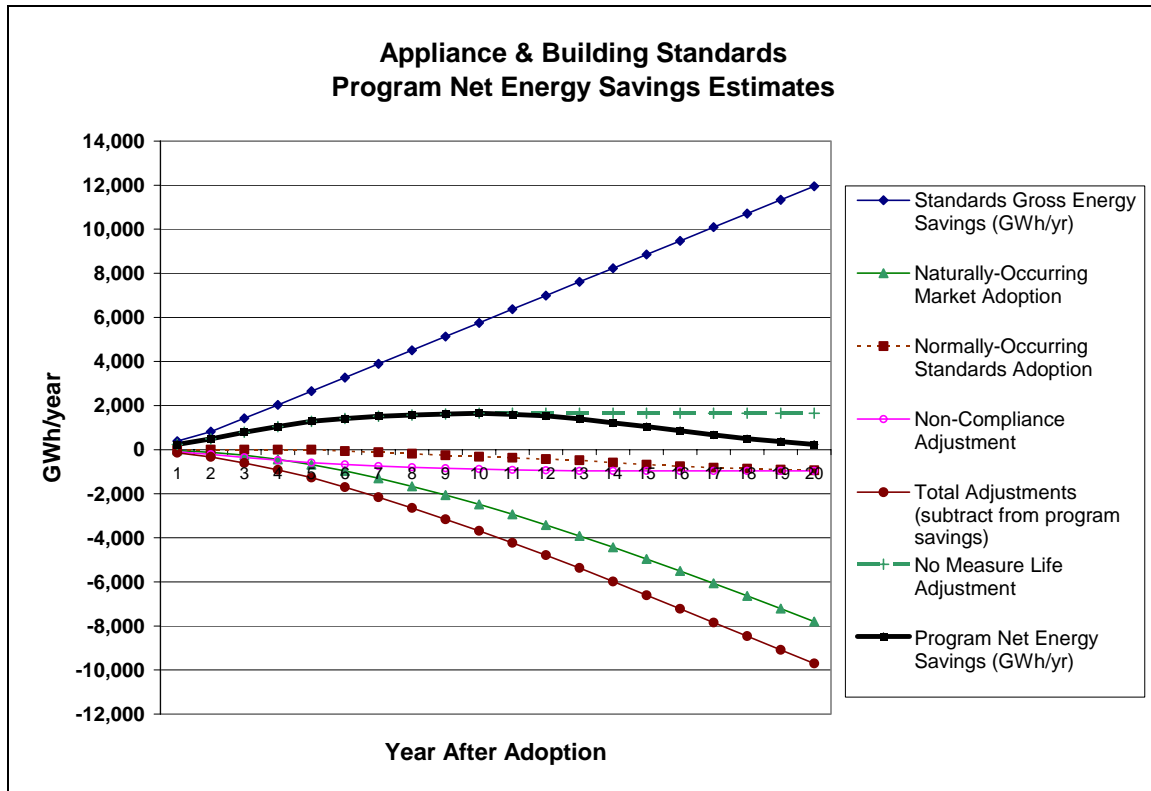
Codes and standards guarantee equity since most market and customer segments realize the benefits of code enhancements. Hence, the impacts of voluntary programs that work for innovators and early adopters are extended to all customers through the C&S program.

Figure 1 represents the latest thinking on estimating and attributing savings to the C&S program based on the 2005 Title 24 update. The framework includes a savings forecast for expected savings at the time of code adoption. The forecast is then modified to reflect adjustments required for:

- Future changes in construction activity;
- Increases in market share absent code adoption;
- Code adoption that would occur absent the statewide C&S program
- Expected compliance related to imperfect enforcement; and
- Measure life.

Net program effects are the expected program savings after subtracting the sum of all the adjustments.

**Figure 1. Combined Statewide Energy Impacts for Title 24 Building Standards (Effective 10/05) and Title 20 Appliance Standards (Effective 1/06)**



Source: Presentation by Doug Mahone to PAG members on Friday, June 24, 2005.

Since code compliance is part of program savings, the C&S program conducts training for building officials and others involved in code enforcement. The need for training has increased in recent years for both Title 20 and Title 24 due to significant changes in existing standards, increases in the scope of building standards, and increases in scope of the appliance standards. Strategic interventions are employed as appropriate to address specific compliance issues.

Participation in standards setting organizations such as ASHRAE informs the CASE study development process. Since Title 24 references product ratings from NFRC and other organizations, membership and involvement provides indirect opportunities for impacting building standards. Voluntary standards, such as procurement guidelines, institutionalize procurement of energy efficiency products and services by large public and private entities. Through proper design, procurement guidelines provide outreach for incentive programs and link them to future codes, thereby improving coordination.

Given the long-term nature of the code upgrade process, preliminary work for the 2011 upgrade cycle needs to be completed in 2007 and 2008. Information surveys are

required to address information gaps that constrain future building and appliance code enhancement proposals. Additionally, Title 24 compliance options are required to support compliance credit for new technologies. Compliance credit, in turn, reduces barriers in design, supports calculations for program savings, and advances the transfer from emerging technologies to incentive programs.

## 7. Program Outcomes

The program's desired results include the following:

- Adoption of Title 24 and Title 20 code enhancement proposals by the CEC that maximize cost effective customer energy savings potential;
- Improved compliance with Title 24 building and Title 20 appliance standards that increase energy savings. The volume of activity will be determined by need on an ongoing basis;
- Effective monitoring and participation in USDOE rulemakings that directly impact California standards through preemption;
- Effective participation in code setting and ratings organizations that potentially impact California standards;
- Adoption of procurement guidelines by large public or private institutions. This is a pilot project that, if successful, will be expanded as appropriate;
- Adoption of compliance options by the CEC that support the transfer of new technologies from emerging technologies to incentive programs; and
- Continued program evolution through new innovative initiatives.

Progress will be measured through the following metrics:

- PG&E will continue development of eight already initiated CASE studies in support of future Title 24 rulemakings and report them as completed after finishing draft studies and sending them to CEC staff. CASE study completion, presentation, support and follow-up activities may take up to four years; and
- PG&E will initiate development of 15 CASE studies in support of Title 20 rulemakings and report them as completed after finishing draft studies and sending them to CEC staff. Case study completion, presentation, support and follow-up activities may take up to four years.

## 8. Program Strategy

The overall strategy is to provide information that is consistent with the public rulemaking process and setting. Initial information is provided through development of CASE studies that are presented to the CEC and docketed for reference. Continuous

support is required to sustain CEC efforts to mediate differences between proponents of changes such as PG&E and those with different interests (usually industry groups).

Program tactics include the following:

- CASE studies will be developed in support of the 2008 Title 24 rulemaking;
- CASE studies will be developed to support the CEC's 2008 or earlier appliance standards rulemakings;
- Expert testimony will be provided during public workshops and hearings in support of code proposals;
- Informal stakeholder workshops and meetings will be conducted to resolve specific issues;
- Compliance improvement activities such as training will be conducted for both Title 24 and Title 20;
- Positive influence on USDOE appliances standards will be realized through expert testimony, technical research, market and economic analyses as appropriate;
- Positive influence on standards, ratings, and other organizations will be realized through memberships and/or participation in meetings, workshops and conferences;
- Draft guidelines will be developed and marketed to large public and private entities;
- Compliance options will be completed to support compliance for new technologies;
- Information surveys will be conducted in preparation for 2011 rulemakings; and
- Innovative activities will be conducted to continuously improve program effectiveness.

#### 9. Program Objectives

See Section 7 above.

#### 10. Program Implementation

The utilities' Codes and Standards program staffs plan to meet periodically to coordinate inter-utility activities so that the limited statewide funding is used efficiently. Activities will also be coordinated with other programs as needed.

- CASE studies are developed through contracts with consultants managed by PG&E staff;

- PG&E staff and their consultants jointly provide expert testimony, conduct informal workshops and problem solving meetings;
- Compliance improvement training will be conducted through contracts with consultants managed by PG&E staff, in particular, those of the Energy Training Center and the Pacific Energy enter
- PG&E staff will participate in standards and ratings organizations;
- Procurement guidelines will be developed through contracts with consultants managed by PG&E;
- Compliance options will be developed through contracts with consultants managed by PG&E; and
- Information surveys will be developed through contracts with consultants managed by PG&E.

#### 11. Customer Description

The C&S program can affect all customer classes.

#### 12. Customer Interface

Not applicable.

#### 13. Energy Measures and Program Activities

13.1 and 13.2

Energy measures and required data are provided in the cost-effectiveness calculator.

##### 13.3. Non-energy Activities

###### 13.3.1. End Use Load

All end uses available for codes or standards enhancements.

###### 13.3.2. Targeted Sector

All customer segments.

###### 13.3.3. Activity Description

Eight CASE studies in support of Title 24 rulemakings.

Fifteen CASE studies in support of Title 20 rulemakings.

###### 13.3.4. Quantitative Activity Goals

As required in the Energy Action Plan, Decision 04-09-060, the Energy Saving Targets Decision, Decision 05-04-051, the Policy Rules and EM&V Decision, and Policy Rules II.1 and II. 2, the focus of all activities in the program will be to promote and produce energy savings.

13.3.5. Assigned attributes of the activity

All market segments and end uses subject to codes and standards enhancements.

13.4. Subcontractor Activities

Subcontractors may produce some of the CASE studies.

13.5. Quality Assurance and Evaluation Activities – Not applicable.

13.6. Marketing Activities – Not applicable

14. Conclusion

This program supports the Market Integrated DSM portfolio, compliments the rest of the portfolio, contributes to the overall balance of the entire portfolio and is designed to achieve the Commission's long range energy savings targets.

15. Appendices

Documents shared with PG&E's Public Advisory Group and at the Public Workshops on the development of PG&E's 2006-2008 portfolio can be found on PG&E's Web site at [http://www.pge.com/rebates/program\\_evaluation/advisory\\_group/](http://www.pge.com/rebates/program_evaluation/advisory_group/).