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September 26, 2011

British Columbia Utilities Commission 6th Floor, 900 Howe Street Vancouver, BC V6Z 2N3

Attention: Ms. Alanna Gillis, Acting Commission Secretary

Dear Ms. Gillis:

Re: FortisBC Energy Utilities¹ ("FEU" or the "Companies") 2012 and 2013 Revenue Requirements and Natural Gas Rates Application (the "Application")

Rebuttal Evidence to the Direct Testimony of John Plunkett on Behalf of the BC Sustainable Energy Association ("BCSEA")

On August 23, 2011, the BCSEA submitted the Direct Testimony of John Plunkett in accordance with the Amended Regulatory Timetable set out in the British Columbia Utilities Commission (the "Commission") Order No. G-129-11. Mr. Plunkett's Direct Testimony related to the FEU's Energy Efficiency and Conservation ("EEC") program proposals. The evidence of Mr. Plunkett was supportive of the FEU's EEC proposals in many respects, but there are discrete elements with which the FEU take issue. Attached to this letter is the Rebuttal Evidence of the FortisBC Energy Utilities in response to Mr. Plunkett. This rebuttal evidence only addresses aspects of Mr. Plunkett evidence with which the FEU take issue.

The Commission's regulatory timetable did not address the potential need for the FEU to file rebuttal evidence. Accordingly, the FEU respectfully request that, as a matter of fairness and ensuring that the Commission has access to a complete evidentiary record, the Commission accept the attached rebuttal evidence as part of the record in this proceeding.

If you require further information or have any questions regarding this submission, please contact the undersigned.

Yours very truly,

on behalf of the FORTISBC ENERGY UTILITIES

Original signed:

Diane Roy

Attachments

cc: Registered Parties

¹ FortisBC Energy Inc. ("FEI"), FortisBC Energy (Vancouver Island) Inc. ("FEVI"), FortisBC Energy (Whistler) Inc. ("FEW"), and FortisBC Energy Inc. Fort Nelson Service Area ("Fort Nelson")



Rebuttal Evidence of FortisBC Energy Utilities

TO DIRECT TESTIMONY OF JOHN PLUNKETT ON BEHALF OF THE BRITISH COLUMBIA SUSTAINABLE ENERGY ASSOCIATION AND THE SIERRA CLUB OF BRITISH COLUMBIA

This evidence is filed by FortisBC Energy Inc., FortisBC Energy (Vancouver Island) Inc. and FortisBC Energy (Whistler) Inc. ("FEU" or "the Companies") in reply to the Direct Testimony of John Plunkett with respect to FEU's energy efficiency and conservation ("EEC") program proposals.

Introduction

Mr. Plunkett agrees with key aspects of the FEU's proposals, concluding that the Companies' proposed spending targets are reasonable and within the range of investment by its peers, and that the Companies' request to use the Societal Cost Test in place of the Total Resource Cost Test is reasonable and appropriate. However, there are discrete elements of Mr. Plunkett's evidence where Mr. Plunkett makes statements and recommendations about which the FEU disagree or to which the FEU otherwise have evidence in reply. These elements are as follows:

- 1. The details of the FEU's EEC program portfolio;
- 2. The integration of gas and electricity efficiency investments;
- 3. The principles of EEC activity;
- 4. The use of the Societal and Utilities Cost Tests; and
- 5. The inclusion of fuel-switching programs.

This rebuttal evidence will respond to each of these points below.

Details of FEU's EEC Program Portfolio

On page 6 of his Direct Testimony, Mr. Plunkett states:

Fortis has not yet estimated natural gas savings associated with these [energy efficiency program] expenditures; nor has it specified program designs for the constituent programs such as financial incentives, marketing strategies for customers or upstream market actors or delivery mechanisms. Also missing from the Fortis plan is an assessment of the value to British Columbia's economy or to Fortis ratepayers. ...Before committing to full-scale implementation of the programs...the Company should refine program designs to clarify how it will use best industry practices in financial, marketing, and delivery strategies to acquire



Rebuttal Evidence of FortisBC Energy Utilities

gas efficiency savings over time. Fortis should also submit detailed estimates of costs and savings for each program and for the portfolio as a whole, as well as cost-effectiveness analysis under the societal and utility costs tests.

Mr. Plunkett suggests that "Fortis should provide to the Commission estimated natural gas savings and assessment of individual and portfolio economic performance under the societal and utility cost tests." Mr. Plunkett recommends (page 24) "that the Commission direct Fortis to refine and supplement its plan in the form of a compliance filing." The overall tenor of Mr. Plunkett's comments in this regard may suggest that the FEU have not filed sufficient detail for the Commission to accept the FEU's proposed EEC expenditure schedules.

Mr. Plunkett's statements do not take into account that the FEU are proposing to continue many existing EEC programs, which have estimated natural gas savings and program designs, including financial incentives, marketing strategies and delivery mechanisms. These existing programs are described in the FEU's 2010 Energy Efficiency and Conservation Annual Report attached as Appendix K-4 to Exhibit B-1. In addition, the FEU have filed details regarding its proposed EEC programs in its Application¹ and in response to information requests, particularly in response to Commission information requests.² This evidence includes a Conservation Potential Review³ and estimated Total Resource Cost and Societal Cost Test ratios for the proposed programs.⁴

In further response to Mr. Plunkett's comments, attached as Appendix 1 to this Rebuttal Evidence is a detailed plan for the Companies EEC expenditures for 2012 and 2013 in previously accepted Program Areas (the "2012-2013 EEC Plan"). The Companies developed the 2012-2013 EEC Plan with the assistance of ICF-Marbek, the consulting company that prepared the FEU's Conservation Potential Review.

The Program Areas covered by the 2012-2013 EEC Plan are the following: Residential (including the Program Area previously known as "Joint Initiatives"), High-Carbon Fuel Switching, Low Income, Commercial, Conservation Education and Outreach, Industrial, and Innovative Technologies. The expenditure schedules related to these existing Program Areas are for \$39.5 million in each of 2012 and 2013. The 2012-2013 EEC Plan does not provide information about the new Program Areas (New Initiatives) proposed in the Revenue Requirements Application (Exhibit B-1).

Mr. Plunkett recommends that the FEU should analyze prospective cost-effectiveness at the measure, program and portfolio levels. This analysis has been done, although the results are presented at the program and portfolio levels in this 2012-2013 EEC Plan. As shown in the 2012-2013 EEC Plan, the Companies' proposed EEC activity for 2012 and 2013 in existing Program Areas has an estimated Total Resource Cost test ratio of 1.28, a Societal Cost Test ratio of 3.07, a Utility Cost Test ratio of 1.97 and NPV energy savings from the measures and activities proposed by the FEU for 2012 and 2013 of approximately 15.7 million GJs.

¹ Exhibit B-1, Appendices K-1 to K-4.

² See, generally, Exhibit B-9, response to BCUC IRs 1.189 to 1.218; Exhibit B-16, BCUC IR 2.90 to 2.122.

³ A summary of the Conservation Potential Review is filed as Appendix K-3 to the Exhibit B-1.

⁴ Exhibit B-9, BCUC IR 1.189.2.



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It is the Companies' intent to present the 2012-2013 EEC Plan to its EEC Stakeholder group in the EEC Stakeholder meeting currently scheduled for November 22, 2011 for their input and feedback. If the proposed new Program Areas are accepted by the Commission, then the Companies intent is to prepare a similar EEC plan for those Program Areas which would also be presented to the EEC Stakeholder group for their input and feedback.

Integration of Gas and Electricity Efficiency Investments

Mr. Plunkett states that: "It is particularly important that Fortis design and deploy its residential and commercial gas efficiency programs to integrate gas and electricity efficiency investments that arise...". In reply, the FEU note that collaborative efforts on energy efficiency and conservation between the FEU, the FortisBC electric utility (FortisBC), BC Hydro and government are happening at unprecedented levels in British Columbia. Programs conducted jointly between the FEU and other entities include:

- Energy Efficient Home Retrofit Programs;
- Home Energy Efficiency Web Portal;
- ENERGY STAR® Washers and Other Measures for DHW Conservation;
- Customer Engagement Tool for Conservation Behaviours;
- New Construction EnerGuide for Homes 80 & Beyond and Energy Efficient Appliances;
- Switch N Shrink;
- Residential Energy Efficiency Works (REnEW);
- Energy Saving Kit (ESK);
- Energy Conservation Assistance Program (ECAP);
- Commercial Custom Design Program; and
- Continuous Optimization Program.

In addition, the FEU have commenced discussion with BC Hydro and FortisBC electric about conducting joint outreach to the public, although the customer research being conducted will need to be more complete before the feasibility of such joint outreach can be adequately evaluated. Thus, it can be seen that the Companies' 2012-2013 EEC Plan satisfies Mr. Plunkett's recommendation regarding integration of gas and electric efficiency efforts.

Principles of EEC Activity

On page 10, Mr. Plunkett outlines the following guiding tenets for EEC activities:



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"Give first priority to capturing efficiency opportunities in market-driven transactions like new construction and renovation as well as purchases of products, appliances and equipment at the time of scheduled replacement...

Avoid the creation of lost opportunities in discretionary efficiency markets...

Choose the pace and scale of discretionary efficiency resource procurement..."

The Companies' 2012-2013 EEC Plan aligns with these guiding tenets.

- It can be seen that there are a number of programs that are aimed at capturing efficiency opportunities in new construction (Residential New Construction – Energuide 80 and beyond, Commercial Custom Design Program – New Construction) and in renovation (Energy Efficient Home Retrofit Program/LiveSmartBC, Commercial Custom Design Program – Retrofit).
- The FEU's collaborative effort with BC Hydro, FortisBC and the Government of British Columbia on the LiveSmartBC residential efficiency retrofit program is a prime example of the Companies' efforts to avoid lost opportunities as the program incorporates both gas and electric measures.
- Addressing Mr. Plunkett's third tenet, the Companies' proposed EEC activity for 2012 and 2013 contains only one program related to "discretionary efficiency resource procurement": the Furnace Scrap-it program. This proposed furnace early retirement program is a new program that will proceed only if a change to the Societal Cost Test as the primary test is approved or some other change to DSM cost-effectiveness screening is implemented. It would be an incremental expenditure over and above proposed funding levels for previously-approved Program Areas and therefore would not cause portfolio funding constraints that would limit other opportunities to capture efficiency resources in new construction and renovation. These efficiency resources would be captured using the proposed funding for previously-approved areas of activity.

In further reply, in the FEU's original EEC Application of May 28, 2008, the Companies laid out key principles that guide the FEU's EEC activity. These principles are listed below:

- 1. Programs will have a goal of being universal, offering access to energy efficiency and conservation for all residential and commercial customers, including low income customers through the DSM for Affordable Housing initiative.
- 2. Wherever possible, programs will be uniform, so that customers in one part of the service territories of the FEU have access to the same programs as customers throughout the service territories.
- 3. EEC expenditures will be efficient, with non-incentive costs not exceeding 50% of the expenditure in a given year.
- 4. Program results will be analyzed on a portfolio-wide basis.



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- 5. The Total Resource Cost/Benefit of the Portfolio over the funding period will have a ratio of 1 or higher.
- 6. The FEU will submit an Annual EEC Report to the BCUC, by the end of the first quarter of each year that details the results of the previous year's programs and anticipates program activity and spending for the upcoming (current) year.
- 7. To every extent practical, programs will support the objectives of established government policies.
- 8. The Companies will continue to seek funding for programs from additional sources, such as the provincial and federal governments, other utilities, and equipment suppliers and manufacturers, in order to minimize the cost impacts of EEC programs to ratepayers, and in recognition of the broader societal benefits resulting from successful program development and implementation.
- 9. Incentives may be directed to the end users of an appliance, to the customer point of contact at the time that an equipment purchase decision is made (for example, to the gas contractor in the case of a furnace), to a system designer or engineer, or to an equipment developer, supplier or manufacturer. The most effective use of incentives will be determined through the program design process.
- 10. Education and outreach regarding conservation will be part of the Companies' EEC activity.
- 11. Programs will be multi-year so as to create a sense of funding certainty necessary to effective implementation in the marketplace.
- 12. Programs will have market transformation as their ultimate goal, and program plans will describe how a program will contribute to market transformation.
- 13. Programs will aim to develop capacity within the market through manufacturers, distributors, vendors and installers.
- 14. To ensure value creation and alignment with the market, the Companies will establish and engage an EEC stakeholder group, comprised of governments, industry, trades, manufacturers, NGOs, advocacy groups, other utilities and customers to provide it with advice on effective program design and implementation, as well as some oversight of the Companies' EEC activity and expenditure. Consideration may be given by the Companies to consolidate the FEU's EEC Stakeholder activity with stakeholder activity currently being undertaken by other utilities in order to reduce potential "stakeholder fatigue".

These EEC principles guide the FEU's EEC activity in its entirety, and are based on the "DSM Best Practices" report prepared for the Canadian Gas Association by IndEco Consulting.



Rebuttal Evidence of FortisBC Energy Utilities

Use of the Societal and Utilities Cost Test

In Exhibit B-1 the FEU have proposed the use of the Societal Cost Test as the primary test for cost-effectiveness screening and Mr. Plunkett supports this proposal. Further, beginning on page 17, Mr. Plunkett's Direct Testimony addresses the Utility Cost Test (or Program Administrator Cost ["PAC"] Test as it is referred to in the California Standard Practice Manual, attached to this Rebuttal Evidence as Appendix 2). Mr. Plunkett states on page 17 that, "It is necessary to use both [the Utility Cost and Societal Cost] tests to plan and assess DSM programs; neither test is sufficient on its own."

The FEU report on the results of the Utility Cost Test in its EEC Annual Reports and in its 2012-2013 EEC Plan (see Appendices K-3 and K-4 of Exhibit B-1 and Appendix 1 to this Rebuttal Evidence, respectively). However, the FEU have used the Total Resource Cost test, and now propose to use the Societal Cost Test, to plan its EEC programs. The FEU have not found it necessary to date to use the Utility Cost Test to screen EEC programs for cost-effectiveness. As stated in California's Energy Efficiency Policy Manual, attached as Appendix 2 to this Rebuttal Evidence, "In almost all instances, an energy efficiency program that passes the TRC test will also pass the PAC test."⁵ The FEU are open to the use of the Societal Cost Test in conjunction with the Utility Cost Test; however, the Utility Cost Test should be applied at the portfolio level as the TRC test has been applied by the Commission in the past.

Exclusion of Fuel-Switching Programs

Mr. Plunkett states on page 6 that he excludes fuel switching programs in his analysis and that by "Fortis's proposed DSM expenditures" he means "to the exclusion of fuel switching and NGV spending." Mr. Plunkett does not explain why this exclusion is made.

The High-Carbon Fuel Switching Program Area was approved by the Commission in its Decision in the Companies' original EEC proceeding, The FEU's fuel-switching programs are properly included within its proposed DSM expenditures. There are several reasons for this.

- 1. The FEU's fuel-switching programs are some of the FEU's longest running programs, and promote the switching from burning of heating oil and propane to natural gas for home heating purposes.
- 2. In the vast majority of cases, the oil- or propane- burning equipment is old and inefficient, and in all cases, is being replaced with an Energy Star furnace or boiler, thus increasing the efficiency of the equipment.
- 3. Natural gas emits lower greenhouse gas levels than heating oil (a reduction of 32%) or propane (a reduction of 15%).

⁵ Appendix 2, page 9



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4. Fuel-switching programs are recognized in the California Standard Practice Manual (attached, along with California's Energy Efficiency Policy Manual, as Appendix 2 to this Rebuttal Evidence) as being a demand-side management category or program.⁶.

Conclusion

In summary, while the Direct Testimony of Mr. Plunkett is supportive of the FEU's EEC proposal in many respects, this rebuttal evidence addresses those aspects of Mr. Plunkett's testimony which suggest a deficiency in FEU's EEC proposals. The FEU EEC programs, including fuel-switching programs, are designed according to sound principles, appropriately integrate gas and electricity efficiency investments, and provide value to ratepayers under the various cost effectiveness tests.

Appendix 1 2012-2013 EEC PLAN



FortisBC EEC Plan 2012/2013

Program Description and Cost-Effectiveness Results

Final Report

September 26, 2011

Submitted to: FortisBC

Submitted by: ICF Marbek 300-222 Somerset Street West Ottawa, Ontario K2P 2G3

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1 Introduction

1.1 Background and Objectives

This EEC Plan covers the funding request in the 2012 – 2013 Revenue Requirements Application for FortisBC Energy Inc., FortisBC Energy (Vancouver Island) Inc. and FortisBC Whistler Inc. (collectively known as "FEU", "FortisBC" or "the Companies") for previously approved Program Areas: Residential (including the Program Area previously known as "Joint Initiatives"), High-Carbon Fuel Switching, Low Income, Commercial, Conservation Education and Outreach, Industrial, and Innovative Technologies.

This EEC Plan does not provide information about the "New Initiatives" (Furnace Scrap-It program, Solar Thermal, and TES for Schools), nor the Natural Gas Vehicles program proposed in the Revenue Requirements Application, as these Program Areas have not been previously approved by the BCUC and FortisBC's preference at this time is to focus their resources on an EEC Plan for those Program Areas that the Commission has previously approved.

Many of the programs in this EEC Plan are continuations of programs that FortisBC is currently running, and has reported on in their 2009 and 2010 EEC Annual Report. This EEC Plan is intended to provide program details and projected cost-effectiveness results for FortisBC's proposed portfolio of previously-approved EEC Program Area activity.

It should be noted that as with all plans, this EEC Plan is subject to change in response to changes in market conditions, customer responses to programs, input from stakeholders including program partners, and changes in the political environment in which the Companies operate.

1.2 Approach

The information presented in this report involved a collaborative working effort between FortisBC EEC program personnel and ICF Marbek staff. The following steps were employed:

- FortisBC program managers identified and provided a description of the individual programs included within their respective portfolio, including eligible measures, target markets and potential delivery partners.
- Drawing on a combination of previous FortisBC EEC market experience, relevant technology and market studies¹, and, in some cases, professional estimates, FortisBC EEC managers completed Profiles for each program within their portfolio. These individual Profiles are included in the body of this report.
- ICF Marbek staff worked from the Program Profiles provided by FortisBC staff and populated the Cost-Effectiveness model. Initial results were generated at the level of total EEC Program Portfolio, Program Area (e.g., residential, commercial etc) and individual program.
- The initial results were reviewed collaboratively and revisions were made, as applicable.
- The final results were compiled into the current report.

¹ This included the recently completed 2010 Conservation Potential Review, which was completed by ICF Marbek for FortisBC.



1.2.1 Conservation Potential Review 2010

FortisBC completed its Conservation Potential Review - 2010 (CPR 2010) in May of 2011. The completed CPR provided a comprehensive update of the current energy efficiency opportunities within FortisBC's service territory. The results identified both the sectors and the end uses that offer the most significant opportunities for natural gas efficiency over the next 20 years.

The completed CPR 2010 also provided an updated dataset on the current costs and performance for a wide range of energy efficiency technologies and measures that are applicable to FortisBC's customers.

While the completed CPR 2010 did not recommend specific programs or targets both the technology and market priorities as well as the scope of achievable savings potential identified in the study have assisted FortisBC's program managers in the design of the program portfolios included in this EEC plan.

1.3 Report Organization

Following this introductory section, the remainder of this report is presented in 9 sections:

- Section 2 provides an overview of the EEC Program Portfolio Results.
- Section 3 provides a description of the individual programs and cost-effectiveness results for the Residential Sector Programs.
- Section 4 provides a description of the individual programs and cost-effectiveness results for the High Carbon Fuel Switching Programs.
- Section 5 provides a description of the individual programs and cost-effectiveness results for the Low Income Programs.
- Section 6 provides a description of the individual programs and cost-effectiveness results for the Commercial Sector Programs.
- Section 7 provides a description of the individual programs and cost-effectiveness results for the Conservation Education & Outreach Programs.
- Section 8 provides a description of the individual programs and cost-effectiveness results for the Industrial Sector Programs.
- Section 9 provides a description of the individual programs and cost-effectiveness results for the Innovative Technologies Programs.
- Section 10 summarizes the findings of this report and provides some commentary to put these results into perspective.



2 Overall EEC Program Portfolio Results

2.1 Introduction

This section provides a summary of the total expenditures, estimated natural gas savings, and associated cost-effectiveness for FortisBC's proposed portfolio of Energy Efficiency and Conservation (EEC) programs for the 2012 and 2013 periods. The EEC portfolio has been organized into the following program areas:

- Residential Sector Programs
- High Carbon Fuel Switching Programs
- Low Income Programs
- Commercial Sector Programs
- Conservation Education & Outreach Programs
- Industrial Sector Programs
- Innovative Technologies Programs

2.2 Overall EEC Program Portfolio Results

The overall EEC program results are summarized in the following two exhibits.

- Exhibit 1 presents the results for the total EEC program portfolio, by service territory and year.
- Exhibit 2 presents the results for each individual program area and for the total EEC program portfolio.

The results presented in the following exhibits and throughout the remainder of this EEC Plan combine the Whistler results within the FEI service area. This is because FortisBC's Cost-Effectiveness Model is currently only able to track a maximum of two service areas. Future versions of the model will have the capability to report Whistler (FEW) separately. Note, however, that the FEW territory is reported separately in the individual program profiles that are provided throughout this document.

It should also be noted that the Societal Cost Test (SCT) results that are provided in the following exhibits and throughout the remainder of this EEC Plan employ a distinct set of inputs from those applied in the conventional cost-effectiveness tests. More specifically, a societal discount rate of 3.0% and a levelized avoided gas commodity cost of \$15.28/GJ representing the ceiling price of biomethane were employed.

In addition, the Carbon Tax input was replaced by a 30% TRC adder, which was added to all of the programs except for the low income programs. These programs did not require an additional TRC adder since they already benefited from a 30% low income program adder in the standard TRC analysis. The remaining inputs used for the SCT analysis were identical to those in the standard TRC tests.



Indicator		Service ⁻	Total	
Indicator		FEI	FEVI	Total
Annual Gas Savings	2012	849,976	85,764	935,740
(GJ/yr.)	2013	1,862,972	166,162	2,029,134
NPV of Gas Savings (GJ)		14,412,588	1,325,457	15,738,045
	2012	22,174	3,439	25,614
Utility Expenditures,	2013	22,174	3,447	25,621
	Total	44,348	6,886	51,234
Utility Expenditures,	2012	11,127	1,536	12,662
Non-Incentives	2013	11,021	1,541	12,563
(\$1000s)	Total	22,148	3,077	25,225
	2012	33,301	4,975	38,276
Total (\$1000s)	2013	33,195	4,988	38,183
	Total	66,496	9,963	76,459
	TRC	1.28	1.27	1.28
	Utility	2.08	1.35	1.97
Benefit/Cost Ratios	Participant	2.47	2.52	2.48
	RIM	0.60	0.53	0.58
	Societal	3.14	2.59	3.07

Exhibit 1: EEC Portfolio Results, by Service Territory and Year

Note: Whistler (FEW) is included in the FEI service territory



Exhibit 2: EEC Program Portfolio Results by Program Area

Portfolio Annual Gas Saving		as Savings	NPV Gas	Utility Expenditures (\$1000s)						Benefit/Cost Ratios							
and Service	(G.	J/yr.)	Savings		Incentive	s	No	n-Incenti	ves	Α	II Spendi	ng	TPC	141144	Participant	DIM	Societal
Territory	2012	2013	(GJ)	2012	2013	Total	2012	2013	Total	2012	2013	Total	TRC	Ounty	Farticipant	KIW	Societai
Residential Se	ector																
FEI	178,683	434,822	3,409,352	5,613	5,224	10,838	2,794	3,263	6,057	8,407	8,487	16,895	0.95	1.92	1.74	0.57	2.42
FEVI	22,363	42,369	448,891	809	718	1,527	298	279	577	1,107	997	2,104	0.92	2.03	2.15	0.45	2.28
Total	201,045	477,191	3,858,243	6,422	5,942	12,365	3,092	3,542	6,634	9,514	9,484	18,999	0.94	1.93	1.79	0.55	2.40
High Carbon F	uel Switchi	ng															
FEI	-4,300	-8,600	-87,292	100	100	200	26	26	52	126	126	252	1.67	0.00	1.73	0.91	1.71
FEVI	-17,200	-34,400	-361,302	400	400	800	104	104	208	504	504	1,008	1.68	0.00	1.28	1.04	1.71
Total	-21,500	-43,000	-448,593	500	500	1,000	130	130	260	630	630	1,260	1.68	0.00	1.35	1.02	1.71
Low Income																	
FEI	27,169	54,338	393,473	2,752	2,752	5,504	1,698	1,698	3,395	4,450	4,450	8,899	0.54	0.40	1.96	0.27	1.00
FEVI	3,019	6,038	44,708	306	306	612	214	214	427	519	519	1,039	0.52	0.39	2.34	0.24	0.95
Total	30,188	60,376	438,181	3,058	3,058	6,116	1,911	1,911	3,822	4,969	4,969	9,938	0.54	0.40	2.00	0.27	0.99
Commercial S	ector																
FEI	447,358	887,671	7,004,449	10,824	11,388	22,212	1,713	1,135	2,848	12,537	12,523	25,060	1.44	2.67	2.59	0.61	3.60
FEVI	76,466	135,699	1,079,518	1,834	1,801	3,635	149	176	325	1,983	1,977	3,960	1.71	2.58	4.20	0.44	4.15
Total	523,824	1,023,370	8,083,967	12,658	13,189	25,847	1,861	1,312	3,173	14,520	14,500	29,020	1.47	2.66	2.78	0.58	3.67
Conservation I	Education a	nd Outreach															
FEI	0	0	0	0	0	0	4,281	4,284	8,564	4,281	4,284	8,564	0.00	0.00		0.00	0.00
FEVI	0	0	0	0	0	0	720	717	1,436	720	717	1,436	0.00	0.00		0.00	0.00
Total	0	0	0	0	0	0	5,000	5,000	10,000	5,000	5,000	10,000	0.00	0.00		0.00	0.00
Industrial Sect	tor																
FEI	172,758	402,486	2,879,123	1,840	1,840	3,679	258	258	516	2,098	2,098	4,195	3.73	6.49	5.34	0.78	9.00
Innovative Tec	hnologies																
FEI	19,598	74,835	610,000	1,046	870	1,916	358	358	716	1,404	1,228	2,632	1.81	2.57	2.79	0.78	4.25
FEVI	1,116	16,456	113,641	90	222	312	52	52	104	142	274	416	2.00	2.96	4.19	0.55	4.38
Total	20,714	91,291	723,641	1,136	1,092	2,228	410	410	820	1,546	1,502	3,048	1.84	2.62	2.99	0.73	4.27
ALL PORTFO	LIOS																
FEI	849,976	1,862,972	14,412,588	22,174	22,174	44,348	11,127	11,021	22,148	33,301	33,195	66,496	1.28	2.08	2.47	0.60	3.14
FEVI	85,764	166,162	1,325,457	3,439	3,447	6,886	1,536	1,541	3,077	4,975	4,988	9,963	1.27	1.35	2.52	0.53	2.59
Total	935,740	2,029,134	15,738,045	25,614	25,621	51,234	12,662	12,563	25,225	38,276	38,183	76,459	1.28	1.97	2.48	0.58	3.07

Note: Whistler (FEW) is included in the FEI service territory



3 Residential Sector Programs

3.1 Introduction

The Residential Sector Programs will continue to provide value to customers by encouraging households to reduce their overall consumption of natural gas and manage their energy bills. The 2012 and 2013 Residential Energy Efficiency Programs will extend energy saving offers to over 850,000 BC households. Residential programs, in combination with the Companies' education and outreach activities, are critical components in driving the culture of conservation for the longer term GHG emissions reduction strategy of the province of British Columbia.

The 2012/2013 suite of Residential Sector Program offerings is listed below:

- ENERGY STAR[®] Domestic Hot Water "DHW" Technologies
- EnerChoice Fireplace Program
- "Give your Furnace/Fireplace Some TLC" Service Campaign
- Energy Efficient Home Retrofit Programs Joint Initiatives with Governments and Utilities (LiveSmartBC and other opportunities)
- Home Energy Efficiency Web Portal
- ENERGY STAR[®] Washers and Other Measures for DHW Conservation
- Customer Engagement Tool for Conservation Behaviours
- New Construction EnerGuide for Homes (80 & Beyond) and Energy Efficient Appliances
- Efficiency Partners Program

The ENERGY STAR[®] water heater technologies program, the EnerChoice fireplace program and the ENERGY STAR[®] washer program, in collaboration with BCHydro and FortisBC (electric), will promote increased customer adoption of energy efficient appliances.

To ensure appliances are running as efficiently as possible and to engage contractors in efficiency dialogues with customers, the successful "Give Your Furnace/Fireplace some TLC" program will be offered for 2012 and 2013.

Retrofit programs focus on conservation behaviours, energy efficient appliance upgrades and whole home performance. Whole home performance will be promoted through Joint Initiatives that support Energy Efficient Home Retrofits including LiveSmartBC, expanding weatherization capacity and other opportunities.

To consolidate energy efficiency rebate offers for British Columbians, a Home Energy Efficiency Web Portal is under development, with support from the electric utilities. FortisBC is currently investigating customer engagement tools to foster conservation behaviours, with the expectation of conducting a pilot in the fall of 2012, and, if successful, a larger scale rollout in 2013.



The new construction program, which will be implemented in collaboration with electric utilities, will focus on building envelope upgrades to achieve EnerGuide for Homes (EGH) 80, in support of pending changes to the BC Building Code. Research is under way for developing programs that go beyond EGH 80 in preparation for Near Net Zero homes. In addition to building envelope measures, incentives will be developed to ensure that the most energy efficient natural gas appliances (space heat and hot water) are installed in new homes and town homes.

The Efficiency Partners program is FortisBC's trades engagement strategy that largely supports residential retrofits. Over this period, FortisBC will expand the scope and reach of this program, since contractors are one of the major drivers of program adoption.

3.2 Overview of Results

Exhibit 3 provides a summary of the estimated savings, program expenditures and costeffectiveness results for each of the programs noted above and for the Residential Sector Portfolio, as a whole.



Exhibit 3: Residential Sector Program Results

Program	Annual Ga	as Savings	NPV Gas				Utility Exp	penditure	s (\$1000s))				Be	nefit/Cost Rat	ios	
and Service	(GJ	/yr.)	Savings		ncentive	S	No	n-Incentiv	/es	A	I Spendi	ng	TPC	l ltility	Participant	DIM	Societal
Territory	2012	2013	(GJ)	2012	2013	Total	2012	2013	Total	2012	2013	Total	TRC	Ounty	Participant	KIIW	Societai
ENERGY STA	R® Domest	ic Hot Wate	r "DHW" Tech	inologies													
FEI	20,250	40,500	394,677	1,215	1,215	2,430	393	393	785	1,608	1,608	3,215	0.50	1.22	1.03	0.50	1.27
FEVI	2,250	4,500	45,327	135	135	270	44	44	87	179	179	357	0.52	1.26	1.33	0.41	1.27
Total	22,500	45,000	440,004	1,350	1,350	2,700	436	436	872	1,786	1,786	3,572	0.50	1.23	1.06	0.49	1.27
EnerChoice Fi	ireplace Prog	gram															
FEI	22,599	35,154	327,467	875	486	1,361	347	266	612	1,221	752	1,973	2.37	1.36	8.69	0.52	5.87
FEVI	5,301	8,246	79,069	205	114	319	82	63	144	287	177	463	2.44	1.39	11.39	0.42	5.86
Total	27,900	43,400	406,535	1,080	600	1,680	428	328	756	1,508	928	2,436	2.38	1.36	8.96	0.51	5.87
"Give your Fur	nace/Firepla	ice Some TL	C" – Service	Campaign													
FEI	0	0	0	394	394	788	169	169	338	563	563	1,126	0.00	0.00	0.17	0.00	0.00
FEVI	0	0	0	44	44	88	19	19	38	63	63	126	0.00	0.00	0.17	0.00	0.00
Total	0	0	0	438	438	875	188	188	376	626	626	1,251	0.00	0.00	0.17	0.00	0.00
Energy Efficie	nt Home Re	trofit Program	ns														
FEI	84,240	168,480	1,797,316	2,147	2,147	4,293	576	576	1,152	2,723	2,723	5,445	1.62	3.05	2.88	0.64	4.21
FEVI	9,360	18,720	207,221	239	239	477	64	64	128	303	303	605	1.68	3.17	3.85	0.49	4.21
Total	93,600	187,200	2,004,538	2,385	2,385	4,770	640	640	1,280	3,025	3,025	6,050	1.62	3.06	2.97	0.62	4.21
Home Energy	Efficiency V	/eb Portal															
FEI	0	0	0	0	0	0	90	90	180	90	90	180	0.00	0.00		0.00	0.00
FEVI	0	0	0	0	0	0	10	10	20	10	10	20	0.00	0.00		0.00	0.00
Total	0	0	0	0	0	0	100	100	200	100	100	200	0.00	0.00		0.00	0.00
ENERGY STA	R® Washe	rs and Other	Measures for	DHW Co	nservation												
FEI	22,950	45,900	406,907	383	383	765	90	90	180	473	473	945	0.94	4.42	1.44	0.69	2.25
FEVI	2,550	5,100	46,496	43	43	85	10	10	20	53	53	105	0.96	4.54	1.90	0.53	2.25
Total	25,500	51,000	453,403	425	425	850	100	100	200	525	525	1,050	0.94	4.44	1.49	0.68	2.25
Customer Eng	agement To	ol for Consei	vation Behavi	ours													
FEI	17,500	122,500	222,644	0	0	0	500	1,050	1,550	500	1,050	1,550	1.38	1.38		0.50	3.11
New Construc	tion – EGH	80 & Beyond	and EE App	liances													
FEI	11,144	22,288	260,341	601	601	1,201	180	180	360	781	781	1,561	0.44	1.84	0.90	0.52	1.20
FEVI	2,902	5,803	70,778	144	144	288	20	20	40	164	164	328	0.48	2.38	1.14	0.45	1.25
Total	14,045	28,091	331,119	745	745	1,490	200	200	400	945	945	1,890	0.45	1.89	0.92	0.52	1.20
Efficiency Par	tners Progra	m															
FEI	0	0	0	0	0	0	450	450	900	450	450	900	0.00	0.00		0.00	0.00
FEVI	0	0	0	0	0	0	50	50	100	50	50	100	0.00	0.00		0.00	0.00
Total	0	0	0	0	0	0	500	500	1,000	500	500	1,000	0.00	0.00		0.00	0.00
ALL PROGRA	MS																
FEI	178,683	434,822	3,409,352	5,613	5,224	10,838	2,794	3,263	6,057	8,407	8,487	16,895	0.95	1.92	1.74	0.57	2.42
FEVI	22,363	42,369	448,891	809	718	1,527	298	279	577	1,107	997	2,104	0.92	2.03	2.15	0.45	2.28
Total	201,045	477,191	3,858,243	6,422	5,942	12,365	3,092	3,542	6,634	9,514	9,484	18,999	0.94	1.93	1.79	0.55	2.40

Note: Whistler (FEW) is included in the FEI service territory



3.3 **Program Profiles**

The following pages provide profiles for each of the programs shown above in Exhibit 3.

3.3.1 ENERGY STAR[®] Domestic Hot Water "DHW" Technologies

Program Description	This Program will promote the replacement of standard efficiency water heaters with efficient ENERGY STAR [®] models. As part of a longer term market transformation strategy, the Program will also introduce new technologies with energy factors (EF) of 0.80, or higher.								
	Promotional activitie consumers and cor	es will include htractors.	educational	I materials and incen	tives targeted to	o both			
Target Market	Residential custom	ers							
New vs Retrofit	Both								
Eligible Measures	ESTAR Water H	eaters C	ondensing \	Vater Heaters T	ankless Water	Heaters			
Incremental Measure Cost**	\$200		\$1,	650	\$1,800				
Incentive Amount	ount \$100 + \$50 SPIF* \$500 + \$50 SPIF*				\$500 + \$50 S	SPIF*			
Savings per Participant	3 GJ		5	GJ	6.5 GJ				
Measure Life & Source	13 years for tanks, 20 years for tankless - Manufacturers, CANETA and OPA stud								
Free Rider Rate & Source	10% - Based on es	timates of mai	ket penetra	tion from manufactur	ers and CANE	ΓΑ			
Spillover Rate & Source	Not available								
	Service Region		2012		2013				
	FEI		4,539		4,539				
Participants	FEVI		510		510				
	FEW		51		51				
	Total		5,100		5,100				
Participant	Measure	ESTAR	W.H.	Condensing W.H.	Tankles	s W.H.			
Breakdown	Percentage	589	%	2%	40	%			
			20)12					
	Service Region	Incentives	Admin*	Communication	Evaluation	Total			
	FEI	\$1,202	\$259	\$67	\$62	\$1,590			
	FEVI	\$135	\$29	\$8	\$7	\$179			
		\$14	\$3	\$1	\$1	\$18			
Expenditures (\$,000s)***	lotal	\$1,350	\$291 2(\$75	\$70	\$1,786			
	Service Region	Incentives	 Admin*	Communication	Evaluation	Total			
	FEI	\$1.202	\$259	\$67	\$62	\$1,590			
	FEVI	\$135	\$29	\$8	\$7	\$179			
	FEW	\$14	\$3	\$1	\$1	\$18			
	Total	\$1,350	\$291	\$75	\$70	\$1,786			

*Note: Dealer Sales Promotion Incentive Fund (SPIF) is included in the Admin portion of expenditures.

** Note: Incremental costs are presented for retrofit situations. Builders who can participate in volume buying may be able to purchase these technologies for lower costs.

***Totals may not add exactly; any differences are due to rounding.



3.3.2 EnerChoice Fireplace Program

Program Description	This Program will EnerChoice firepla will also provide a	provide financ ace. To help c dealer incenti	ial rebates Irive progra ve.	to customers that pu im awareness and pa	rchase and inst articipation, the	all an Program				
	The goal is to edu gas fireplaces bas	cate consume sed on energy	ers and dea efficient pe	lers about the importa rformance rather that	ance of selectin n just decorativ	g natural e features.				
Target Market	Residential custor	mers								
New vs Retrofit	Both									
Eligible Measures	EnerChoice Firep	lace								
Incremental Measure Cost	\$150									
Incentive Amount	\$300 + \$50 SPIF*									
Savings per Participant	7.75 GJ									
Measure Life & Source	15 years - Impact	assessment, (Conservatio	on Potential Review, a	and application	form data				
Free Rider Rate & Source	24% - Findings of share data)	previous prog	rams (com	petitive industry reluc	tant to provide	market				
Spillover Rate & Source	Not available									
	Service Region	2	2012		2013					
	FEI	2	,880		1,600					
Participants	FEVI		684	380						
	FEW		36		20					
	Total	3	,600		2,000					
	2012									
	Service Region	Incentives	Admin*	Communication*	Evaluation	Total				
	FEI	\$864	\$182	\$120	\$40	\$1,206				
	FEVI	\$205	\$43	\$29	\$10	\$287				
	FEW	\$11	\$2	\$2	\$1	\$15				
	Total	\$1,080	\$228	\$150	\$50	\$1,508				
Expenditures (\$,000s)**			2	2013						
	Service Region	Incentives	Admin*	Communication*	Evaluation	Total				
	FEI	\$480	\$119	\$120	\$24	\$742				
	FEVI	\$114	\$28	\$29	<u>+-</u> \$6	\$176				
	FEW	\$6	<u>,</u> \$2	\$2	-	\$9				

Total \$600 \$148 \$150 \$30 \$928 * Note: Dealer Sales Promotion Incentive Fund (SPIF) is included in the Admin portion of expenditures, and \$100,000 in co-op funding is included in the Communication portion. ** Totals may not add exactly; any differences are due to rounding.

3.3.3 "Give your Furnace/Fireplace Some TLC" – Service Campaign

Program Description	This Program will regular appliance opportunities to u	This Program will educate the market about the energy efficiency and other benefits of egular appliance maintenance. It is also expected that this approach will create apportunities to upgrade appliances to more efficient models.							
Target Market	Residential custor	mers							
New vs Retrofit	Retrofit								
Eligible Measures	Furnace service a	and fireplace se	ervice						
Incremental Measure Cost	\$150								
Incentive Amount	\$25								
Savings per Participant	Unknown - Worki	ng on combust	ion analys	is project to determin	ne savings				
Measure Life & Source	1-2 years; 1.5 ass	sumed - Annua	l servicing	is recommended					
Free Rider Rate & Source	80% - 2010 TLC Participant Survey (participants also cited gift card incentive as key driver)								
Spillover Rate & Source	Not available								
	Service Region	2	012		2013				
	FEI	15	,575		15,575				
Participants	FEVI	1,	750 1,750						
	FEW		75		175				
	Total	17	,500		17,500				
			2	2012					
	Service Region	Incentives	Admin	Communication	Evaluation	Total			
	FEI	\$389	\$78	\$45	\$45	\$556			
	FEVI	\$44	\$9	\$5	\$5	\$63			
	FEW	\$4	\$1	\$1	\$1	\$6			
	Total	\$438	\$88	\$50	\$50	\$625			
Expenditures (\$,000s)*			2	2013					
	Service Region	Incentives	Admin	Communication	Evaluation	Total			
	FEI	\$389	\$78	\$45	\$45	\$556			
	FEVI	\$44	\$9	\$5	\$5				
	FEW	\$4	\$1	\$1	\$1	\$6			
	Total	\$438	\$88	\$50	\$50	\$625			

*Totals may not add exactly; any differences are due to rounding.



3.3.4 Energy Efficient Home Retrofit Programs – Joint Initiatives with Governments and Utilities (LiveSmartBC and other opportunities)

Program Description	These Programs v with utility partners	vill promote en s, as well as pr	ergy efficio ovincial, fe	ency home retrofits i ederal, and municipa	nvolving collab Il governments.	oration				
	The major initiative is LiveSmartBC for which economic modeling data is presented below. Other initiatives include capacity building for weatherization and initiatives with individual municipalities. There is a significant shared investment in energy modeling studies and evaluation.									
Target Market	Residential custon	ners								
New vs Retrofit	Retrofit	Retrofit								
Eligible Measures	Several different ty	ypes of Air Sea	aling, Insul	ation, and Window n	neasures					
Incremental Measure Cost*	\$682									
Incentive Amount*	\$265 + \$54 MEM**									
Savings per Participant*	10.4 GJ									
Measure Life	20 year average assumed (10-15 years for Air Sealing, 20-25 years for Insulation, and 20-25 years for Windows)									
Measure Life Source	Consultations with	BC Hydro, Ha	abart & Ho	od, and 2010 Conse	rvation Potentia	al Review				
Free Rider Rate	18% average assu (12% for Air Sealir	umed ng, 12% for Ins	sulation, ar	nd 25% for Windows)					
Free Rider Rate Source	BCHydro past pro	gram analysis								
Spillover Rate & Source	Not available									
	Service Region		2012		2013					
	FEI		8,010		8,010					
Participants	FEVI		900		900					
	FEW		90		90					
	Total		9,000		9,000					
			2	012						
	Service Region	Incentives	Admin	Communication	Evaluation	Total				
	FEI	\$2,123	\$45	\$401	\$125	\$2,692				
	FEVI	\$239	\$5	\$45	\$14	\$303				
	FEW	\$24	\$1	\$5	\$1	\$30				
Expenditures (\$ 000s)***	Total	\$2,385	\$50	\$450	\$140	\$3,025				
			2	013						
	Service Region	Incentives	Admin	Communication	Evaluation	Total				
	FEI	\$2,123	\$45	\$401	\$125	\$2,692				
	FEVI	\$239	\$5	\$45	\$14	\$303				

*Weighted averages based on multiple measures and projected participants. Note: Assumptions were based on limited data from past performance. A full program evaluation has been initiated in collaboration with BCHydro to validate energy savings claims and measure uptake.

\$1

\$50

\$5

\$450

\$1

\$140

\$24

\$2,385

**FortisBC incentive is supplemented by a Ministry of Energy and Mines (MEM) incentive.

*** Totals may not add exactly; any differences are due to rounding.

FEW

Total

\$30

\$3,025



3.3.5 Home Energy Efficiency Web Portal

Program Description	This Program will develop a home energy efficiency web portal with content, energy saving tips and a "one-stop rebate shop" for the province of BC. Note: this program is under development; consequently complete information is not currently available.								
Target Market	Residential custor	ners							
New vs Retrofit	Retrofit								
Eligible Measures	N/A								
Incremental Measure Cost	N/A								
Incentive Amount	N/A								
Savings per Participant	N/A								
Measure Life & Source	N/A								
Free Rider Rate & Source									
Spillover Rate & Source	Not available								
	Service Region	2	012		2013				
	FEI								
Participants	FEVI								
-	FEW								
	Total								
			2	2012					
	Service Region	Incentives	Admin	Communication	Evaluation	Total			
	FEI	-	\$45	\$45	-	\$89			
	FEVI	-	\$5	\$5	-	\$10			
	FEW	-	\$1	\$1	-	\$1			
	Total	-	\$50	\$50	-	\$100			
Expenditures (\$,000s)*			2	2013					
	Service Region	Incentives	Admin	Communication	Evaluation	Total			
	FEI	-	\$45	\$45	-	\$89			
	FEVI	-	\$5	\$5	-	\$10			
	FEW	-	\$1	\$1	-	\$1			
	Total	-	\$50	\$50	-	\$100			

* Totals may not add exactly; any differences are due to rounding.

3.3.6 ENERGY STAR[®] Washers and Other Measures for DHW Conservation

Program Description	This Program will provide rebates on select Tier 3 ENERGY STAR [®] clothes washers in collaboration with utility partners.									
	Low flow fixtures (well as other poter the program inputs	also covered in ntial initiatives s provided belo	n Section remain un ow are only	7 Conservation Educ der consideration at y for clothes washer	cation and Outro this time. Cons s at this time.	each) as equently,				
Target Market	Residential custon	ners								
New vs Retrofit	Both									
Eligible Measures	ENERGY STAR [®] Low Flow Fixtures	Washing Mach (under review	nines, ENE)	RGY STAR [®] Dish V	Vashers (under	review),				
Incremental Measure Cost	\$325									
Incentive Amount	Retrofit: \$50 + \$25 New Construction:	5 BCH* \$25 + \$25 BC	CH*							
Savings per Participant	1.5 GJ - Based on Potential Review f	ICF Marbek Mor Fortis, and a	leasure Tl assuming	RC Model results fro 8% penetration of ga	om a recent Cor as dryers	servation				
Measure Life & Source	14 years - 2010 Co Prescriptive Measure	onservation Poures and Assu	otential Re mptions: F	view and Ontario Po Release 1"	ower Authority "	2010				
Free Rider Rate & Source	5% - BCHydro, ba	sed on market	share of t	hese select Tier 3 w	ashers					
Spillover Rate & Source	Not Available									
	Service Region		2012		2013					
	FEI		7,565		7,565					
Participants	FEVI		850		850					
	FEW		85		85					
	Total		8,500		8,500					
			2	012						
	Service Region	Incentives	ے Admin	Communication	Evaluation	Total				
	FEI	\$378	\$27	\$15	\$18	\$467				
	FEV/I	\$ <u>4</u> 3	γ∠≀ \$?	 \$5	\$2	\$53				
	FFW	<u>\$4</u>	φυ -	\$1	- -	\$5				
	Total	\$425	\$30	\$50	\$20	\$525				
Expenditures (\$,000s)**		ψ. <u>_</u>	 2	013		ψ υ Ξυ				
	Service Region	Incentives	Admin	Communication	Evaluation	Total				
	FEI	\$378	\$27	\$45	\$18	\$467				
	FEVI	\$43	\$3	\$5	\$2	\$53				
	FEW	\$4	-	\$1	-	\$5				
	Total	\$425	\$30	\$50	\$20	\$525				

*FortisBC incentive is supplemented by BC Hydro (BCH) incentive.

** Totals may not add exactly; any differences are due to rounding.



3.3.7 Customer Engagement Tool for Conservation Behaviours

Program Description	This Program will conservation thro	develop a com ugh behaviour	imunicatio change.	ns tool that engages	customers in		
	Each year, 3-4 en	ergy consumpt	tion report	s will be mailed to pa	articipating cust	tomers.	
Target Market	Residential Custo	mers					
New vs Retrofit	Retrofit						
Eligible Measures	Communication to	lool					
Incremental Measure Cost	N/A						
Incentive Amount	\$0 (energy consu	mption reports))				
Savings per Participant	1 GJ (Based on a	pproximately 1	% savings	s for natural gas hea	ted homes , OF	POWER)	
Measure Life & Source	2 years – OPOWI	ER analysis					
Free Rider Rate & Source	N/A - OPOWER						
Spillover Rate & Source	Not available						
	Service Region	2	012		2013		
	FEI	17	,500		105,000		
Participants	FEVI						
	FEW		-		-		
	Total	17	,500		105,000		
			2	2012			
	Service Region	Incentives	Admin	Communication	Evaluation	Total	
	FEI	-	\$100	\$400	-	\$500	
	FEVI	-	-	-	-	-	
	FEW	-	-	-	-	-	
	Total	-	\$100	\$400	-	\$500	
Expenditures (\$,000s)*			2	2013			
	Service Region	Incentives	Admin	Communication	Evaluation	Total	
	FEI	-	\$200	\$800	\$50	\$1,050	
	FEVI	-	-	-	-	-	
	FEW	-	-	-	-	-	
	Total	-	\$200	\$800	\$50	\$1,050	

*Totals may not add exactly; any differences are due to rounding.



3.3.8 New Construction – EnerGuide for Homes (80 & Beyond) and Energy **Efficient Appliances**

	Service Region	Incentives	Admin	Communication	Evaluation	Total
			2	012		
	IUIAI		500		1,030	
			-		-	
Participants			79		279	
Destisionente		1,3	359		1,359	
	Service Region	20	012		2013	
	<u> </u>					
Spillover Rate & Source	Not available					
Free Rider Rate & Source	10% - Focus grou	ps will help dete	ermine E	GH 80 market share		
Measure Life & Source	25+ years - SAR E	Engineering rep	ort and D	unsky Consulting		
Savings per Participant*	FEI: 8.2 GJ / FEVI	I: 10.4 GJ				
Incentive Amount*	FEI: \$442 + \$198	BCH** / FEVI: :	\$517 + \$2	219 BCH**		
Cost^	FEVI: \$2,965					
Incremental Measure	FEI: \$2,360					
Eligible Measures	EGH 80 & building	g envelope ince	ntives			
New vs Retrofit	New Construction					
Target Market	Builders of resider	ntial properties	– single fa	amily homes and tov	vn homes	
	The Program will a efficient new home	also educate co es.	onsumers	about the benefits o	f purchasing en	ergy
	program areas; pr	ogram inputs a	re current	lly under developme	nt.	а
				is churched in the inner su		-1
	attain EnerGuide f	for Homes (EGI	H) 80 thro	bugh building envelo	pe measures. T	his

	Service Region	Incentives	Admin	Communication	Evaluation	Total
	FEI	\$601	\$4	\$85	\$89	\$779
	FEVI	\$144	\$1	\$10	\$10	\$164
	FEW	-	-	\$1	\$1	\$2
	Total	\$745	\$5	\$95	\$100	\$945
Expenditures (\$,000s)***			2	013		
	Service Region	Incentives	Admin	Communication	Evaluation	Total
	FEI	\$601	\$4	\$85	\$89	\$779
	FEVI	\$144	\$1	\$10	\$10	\$164
	FEW	-	-	\$1	\$1	\$2

\$5

\$95

\$100

\$745

Total

*Weighted averages based on multiple measures. **FortisBC incentive is supplemented by BC Hydro (BCH) incentive. *** Totals may not add exactly; any differences are due to rounding.

\$945



3.3.9 Efficiency Partners Program

Program Description	This Program will develop and manage a contractor network to promote EEC programs and energy efficiency messaging.								
	Currently, this pro include equipmen	gram includes t manufacturer	natural ga s, distribut	as service providers l tors, and retailers.	out may be exp	anded to			
Target Market	Residential Custo	mers							
New vs Retrofit	Both								
Eligible Measures									
Incremental Measure Cost	N/A								
Incentive Amount	N/A								
Savings per Participant	N/A								
Measure Life & Source	N/A								
Free Rider Rate & Source	N/A								
Spillover Rate & Source	Not available								
	Service Region	2	012		2013				
	FEI	Т	BD		TBD				
Participants	FEVI	Т	BD		TBD				
	FEW	Т	BD		TBD				
	Total	Г	BD		TBD				
			2	2012					
	Service Region	Incentives	Admin	Communication	Evaluation	Total			
	FEI	N/A	\$445	-	-	\$445			
	FEVI	N/A	\$50	-	-	\$50			
	FEW	N/A	\$5	-	-	\$5			
	Total	N/A	\$500	-	-	\$500			
Expenditures (\$,000s)			2	2013					
	Service Region	Incentives	Admin	Communication	Evaluation	Total			
	FEI	N/A	\$445	-	-	\$445			
	FEVI	N/A	\$50	-	-	\$50			
	FEW	N/A	\$5	-	-	\$5			
	Total	N/A	\$500	-	-	\$500			

*Totals may not add exactly; any differences are due to rounding.



4 High Carbon Fuel Switching Programs

4.1 Introduction

The High Carbon Fuel Switching Programs are designed to result in the more efficient us eof energy by moving existing customers away from less efficient appliances using fossil fuels with higher carbon content than natural gas to natural gas ENERGY STAR[®] or EnerChoice rated appliances.

The 2012/2013 High Carbon Fuel Switching Program offering currently consists of the Switch N' Shrink program, which is focused on converting oil or propane heating systems to ENERGY STAR[®] natural gas appliances.

Additional programs are under development for 2012 and 2013 to further reduce GHG emissions. When completed it is expected that the total ask for this program area will be approximately \$2 million annually. Further information will be available in the 2011 EEC Report.

4.2 Overview of Results

Exhibit 4 provides a summary of the estimated savings, program expenditures and costeffectiveness results for each of the programs noted above and for the High Carbon Fuel Switching Portfolio.

Exhibit 4: High Carbon Fuel Switching Program Results

Program	Annual Ga	as Savings	NPV Gas				Utility Ex	penditure	s (\$1000s)					Be	Benefit/Cost Ratios		
and Service	(GJ	/yr.)	Savings	I	ncentive	s	No	n-Incenti	ves	Α	II Spendi	ng	TRC	14114	Participant	RIM	Conintal
Territory	2012	2013	(GJ)	2012	2013	Total	2012	2013	Total	2012	2013	Total	TRC	Ounty			Societai
Switch N Shri	nk																
FEI	-4,300	-8,600	-87,292	100	100	200	26	26	52	126	126	252	1.67	0.00	1.73	0.91	1.71
FEVI	-17,200	-34,400	-361,302	400	400	800	104	104	208	504	504	1,008	1.68	0.00	1.28	1.04	1.71
Total	-21,500	-43,000	-448,593	500	500	1,000	130	130	260	630	630	1,260	1.68	0.00	1.35	1.02	1.71
ALL PROGRA	AMS																
FEI	-4,300	-8,600	-87,292	100	100	200	26	26	52	126	126	252	1.67	0.00	1.73	0.91	1.71
FEVI	-17,200	-34,400	-361,302	400	400	800	104	104	208	504	504	1,008	1.68	0.00	1.28	1.04	1.71
Total	-21,500	-43,000	-448,593	500	500	1,000	130	130	260	630	630	1,260	1.68	0.00	1.35	1.02	1.71

Note: Whistler (FEW) is included in the FEI service territory



4.3 **Program Profiles**

The following provides a profile of the program shown above in Exhibit 4.

4.3.1 Switch N Shrink

Program Description	This Program will encourage customers to switch from higher carbon oil and propane heating systems to natural gas. Promotional efforts will include a combination of education and financial incentives.										
Target Market	Residential custor	Residential customers									
New vs Retrofit	Retrofit	Retrofit									
Eligible Measures	Heating system co	Heating system conversion to ENERGY STAR [®] natural gas appliances									
Incremental Measure Cost	\$1,000	\$1,000									
Incentive Amount	\$1,000 + \$50 VSN	\$1,000 + \$50 VSM*									
Savings per Participant	46 GJ in fuel oil sa	46 GJ in fuel oil savings, 43 GJ increase in natural gas consumption									
Measure Life & Source	18 years - Naviga	18 years - Navigant Consulting report, BC Hydro Power Smart QA Standard, NRCan									
Free Rider Rate & Source	50% - Based on 40% used in 2009 furnace program										
Spillover Rate & Source	Not available										
	Service Region	2	012		2013						
	FEI		95		95						
Participants	FEVI	4	100		400						
	FEW		5		5						
	Total	5	500		500						
			2	012							
	Service Region	Incentives	Admin	Communication	Evaluation	Total					
		\$95	\$2	\$19	\$4	\$120					
		\$400	\$8	\$80	\$16	\$504					
		<u>ቆ5</u>	-	<u>\$1</u> ድፈርርር	- 	\$6 #0000					
	IOTAI	\$500	\$10	\$100	\$20	\$630					
Expenditures (\$,000s)			2	013							
	Service Region	Incentives	Admin	Communication	Evaluation	Total					
	FEI	\$95	\$2	\$19	\$4	\$120					
	FEVI	\$400	\$8	\$80	\$16	\$504					
	FEW	\$5	-	\$1	-	\$6					
	Total	\$500	\$10	\$100	\$20	\$630					

*FortisBC incentive plus additional \$50 for Variable Speed Motors (VSM) from electric utility partners.



5 Low Income Programs

5.1 Introduction

This Program Area was specifically created to meet the needs of low income customers. The Low Income portfolio is important to FortisBC as it also helps us meet our regulated adequacy requirements. As per the Demand-Side Measures Regulation, a utilities' DSM portfolio is considered adequate (by the authorities) when there is "a demand-side measure intended specifically to assist residents of low income households to reduce their energy consumption."²

Further, one of the EEC program principles is that "programs will have a goal of being universal, offering access to energy efficiency and conservation for all residential and commercial customers, including low income...."³

The Companies are maintaining their commitment to this principle by offering a set of no cost or low cost programs to low income participants. The 2012/2013 suite of Low Income Program offerings is listed below:

- Residential Energy Efficiency Works (REnEW)
- Energy Saving Kit (ESK)
- Energy Conservation Assistance Program (ECAP)

The REnEW program is a longer term and deeper impact program that seeks to enhance the energy efficiency retrofit trade industry by providing specific training to individuals facing barriers to employment.

The Energy Saving Kit is a broad reaching program that enables low-income customers to easily implement self-install energy savings measures.

The ECAP program reaches a more targeted set of low income customers and seeks to achieve a deep level of energy savings for customers living in very inefficient homes.

5.2 Overview of Results

Exhibit 5 provides a summary of the estimated savings, program expenditures and costeffectiveness results for each of the programs noted above and for the Low Income Portfolio, as a whole. Results shown below in Exhibit 5 include the 30 percent benefits adder, as provided for in the Demand-Side Measures regulation for Low Income programs.⁴

It should be noted that providing energy efficiency and conservation programs for low income customers can be challenging in terms of achieving a positive TRC result, despite the 30 percent benefits adder. This is because of the relatively high cost of providing conservation services to this important customer segment. The ECAP program, in particular, uses a full-service approach that the Companies believe is required to achieve deep energy savings within

² November 7, 2008, Regulation of the Minister of Energy, Mines and Petroleum Resources, Ministerial Order No. M 271, Section 3[a]

³ Energy Efficiency and Conservation Programs Application, May 28, 2008, pg 47

⁴ November 7, 2008, Regulation of the Minister of Energy, Mines and Petroleum Resources, Ministerial Order No. M 271, Section 4.2.6



this sector. Servicing this sector requires fully funding the measures, not only the incremental cost, which makes it very difficult to achieve favourable TRC results.

Exhibit 5: Low Income Program Results

Program	Annual Ga	as Savings	NPV Gas				Utility Ex	penditure	s (\$1000s))				Be	nefit/Cost Rat	ios	
and Service	(GJ	/yr.)	Savings	I	ncentive	S	Non-Incentives All Spending	DIM	Societal								
Territory	2012	2013	(GJ)	2012	2013	Total	2012	2013	Total	2012	2013	Total	TKC Ounty			Societai	
Residential Er	nergy Efficier	ncy Works (F	REnEW)														
FEI	0	0	0	0	0	0	145	145	290	145	145	290	0.00	0.00		0.00	0.00
FEVI	0	0	0	0	0	0	40	40	80	40	40	80	0.00	0.00		0.00	0.00
Total	0	0	0	0	0	0	185	185	370	185	185	370	0.00	0.00		0.00	0.00
Energy Saving	g Kit (ESK)																
FEI	14,164	28,328	172,845	165	165	329	135	135	270	300	300	599	3.29	2.16	7.80	0.60	5.92
FEVI	1,574	3,148	19,539	18	18	37	16	16	32	34	34	69	3.22	2.13	10.54	0.46	5.71
Total	15,738	31,476	192,385	183	183	366	151	151	302	334	334	668	3.28	2.16	8.07	0.58	5.90
Energy Conse	ervation Assis	stance Progr	am (ECAP)														
FEI	13,005	26,010	220,628	2,588	2,588	5,175	1,418	1,418	2,835	4,005	4,005	8,010	0.38	0.28	1.59	0.21	0.71
FEVI	1,445	2,890	25,168	288	288	575	158	158	315	445	445	890	0.39	0.29	1.82	0.20	0.71
Total	14,450	28,900	245,796	2,875	2,875	5,750	1,575	1,575	3,150	4,450	4,450	8,900	0.38	0.28	1.61	0.21	0.71
ALL PROGR	AMS																
FEI	27,169	54,338	393,473	2,752	2,752	5,504	1,698	1,698	3,395	4,450	4,450	8,899	0.54	0.40	1.96	0.27	1.00
FEVI	3,019	6,038	44,708	306	306	612	214	214	427	519	519	1,039	0.52	0.39	2.34	0.24	0.95
Total	30,188	60,376	438,181	3,058	3,058	6,116	1,911	1,911	3,822	4,969	4,969	9,938	0.54	0.40	2.00	0.27	0.99

Note: Whistler (FEW) is included in the FEI service territory



5.3 **Program Profiles**

The following pages provide profiles for each of the programs shown above in Exhibit 5.

5.3.1 Residential Energy Efficiency Works (REnEW)

	Sonvice Region	Incontivos Admin	Communication	Evoluction	Total
			2012		
	IUIAI	55		55	
		55		-	
Participants		12		12	
Dartiainanta		43		43	
		<u> </u>		2013	
	Sorvico Pogion	2012		2012	
Spillover Rate & Source	N/A				
Free Rider Rate & Source	N/A				
Measure Life & Source	N/A				
Savings per Participant	N/A				
Incentive Amount	N/A				
Incremental Measure Cost	N/A				
	N/A				
	Netroint				
New vs Retrofit	Retrofit				
Target Market	Low income indivi	duals facing barriers to	employment		
Program Description	This Program prov the participants. T FortisBC, that are includes first aid, V other trade industr during training.	vides energy efficiency t his training program inc focused on the Energy Vorkplace Hazardous N y certifications, a set of	trade training by indus ludes course materia Efficiency trade indus faterials Information tools and a tool belt,	stry experts at r ls, developed b stry. The progra System ("WHMI and two meals	no cost to y m also S") and per day

			2	012		
	Service Region	Incentives	Admin	Communication	Evaluation	Total
	FEI	-	\$145	-	-	\$145
	FEVI	-	\$40	-	-	\$40
	FEW	-	-	-	-	-
	Total	-	\$185	-	-	\$185
Expenditures (\$,000s)			2	013		
	Service Region	Incentives	Admin	Communication	Evaluation	Total
	FEI	-	\$145	-	-	\$145
	FEVI	-	\$40	-	-	\$40
	FEW	-	-	-	-	-
	Total	-	\$185	-	-	\$185


5.3.2 Energy Saving Kit (ESK)

Program Description	This Program pro income household	vides a bundle ls.	of easy-to	o-install energy efficie	ency measures	for low-	
Target Market	Low Income Resid	dential Custom	ers				
New vs Retrofit	Retrofit						
Eligible Measures	Faucet aerators, I proofing, Outlet G	Low Flow Show askets, Window	verhead, V w Film	Vater Heater Pipe W	′rap, Caulking, I	Draft	
Incremental Measure Cost	\$10 - Average co	st					
Incentive Amount	\$10 - Based on the full cost of the gas measures included in the ESK and pro-rated by the proportion of participants that use natural gas for space or water heating						
Savings per Participant	0.86 GJ						
Measure Life & Source	8 years - Average Kit	based on the	individual	gas measures includ	ded in the Enero	gy Saving	
Free Rider Rate & Source	27% - Based on c	ustomer surve	у				
Spillover Rate & Source	Not available						
Participants	Service Region	2	012		2013		
	FEI	16	i,287		16,287		
	FEVI	1,	830		1,830		
	FEW	1	83		183		
	Total	18	,300		18,300		
			2	2012			
	Service Region	Incentives	Admin	Communication	Evaluation	Total	
	FEI	\$163	\$60	\$60	\$13	\$296	
	FEVI	\$18	\$7	\$7	\$2	\$33	
	FEW	\$2	\$1	\$1	-	\$3	
	Total	\$183	\$68	\$68	\$15	\$333	
Expenditures (\$,000s)*			2	013			
	Service Region	Incentives	Admin	Communication	Evaluation	Total	
	FEI	\$163	\$60	\$60	\$13	\$296	
	FEVI	\$18	\$7	\$7	\$2	\$33	
	FEW	\$2	\$1	\$1	-	\$3	
	Total	\$183	\$68	\$68	\$15	\$333	



5.3.3 Energy Conservation Assistance Program (ECAP)

Program Description	This is a full-servic income household financial incentive	ce direct-install ls. The Progra s for the install	program m will targ ation of a	that will provide dee et very inefficient ho variety of energy sav	p energy saving mes and provic ving measures.	gs for low- le		
Target Market	Low Income Resid	dential Custom	ers					
New vs Retrofit	Retrofit							
Eligible Measures	Basic Stream of m Showerheads, Wa Window Film, and	neasures inclue ater Heater Pip Basic Draftpro	des direct e Wrap, C pofing. ncludes al	Installation of: Fauce aulking, Draftproofir	et aerators, Lov og, Outlet Gask ome cases: Ins	/ Flow ets,		
	(typically ceiling a Draftproofing.	(typically ceiling and crawl space), High Efficiency Furnaces, and Advanced Draftproofing.						
Incremental Measure Cost	\$1,150 - Average	31,150 - Average cost						
Incentive Amount	\$1,150 - Based or	n the full cost o	f the gas r	neasures installed.				
Savings per Participant	5.78 GJ	5.78 GJ						
Measure Life & Source	13 years - Averag	e based on the	e individua	l gas measures inclu	Ided in ECAP			
Free Rider Rate & Source	4% - Primarily thir	d-party studies	;					
Spillover Rate & Source	Not available							
	Service Region	2	012		2013			
	FEI	2.	225		2,225			
Participants	FEVI	2	250		250			
-	FEW		25		25			
	Total	2,	500		2,500			
			2	012				
	Service Region	Incentives	Admin	Communication	Evaluation	Total		
	FEI	\$2.559	\$819	\$467	\$116	\$3.961		
	FEVI	\$288	\$92	\$53	\$13	\$445		
	FEW	\$29	\$9	\$5	\$1	\$45		
	Total	\$2,875	\$920	\$525	\$130	\$4,450		
Expenditures (\$,000s)*			2	013				
	Service Region	Incentives	Admin	Communication	Evaluation	Total		
	FEI	\$2,559	\$819	\$467	\$116	\$3,961		
	FEVI	\$288	\$92	\$53	\$13	\$445		
	FEW	\$29	\$9	\$5	\$1	\$45		
	Total	\$2,875	\$920	\$525	\$130	\$4,450		



6 Commercial Sector Programs

6.1 Introduction

The Commercial Sector Programs encourage commercial and institutional customers to implement measures that reduce their natural gas consumption and energy costs while contributing to the realization of the government's energy and climate objectives. These programs are offered to both new construction and retrofit applications in the FEI, FEVI, and FEW service areas.

The 2012/2013 suite of Commercial Sector Program offerings is listed below:

- Efficient Boiler Program
- Light Commercial Boiler Program
- Efficient Commercial Water Heater Program
- Commercial Energy Assessment Program
- Spray Valve Program
- Commercial Custom Design Program
- Continuous Optimization Program
- Commercial Kitchen Program
- MURB Program
- Process Heat Program
- Fireplace Timers Pilot Program
- Radiant Tube Heaters Pilot Program
- Energy Specialist Program

The 2012/2013 programs listed above extend the Companies's commercial program offering by rolling out the following new programs to take advantage of a wider array of natural gas saving opportunities.

The Commercial Custom Design and Continuous Optimization Programs will encourage reduced natural gas consumption through custom engineered capital upgrades and ongoing facilities performance management. These programs, to be offered in partnership with BC Hydro and eventually FortisBC Inc, will further inter utility cooperation on DSM initiatives, allowing each to leverage the other's reach to promote a cohesive energy saving message and take full advantage of all investment opportunities.

Programs targeted at MURBs, commercial kitchens and process heating will round out the new offerings during the period, providing the companies with a portfolio of programs addressing a significantly broadened range of potential participants.

6.2 CAVEAT

Every attempt has been made to provide an accurate representation of the portfolio of commercial area programs for the planning period. However, certain limitations must be acknowledged and understood. This is particularly the case for the Commercial Custom Design program, the Continuous Optimization program and the Process Heat program.

These programs, being more complex and non prescriptive in nature, have variable measure savings, costs, incentives and/or cash flows. Additional information is provided below and in the Program Profiles that are included later in this section.

6.2.1 Commercial Custom Design Program

The numbers presented in this plan are based on values observed for the first 5 participants in the Beta test stage of the commercial custom design program. While these values represent the best available information to date vis-a-vis average savings, costs, incentives and measure lives, they may not be representative of program results over the longer term as the former are, by definition, specific to each participant. It should be understood however that under the program rules no incentives will be provided for measures having a TRC less than one, thus the companies are confident that the program will be cost effective.

6.2.2 Process Heat

The process heat program remains in initial concept stage while the Companies focus on rolling out other programs to market. The values provided in this plan represent the Companies' estimates that are based primarily on boiler upgrades for process heating. Additional details are to be worked out during more detailed program design.

6.3 Overview of Results

Exhibit 6 provides a summary of the estimated savings, program expenditures and costeffectiveness results for each of the programs noted above and for the Commercial Sector Portfolio, as a whole.



Exhibit 6: Commercial Sector Program Results

Program	Annual Ga	as Savings	NPV Gas				Utility Ex	penditure	s (\$1000s))				Be	nefit/Cost Rat	ios	
and Service	(GJ	/yr.)	Savings		Incentive	s	No	n-Incenti	ves	Α	II Spendi	ng	TRC	114111417	Participant	DIM	Societal
Territory	2012	2013	(GJ)	2012	2013	Total	2012	2013	Total	2012	2013	Total	IRC	Othity	Participant	KIIVI	Societai
Efficient Boile	r Program																
FEI	99,145	207,058	2,205,531	2,537	2,762	5,298	124	234	358	2,660	2,995	5,656	1.71	3.61	2.57	0.72	4.46
FEVI	11,367	23,244	257,112	290	304	594	14	26	40	304	330	634	1.78	3.75	3.97	0.48	4.46
Total	110,512	230,302	2,462,644	2,827	3,066	5,892	138	260	397	2,965	3,325	6,290	1.71	3.63	2.71	0.69	4.46
Light Commer	rcial Boiler P	rogram															
FEI	8,288	16,872	179,875	97	100	197	32	5	36	128	105	233	1.82	7.10	2.54	0.79	4.74
FEVI	1,184	2,368	26,213	14	14	28	4	1	4	17	14	32	1.90	7.62	4.04	0.51	4.78
Total	9,472	19,240	206,088	111	114	225	35	5	40	146	119	265	1.82	7.15	2.69	0.77	4.74
Efficient Comr	mercial Wate	er Heater Pro	ogram														
FEI	7,031	14,062	113,502	174	174	349	26	26	51	200	200	400	1.33	2.87	2.13	0.68	3.25
FEVI	1,157	2,314	19,143	29	29	57	5	5	9	33	33	66	1.36	2.91	3.21	0.46	3.23
Total	8,188	16,376	132,645	203	203	406	30	30	60	233	233	466	1.33	2.88	2.23	0.65	3.24
Commercial E	Energy Asses	ssment Prog	ram														
FEI	55,632	55,632	107,441	143	143	285	45	45	90	188	188	375	2.25	1.66	5.16	0.54	5.32
FEVI	18,544	18,544	35,896	48	48	95	15	15	30	63	63	125	2.25	1.66	7.78	0.38	5.32
Total	74,176	74,176	143,336	190	190	380	60	60	120	250	250	500	2.25	1.66	5.42	0.53	5.32
Spray Valve P	Program																
FEI	2,961	5,922	24,923	43	43	86	3	3	5	45	45	91	2.67	2.38	4.43	0.63	6.20
FEVI	333	666	2,834	5	5	10	0	0	1	5	5	10	2.70	2.40	6.58	0.43	6.20
Total	3,294	6,588	27,758	48	48	95	3	3	6	51	51	101	2.67	2.38	4.64	0.61	6.20
Commercial C	Custom Desig	gn Program															
FEI	122,464	218,647	2,024,865	4,262	3,326	7,588	954	375	1,328	5,216	3,700	8,916	1.74	2.21	3.11	0.63	4.36
FEVI	32,061	58,342	555,991	1,109	937	2,045	58	85	143	1,167	1,022	2,189	1.92	2.48	4.62	0.45	4.66
Total	154,525	276,989	2,580,857	5,371	4,262	9,633	1,012	460	1,472	6,383	4,722	11,105	1.76	2.24	3.26	0.61	4.39
Continuous O	ptimization F	Program															
FEI	103,635	236,880	1,438,891	1,760	2,453	4,213	216	239	455	1,976	2,692	4,668	0.98	3.19	2.18	0.47	2.32
FEVI	4,230	9,870	60,979	72	104	176	14	16	30	86	120	206	0.98	3.06	2.94	0.35	2.28
Total	107,865	246,750	1,499,870	1,832	2,557	4,389	230	255	485	2,062	2,812	4,874	0.98	3.17	2.25	0.46	2.32
Commercial K	Kitchen Progr	ram															
FEI	1,404	3,300	26,498	60	81	141	2	2	5	62	83	146	1.09	1.85	1.90	0.60	2.67
FEVI	140	351	2,885	6	9	15	2	2	3	8	11	18	1.03	1.72	2.76	0.41	2.44
Total	1,545	3,651	29,383	66	90	156	4	4	8	70	94	164	1.08	1.84	1.99	0.58	2.64



Exhibit 6: Commercial Sector Program Results (cont'd)

Program	Annual G	as Savings	NPV Gas				Utility Ex	penditure	s (\$1000s))				Be	nefit/Cost Rat	ios	
and Service	(G.	J/yr.)	Savings		Incentive	S	No	n-Incentiv	ves	A	I Spendiı	ng	TRC	14114	Dorticipont	DIM	Conintal
Territory	2012	2013	(GJ)	2012	2013	Total	2012	2013	Total	2012	2013	Total	IRC	Ounty	Participant	KIIVI	Societai
MURB Progra	m																
FEI	19,800	50,400	210,495	371	574	945	28	28	56	399	602	1,001	2.07	1.89	3.64	0.59	4.81
FEVI	4,950	12,150	51,390	93	135	228	7	7	14	100	142	242	2.09	1.90	5.30	0.41	4.80
Total	24,750	62,550	261,886	464	709	1,173	35	35	70	499	744	1,243	2.07	1.89	3.81	0.57	4.81
Process Heat	Program																
FEI	26,250	52,500	560,061	525	525	1,050	14	14	27	539	539	1,077	2.11	4.69	3.02	0.75	5.51
FEVI	2,500	5,000	55,348	50	50	100	2	2	3	52	52	103	2.19	4.84	4.71	0.49	5.49
Total	28,750	57,500	615,409	575	575	1,150	15	15	30	590	590	1,180	2.12	4.70	3.19	0.73	5.50
Fireplace Time	ers Pilot Pro	ogram															
FEI	0	25,650	104,109	0	428	428	68	23	90	68	450	518	2.07	2.09	4.00	0.62	4.79
FEVI	0	2,850	11,726	0	48	48	8	3	10	8	50	58	2.09	2.11	5.89	0.43	4.78
Total	0	28,500	115,835	0	475	475	75	25	100	75	500	575	2.07	2.09	4.19	0.60	4.79
Radiant Tube	Heaters Pilo	ot Program															
FEI	748	748	8,258	12	0	12	8	0	8	20	0	20	3.71	4.45	7.71	0.74	9.64
Energy Specia	alists Progra	am															
FEI	0	0	0	840	780	1,620	195	144	339	1,035	924	1,959	0.00	0.00	1.00	0.00	0.00
FEVI	0	0	0	120	120	240	22	16	38	142	136	278	0.00	0.00	1.00	0.00	0.00
Total	0	0	0	960	900	1,860	217	160	377	1,177	1,060	2,237	0.00	0.00	1.00	0.00	0.00
ALL PROGR	AMS																
FEI	447,358	887,671	7,004,449	10,824	11,388	22,212	1,713	1,135	2,848	12,537	12,523	25,060	1.44	2.67	2.59	0.61	3.60
FEVI	76,466	135,699	1,079,518	1,834	1,801	3,635	149	176	325	1,983	1,977	3,960	1.71	2.58	4.20	0.44	4.15
Total	523,824	1,023,370	8,083,967	12,658	13,189	25,847	1,861	1,312	3,173	14,520	14,500	29,020	1.47	2.66	2.78	0.58	3.67



6.4 **Program Profiles**

The following pages provide profiles for each of the programs shown above in Exhibit 6.

6.4.1 Efficient Boiler Program

Program Description	This Program prov with more than 30	vides rebates fo 0 MBH input.	or the insta	allation of high efficion	ency commerci	al boilers
Target Market	Commercial Custo	omers				
New vs Retrofit	Both					
Eligible Measures	Near condensing I with input >300 MI	ooilers 85% ≤ (BH.	C.E. ≥ 90%	6 and condensing b	oilers 85% ≤ C.	E. ≥ 90%
		Retrofit		New	Construction	
Incremental Measure Cost*	\$	35,834			\$65,711	
Incentive Amount*	\$	513,517			\$24,687	
Savings per Participant*	Ę	510 GJ			1069 GJ	
Measure Life & Source	20 years - ASHRA	E Handbook a	nd Conse	rvation Potential Re	view	
Free Rider Rate & Source	18% - Jack Haba	rt Study				
Spillover Rate & Source	Not available					
	Service Region		2012		2013	
		Retrofit	New C	onstr. Retro	fit New	Constr.
Particinants**	FEI	141	2	5 154		27
i unicipanto	FEVI	16	3	3 17		3
	FEW	1	-	1		-
	Total	158	2	8 173		30
			2012 -	Retrofit		
	Service Region	Incentives	Admin	Communication	Evaluation	Total
		\$1,908	\$89	\$15	-	\$2,013
	FEVI	\$214	\$10	\$2	-	\$226
		\$16	\$1	-	-	\$17
	Iotal	\$2,139	\$100	\$17 Construction	-	\$2,256
	Sorvico Pogion	Incontivos	Admin	Communication	Evaluation	Total
	FEI	¢615	¢16	¢3		\$633
	FEV/I	010	\$2	ΨΟ 		\$71
	FFW	\$5	- Ψ	-	-	\$5
	Total	\$689	\$18	\$3	-	\$710
			2013 -	Retrofit		
Expenditures (\$,000s)^^	Service Region	Incentives	Admin	Communication	Evaluation	Total
	FEI	\$2,082	\$91	\$15	\$89	\$2,277
	FEVI	\$234	\$10	\$2	\$10	\$256
	FEW	\$18	\$1	-	\$1	\$20
	Total	\$2,333	\$102	\$17	\$100	\$2,552
		20	13 – New	Construction		
	Service Region	Incentives	Admin	Communication	Evaluation	Total
	FEI	\$671	\$16	\$3	\$18	\$707
	FEVI	\$75	\$2	-	\$2	\$76
	FEW	\$6	-	-	-	\$6
	Iotal	\$752	\$18	\$3	\$20	\$793

*Values provided are 2010 averages. **Totals may not add exactly; any differences are due to rounding.



6.4.2 Light Commercial Boiler Program

Program Description	This Program prov with less than 300	vides rebates fo MBH input.	or the insta	allation of high efficie	ency commerci	al boilers
Target Market	Commercial Custo	omers				
New vs Retrofit	Both					
Eligible Measures	Near condensing I with input < 300 M	boilers 85% ≤ 0 IBH.	C.E. ≥ 90%	6 and condensing bo	oilers 85% ≤ C.	E. ≥ 90%
Incremental Measure	Retrofit: \$18,695					
Cost*	New Construction	: \$18,695				
In continue Amonunt	<u>↑</u>) /		-	
incentive Amount	¢09 ≤ 101 101 × 50 %	% AFUE and φ	5 / 11011 101	>05% < 90% AFUE		
Savings per Participant*	296 GJ					
Measure Life & Source	20 years - ASHRA	E Handbook a	nd Conse	rvation Potential Rev	view	
Free Rider Rate & Source	18% - Jack Haba	rt Study				
Spillover Rate & Source	Not available					
	Sonvico Pogion		2012		2012	
	Service Region	Petrofit		onetr Potrof	it Now	Constr
	FEI	25				3
Participants		20		20		-
	FEW/			. J		_
	Total			3 29		3
			2012 -	Retrofit		
	Service Region	Incentives	Admin	Communication	Evaluation	Total
	FEI	\$85	\$2	\$2	\$24	\$113
	FEVI	\$10	-	-	\$3	\$13
	FEW	\$1	-	-	-	\$1
	Total	\$96	\$2	\$3	\$27	\$127
		20	12 Now	Construction		
	Service Region	Incentives	Admin	Communication	Evaluation	Total
	FFI	\$9	-	-	\$3	\$13
	FFVI	\$0 \$1	-	-	- -	\$1
	FFW	- -	-	-	-	- -
	Total	\$11	-	-	\$3	\$14
Expanditures (\$ 000s)**						
			2013 -	Retrofit		
	Service Region	Incentives	Admin	Communication	Evaluation	Total
	FEI	\$90	\$2	\$2	-	\$94
	FEVI	\$10	-	-	-	\$11
	FEW	\$1	-	-	-	\$1
	Iotal	\$101	\$2	\$3	-	\$105
		20	13 _ Now	Construction		
	Service Region	Incentives	Δdmin	Communication	Evaluation	Total
	FEI	\$10	-	-		\$10
	FEVI	\$1	-	-	-	\$1

-

-

-

\$11

-

-

-

-

*Values provided are 2010 averages. **Totals may not add exactly; any differences are due to rounding.

FEW

Total

-

\$12



6.4.3 Efficient Commercial Water Heater Program

	-					
Program Description	This Program prov	vides rebates f	or the inst	allation of high effici	ency commerci	al water
	heaters with therm	nal efficiency g	reater thai	n or equal to 84%.		
Target Market	Commercial Custo	omers				
New vs Retrofit	Both					
Eligible Measures	Near condensing	storage and vo	lume type	water heaters 84%	≤ T.E. ≥ 90%	
	Condensing stora	ge and volume	type wate	er heaters 90% ≤ T.I	Ξ.	
	Condensing on de	emand water he	eaters 90%	% ≤ T.E.		
Incremental Measure	\$5,378					
Incentive Amount	$\$5 / mbh for \ge 90^{\circ}$	% TE Storage t	vpe and v	olume water boilers		
	\$3 / mbh for >85%	6 < 90% TE Sto	orage type	and volume water	boilers	
	\$2.50 / mbh for ≥	90% TE Tankl	less type			
	·					
Savings per Participant*	89 GJ					
• • •						
Measure Life & Source	12 years - Conser	vation Potentia	al Review,	CEE data, Other Ut	tility programs	
Free Rider Rate & Source	5% - OEB Approv	ed DSM assun	nptions			
Spillover Rate & Source	Not available					
opinover Mate & oource	NOL AVAIIADIE					
	Service Region		2012		2013	
	een neg neg neg neg neg neg neg neg neg	Retrofit	New C	Constr. Retro	fit New	Constr.
	FEI	70	{	3 70		8
Participants	FEVI	12		12		1
	FEW	1		· · · · · · · · · · · · · · · · · · ·		-
	Total		(. 83		9
			2012 -	- Retrofit		
	Service Region	Incentives	Admin	Communication	Evaluation	Total
	FEI	\$154	\$4	\$12	\$7	\$177
	FEVI	\$27	\$1	\$2	\$1	\$32
	FEW	\$2	-	-	-	\$2
	Total	\$183	\$5	\$14	\$8	\$210
		20)12 – New	Construction		
	Service Region	Incentives	Admin	Communication	Evaluation	Total
	FEI	\$17	-	\$1	\$1	\$20
	FEVI	\$3	-	-	-	\$4
	FEW	-	-	-	-	-
	Total	\$20	\$10	\$0	\$1	\$32
Expenditures (\$ 000s)**						
		-	2013 -	- Retrofit		
	Service Region	Incentives	Admin	Communication	Evaluation	Total
	FEI	\$154	\$4	\$12	\$7	\$177
	FEVI	\$27	\$1	\$2	\$1	\$32
	HEW	\$2	-	-	-	\$2
	lotal	\$183	\$5	\$14	\$8	\$210
			MO N-	Construction		
	Comiloo Dorilo-	20		Construction	Evaluation	Tatal
			Aumin			total ¢oo
		ري مە	-	ΦI	٩L	¢∠∪ ¢≀
		φS	-	-	-	- φ4

*Values provided are 2010 averages. **Totals may not add exactly; any differences are due to rounding.

\$20

-

\$10

-

\$0

-

\$1

FEW

Total

\$32

6.4.4 Commercial Energy Assessment Program

Program Description	This Program pror assessments of co	notes energy s ommercial facil	aving retr ities.	ofits by providing no	charge energy	use		
Target Market	Commercial Custo	omers						
New vs Retrofit	Retrofit							
Eligible Measures	Walkthrough ener	gy assessmen	t and writte	en report.				
Incremental Measure Cost	\$1,250							
Incentive Amount	\$1,250							
Savings per Participant	488 GJ	3 GJ						
Measure Life & Source	1 year	/ear						
Free Rider Rate & Source	35% - 2008 and 2	5% - 2008 and 2010 EAP Program Evaluations						
Spillover Rate & Source	Not available							
	Sonvice Pegien		2042		~~ / ~			
	Service Region		2012		2013			
	FEI		112		2013 112			
Participants	FEI FEVI		112 38		2013 112 38			
Participants	FEI FEVI FEW		112 38 2		2013 112 38 2			
Participants	FEI FEVI FEW Total		2012 112 38 2 152		2013 112 38 2 152			
Participants	FEI FEVI FEW Total		2012 112 38 2 152 2	012	2013 112 38 2 152			
Participants	FEI FEVI FEW Total	Incentives	2012 112 38 2 152 2 Admin	012 Communication	2013 112 38 2 152 Evaluation	Total		
Participants	FEI FEVI FEW Total Service Region FEI	Incentives \$141	2012 112 38 2 152 2 Admin \$41	012 Communication \$4	2013 112 38 2 152 Evaluation	Total \$185		
Participants	FEI FEVI FEW Total Service Region FEI FEVI	Incentives \$141 \$48	2012 112 38 2 152 2 Admin \$41 \$14	012 Communication \$4 \$1	2013 112 38 2 152 Evaluation -	Total \$185 \$63		
Participants	FEI FEVI FEW Total Service Region FEI FEVI FEW	Incentives \$141 \$48 \$2	2012 112 38 2 152 2 Admin \$41 \$14 \$1	012 Communication \$4 \$1 -	2013 112 38 2 152 Evaluation - - -	Total \$185 \$63 \$3		
Participants	FEI FEVI FEW Total Service Region FEI FEVI FEW Total	Incentives \$141 \$48 \$2 \$190	2012 112 38 2 152 2 Admin \$41 \$14 \$14 \$55	012 Communication \$4 \$1 - \$5	2013 112 38 2 152 Evaluation - - - -	Total \$185 \$63 \$3 \$250		
Participants Expenditures (\$,000s)*	FEI FEVI FEW Total Service Region FEI FEVI FEW Total	Incentives \$141 \$48 \$2 \$190	2012 112 38 2 152 2 Admin \$41 \$14 \$14 \$55 2	012 Communication \$4 \$1 - \$5 013	2013 112 38 2 152 Evaluation - - - -	Total \$185 \$63 \$3 \$250		
Participants Expenditures (\$,000s)*	FEI FEVI FEW Total Service Region FEI FEVI FEW Total Service Region	Incentives \$141 \$48 \$2 \$190 Incentives	2012 112 38 2 152 2 Admin \$41 \$14 \$14 \$55 2 Admin	012 Communication \$4 \$1 - \$5 013 Communication	2013 112 38 2 152 Evaluation - - - Evaluation	Total \$185 \$63 \$3 \$250 Total		
Participants Expenditures (\$,000s)*	FEI FEVI FEW Total Service Region FEI FEVI FEW Total Service Region FEI	Incentives \$141 \$48 \$2 \$190 Incentives \$141	2012 112 38 2 152 2 Admin \$41 \$14 \$14 \$55 2 Admin \$41	012 Communication \$4 \$1 - \$5 013 Communication \$4	2013 112 38 2 152 Evaluation - - - - Evaluation - -	Total \$185 \$63 \$3 \$250 Total \$185		
Participants Expenditures (\$,000s)*	FEI FEVI FEW Total Service Region FEI FEW Total Service Region FEI FEVI	Incentives \$141 \$48 \$2 \$190 Incentives \$141 \$48	2012 112 38 2 152 2 Admin \$41 \$14 \$55 2 Admin \$41 \$15 \$2 14 \$14 \$14 \$14 \$12 \$2 15 15 2 15 2 15 2 2 15 2 2 2 2 2 2 2 2 2 2 2 2 2	012 Communication \$4 \$1 - \$5 013 Communication \$4 \$1	2013 112 38 2 152 Evaluation - - - - Evaluation - - - - - - - - - - - - -	Total \$185 \$63 \$250 Total \$185 \$63		
Participants Expenditures (\$,000s)*	FEI FEVI FEW Total Service Region FEI FEW Total Service Region FEI FEVI FEVI FEVI FEVI FEVI	Incentives \$141 \$48 \$2 \$190 Incentives \$141 \$48 \$2	2012 112 38 2 152 2 Admin \$41 \$14 \$55 2 Admin \$41 \$14 \$15 \$55 2 Admin \$41 \$14 \$14 \$15 \$55 2 Admin \$41 \$14 \$15 \$15 2 2 Admin \$41 \$14 \$15 \$15 2 2 Admin \$41 \$14 \$15 \$15 2 2 Admin \$41 \$14 \$15 \$15 2 2 Admin \$41 \$14 \$15 \$15 2 2 Admin \$41 \$14 \$15 \$15 2 2 Admin \$41 \$14 \$15 \$15 \$15 \$15 \$15 \$15 \$15 \$15	012 Communication \$4 \$1 - \$5 013 Communication \$4 \$1 -	2013 112 38 2 152 Evaluation - - - - Evaluation - - - - - - - - - - - - -	Total \$185 \$63 \$250 Total \$185 \$63 \$3		
Participants Expenditures (\$,000s)*	FEI FEVI FEW Total Service Region FEI FEVI FEW Total Service Region FEI FEVI FEW Total	Incentives \$141 \$48 \$2 \$190 Incentives \$141 \$48 \$2 \$190	2012 112 38 2 152 2 Admin \$41 \$14 \$55 2 Admin \$41 \$14 \$14 \$15 2 Admin \$41 \$55	012 Communication \$4 \$1 - \$5 013 Communication \$4 \$1 - \$5	2013 112 38 2 152 Evaluation - - - - Evaluation - - - - - - - - - - - - -	Total \$185 \$63 \$250 Total \$185 \$63 \$3 \$250		



6.4.5 Spray Valve Program

Program Description	This Program part commercial food s flow pre rinse spra	ners with Gree ervice custome y valves.	n Table to ers by offe	ering free provision	y consumption of and installation	of low
Target Market	Commercial Custo	omers				
New vs Retrofit	Both					
Eligible Measures	Low flow pre rinse	spray valves				
Incremental Measure Cost	\$130					
Incentive Amount	\$130					
Savings per Participant	9 GJ					
Measure Life & Source	5 years - Food Se	rvice Technolo	gy Center	and OEB approve	ed DSM assumpt	ions
Free Rider Rate & Source	12 % - Food Servi	ce Technology	Center a	nd OEB approved	DSM assumptior	าร
Spillover Rate & Source	Not available					
	Service Region	<u> </u>	2012		2013	~ ·
		Retrofit	New C	onstr. Retr	ofit New	Constr.
Participants*		322	, ,	3 32	2	3
-			•	· 36)	-
		4	•	• 4	0	-
	Total	362		+ 30	2	4
			2012 -	Retrofit		
	Service Region	Incentives	Δdmin	Communication	Evaluation	Total
	FFI	\$42	\$1	\$1	-	\$44
	FFVI	<u>Ψ-</u> \$5	φı -	- -	-	\$5
	FFW	- -			-	-
	Total	<u>ф</u> 4 – 7	A 4			¢50
	1 1 1 2 1 2 1 2	\$/1/	\$1	<u>\$1</u>	_	
	Total	\$47	\$1	\$1	-	4 00
		\$47 20	\$1 12 – New	\$1 Construction	-	φου
	Service Region	547 20 Incentives	<u>ه1</u> 12 – New Admin	\$1 Construction Communicatior	- n Evaluation	Total
	Service Region	547 20 Incentives	\$1 12 – New Admin -	\$1 Construction Communicatior	- n Evaluation -	Total
	Service Region FEI FEVI	547 20 Incentives - -	\$1 12 – New Admin - -	\$1 Construction Communicatior - -	- Evaluation - -	•50 Total - -
	Service Region FEI FEVI FEW	547 20 Incentives - - -	\$1 112 – New Admin - - -	\$1 Construction Communicatior - - -	- Evaluation - -	- - -
	Service Region FEI FEVI FEW Total	547 20 Incentives - - - -	\$1 12 – New Admin - - - - -	\$1 Construction Communicatior - - - - -	- Evaluation - - - -	•30 Total - - \$1
Expenditures (\$ 000s)*	Service Region FEI FEVI FEW Total	\$47 20 Incentives - - - -	\$1 112 – New Admin - - - -	\$1 Construction Communicatior - - - - -	- Evaluation - - - -	•30 Total - - - \$1
Expenditures (\$,000s)*	Service Region FEI FEVI FEW Total	\$47 20 Incentives - - - -	\$1 112 - New Admin - - - - 2013 -	\$1 Construction Communicatior - - - - Retrofit	- Evaluation - - - -	• Total - - - \$1
Expenditures (\$,000s)*	Service Region FEI FEVI FEW Total	547 20 Incentives - - - - Incentives	\$1 112 - New Admin - - - - - 2013 - Admin	\$1 Construction Communicatior - - - - - - - - - - - - -	- Evaluation - - - - n Evaluation	\$30 Total - - \$1 Total
Expenditures (\$,000s)*	Service Region FEI FEVI FEW Total Service Region FEI	\$47 20 Incentives - - - Incentives \$42	\$1 112 - New Admin - - - 2013 - Admin \$1	\$1 Construction Communicatior - - - Retrofit Communicatior \$1	- Evaluation - - - - n Evaluation -	\$30 Total - - \$1 Total \$44
Expenditures (\$,000s)*	Service Region FEI FEVI FEW Total Service Region FEI FEVI	\$47 20 Incentives - - - Incentives \$42 \$5	\$1 112 - New Admin - - - 2013 - Admin \$1 -	\$1 Construction Communicatior - - - Retrofit Communicatior \$1 -	- Evaluation - - - - - - n Evaluation - -	\$30 Total - \$1 Total \$44 \$5
Expenditures (\$,000s)*	Service Region FEI FEVI FEW Total Service Region FEI FEVI FEW	\$47 20 Incentives - - - - Incentives \$42 \$5 - - - - - - - - - - - - -	\$1 112 - New Admin - - - 2013 - Admin \$1 - - - -	\$1 Construction Communication - - - - - - - - - - - - -	- Evaluation - - - - - - - - - - - - - - - - - - -	\$30 Total - \$1 Total \$44 \$5 - -
Expenditures (\$,000s)*	Service Region FEI FEVI FEW Total Service Region FEI FEVI FEW Total	\$47 20 Incentives - - - - - - - - - - - - -	\$1 112 - New Admin - - - 2013 - Admin \$1 - - \$1	\$1 Construction Communication - - - Retrofit Communication \$1 - - \$1	- Evaluation - - - - - - - - - - - - - - - -	\$30 Total - - \$1 Total \$44 \$5 - \$50
Expenditures (\$,000s)*	Service Region FEI FEVI FEW Total Service Region FEI FEVI FEW Total	\$47 20 Incentives - - - - Incentives \$42 \$5 - \$47 20	\$1 112 - New Admin - - 2013 - Admin \$1 - \$1 13 - New	\$1 Construction Communication - - - Retrofit Communication \$1 - - \$1 Construction	- Evaluation - - - - n Evaluation - - - - -	\$30 Total - - \$1 Total \$44 \$5 - \$50
Expenditures (\$,000s)*	Service Region FEI FEW Total Service Region FEI FEVI FEW Total Service Region	\$47 20 Incentives - - - Incentives \$42 \$5 - \$47 20 Incentives	\$1 112 - New Admin - - 2013 - 2013 - Admin \$1 - \$1 113 - New Admin	\$1 Construction Communication - - - Retrofit Communication \$1 - \$1 Construction Communication	- Evaluation - - - - - - - - - - - - - - - - - - -	\$30 Total - \$1 Total \$44 \$5 - \$50 Total
Expenditures (\$,000s)*	Service Region FEI FEVI FEW Total Service Region FEI FEVI FEW Total Service Region FEI	\$47 20 Incentives - - - - Incentives \$42 \$5 - \$47 20 Incentives	\$1 112 - New Admin - - 2013 - 2013 - Admin \$1 - \$1 113 - New Admin -	\$1 Construction Communication - - - Retrofit Communication \$1 - \$1 Construction Communication	- Evaluation - - - - - - - - - - - - - - - - - - -	\$30 Total - \$1 Total \$44 \$5 - \$50 Total -
Expenditures (\$,000s)*	Service Region FEI FEVI FEW Total Service Region FEI FEVI FEW Total Service Region FEI FEVI	\$47 20 Incentives - - - - Incentives \$42 \$5 - \$47 20 Incentives - - -	\$1 112 - New Admin - - 2013 - 2013 - Admin \$1 - \$1 113 - New Admin - - - -	\$1 Construction Communicatior - - - Retrofit Communicatior \$1 - \$1 Construction Communicatior - - - - - - - - - - - - -	- Evaluation - - - - - - - - - - - - - - - - - - -	\$30 Total - \$1 Total \$44 \$5 - \$50 Total - \$50
Expenditures (\$,000s)*	Service Region FEI FEVI FEW Total Service Region FEI FEVI FEW Total Service Region FEI FEVI FEI FEVI FEVI	\$47 20 Incentives - - - - Incentives \$42 \$5 - \$47 20 Incentives - - - - - - - - - - - - -	\$1 112 - New Admin - - 2013 - 2013 - Admin \$1 - \$1 113 - New Admin - - - - - - - - - - - - -	\$1 Construction Communicatior - - - Retrofit Communicatior \$1 - \$1 Construction Communicatior - - - - - - - - - - - - -	- Evaluation	\$30 Total - - \$1 Total \$44 \$5 - \$50 Total - - - - - - - - - - - - -
Expenditures (\$,000s)*	Service Region FEI FEVI FEW Total Service Region FEI FEVI FEW Total Service Region FEI FEVI FEU FEVI FEVI FEVI FEW Total	\$47 20 Incentives - - - - Incentives \$42 \$5 - \$47 20 Incentives - - - - - - - - - - - - -	\$1 112 - New Admin - - 2013 - 2013 - Admin \$1 - \$1 113 - New Admin - - - - - - - - - - - - -	\$1 Construction Communicatior - - - Retrofit Communicatior \$1 - \$1 Construction Communicatior - - - - - - - - - - - - -	- Evaluation	\$30 Total - - \$1 Total \$44 \$5 - \$50 Total - - \$1 - - \$1



6.4.6 Commercial Custom Design Program

					_		
Program Description	This Program prov financial incentive measures identifie commercial custor specific situations and must be appre	vides commerces to encourage ed in the study. mers to participant . The energy so oved by the ution	cial custom the imple The Prog pate becau aving mea ility.	ners with an ementation ram will en use the End asures will v	n Energy S of cost eff acourage a ergy Study vary deper	Study, and the ective energy wide variety of will consider nding on the c	n uses saving of their ustomer,
	This Program is o	ffered in partne	ership with	BC Hydro			
Target Market	Commercial Custo	omers					
New vs Retrofit	Both						
Eligible Measures	Utility funded eneridentified in the er	rgy study, and hergy study and	utility ince d approve	nted Energ d by the uti	gy Saving I ility. ESMs	Veasures (ES are variable.	Ms) as
Incremental Measure Cost	Variable. Dependet the following:	ent upon partic	cipant prop	osed Ener	gy Saving	Measures. As	sumed
	Retrofit: \$255,298 New Construction	; : \$334,750					
Incentive Amount	If TRC ≥ 1.0 then (EML), up to 10 yr	\$5 / discounte rs max. Assum	d GJ save ed the foll	d over 50% owing:	6 of the En	ergy Measure	Life
	Retrofit: \$171,700 New Construction	: \$250,000					
Savings per Participant	Dependent upon r			1- A			
earinge per r'articipant	Dependent upon p	banicipant prop	posed ESN	vis. Assum	ed the folic	owing.	
	Retrofit: 5,780 GJ New Construction	: 3,161 GJ	DOSED ESM	vis. Assum	ed the tolic	Jwing.	
Measure Life & Source	Retrofit: 5,780 GJ New Construction 15 years - Variabl	: 3,161 GJ e. Dependent	upon parti	cipant's pro	ed the folic	ergy Saving N	1 easures
Measure Life & Source Free Rider Rate & Source	Retrofit: 5,780 GJ New Construction 15 years - Variabl 10% - Variable. D	: 3,161 GJ e. Dependent ependent upor	upon participa	cipant's propos	ed the folic oposed En sed Energy	ergy Saving N v Saving Meas	Measures sures
Measure Life & Source Free Rider Rate & Source Spillover Rate & Source	Retrofit: 5,780 GJ New Construction 15 years - Variabl 10% - Variable. D Not available	: 3,161 GJ e. Dependent ependent upor	upon parti	cipant's pro	ed the folic	ergy Saving N v Saving Meas	Measures sures
Measure Life & Source Free Rider Rate & Source Spillover Rate & Source	Retrofit: 5,780 GJ New Construction 15 years - Variabl 10% - Variable. D Not available Service Region	: 3,161 GJ e. Dependent ependent upor	upon participal	cipant's pro	ed the folic	ergy Saving N Saving Meas 2013	Aeasures sures
Measure Life & Source Free Rider Rate & Source Spillover Rate & Source	Retrofit: 5,780 GJ New Construction 15 years - Variabl 10% - Variable. D Not available Service Region	: 3,161 GJ e. Dependent ependent upor Retrofit	upon participar n participar 2012 New C	cipant's pro nt's propos Constr.	ed the folic oposed En ed Energy Retrofi	ergy Saving N v Saving Meas 2013 t New	leasures sures (Constr.
Measure Life & Source Free Rider Rate & Source Spillover Rate & Source Participants*	Retrofit: 5,780 GJ New Construction 15 years - Variabl 10% - Variable. D Not available Service Region FEI	: 3,161 GJ e. Dependent ependent upor Retrofit 19	upon participal n participal 2012 New C	cipant's pro nt's propos Constr.	ed the folic oposed En sed Energy Retrofi 15	ergy Saving N v Saving Meas 2013 t New	Aeasures sures / Constr. 3
Measure Life & Source Free Rider Rate & Source Spillover Rate & Source Participants*	Retrofit: 5,780 GJ New Construction 15 years - Variabl 10% - Variable. D Not available Service Region FEI FEI	: 3,161 GJ e. Dependent ependent upor Retrofit 19 5	upon participal 2012 New C	cipant's pro nt's propos Constr. 4	ed the folic oposed En sed Energy Retrofi 15 4	ergy Saving N Saving Meas 2013 t New	Aeasures sures / Constr. 3 1
Measure Life & Source Free Rider Rate & Source Spillover Rate & Source Participants*	Retrofit: 5,780 GJ New Construction 15 years - Variabl 10% - Variable. D Not available Service Region FEI FEVI FEW	: 3,161 GJ e. Dependent ependent upor Retrofit 19 5 -	upon participal 2012 New C	cipant's pro nt's propos Constr. 4	ed the folic oposed En sed Energy Retrofi 15 4	ergy Saving N v Saving Meas 2013 t New	Aeasures sures (Constr. 3 1 -
Measure Life & Source Free Rider Rate & Source Spillover Rate & Source Participants*	Retrofit: 5,780 GJ New Construction 15 years - Variable 10% - Variable. D Not available Service Region FEI FEVI FEW Total	Retrofit - 24	upon participal 2012 New C	cipant's pro nt's propos Constr. 4 1 - 5	ed the folic pposed En sed Energy Retrofi 15 4 - 19	ergy Saving N v Saving Meas 2013 t New	Aeasures sures / Constr. 3 1 - 4
Measure Life & Source Free Rider Rate & Source Spillover Rate & Source Participants*	Retrofit: 5,780 GJ New Construction 15 years - Variabl 10% - Variable. D Not available Service Region FEI FEVI FEW Total	Retrofit - 24	upon participal 2012 New C	cipant's pro nt's propos Constr. 4 1 - 5 - Retrofit	Retrofi 15 4 - 19	ergy Saving N v Saving Meas 2013 t New	Veasures Sures V Constr. 3 1 - 4
Measure Life & Source Free Rider Rate & Source Spillover Rate & Source Participants*	Retrofit: 5,780 GJ New Construction 15 years - Variabl 10% - Variable. D Not available Service Region FEI FEVI FEW Total	: 3,161 GJ e. Dependent ependent upor Retrofit 19 5 - 24 Incentives	upon participal 2012 New C 2012 Admin	cipant's propos nt's propos Constr. 4 1 - 5 - Retrofit Commu	Retrofi 15 4 - 19 nication	ergy Saving N v Saving Meas 2013 t New	Veasures
Measure Life & Source Free Rider Rate & Source Spillover Rate & Source Participants*	Retrofit: 5,780 GJ New Construction 15 years - Variabl 10% - Variable. D Not available Service Region FEI FEVI FEW Total Service Region FEI	: 3,161 GJ e. Dependent ependent upor Retrofit 19 5 - 24 Incentives \$3,255	upon participal 2012 New C 2012 Admin \$64	cipant's propos nt's propos Constr. 4 1 - 5 - Retrofit Commun \$1	Retrofi 15 4 - 19 nication	ergy Saving N v Saving Meas 2013 t New Evaluation \$134	Veasures
Measure Life & Source Free Rider Rate & Source Spillover Rate & Source Participants*	Retrofit: 5,780 GJ New Construction 15 years - Variabl 10% - Variable. D Not available Service Region FEI FEVI FEW Total Service Region FEI FEVI	: 3,161 GJ e. Dependent ependent upor Retrofit 19 5 - 24 Incentives \$3,255 \$824	upon participal 2012 New C 2012 - Admin \$64 \$16	cipant's propos nt's propos Constr. 4 1 - 5 - Retrofit Commun \$1 \$	Retrofi 15 4 - 19 nication	ergy Saving N v Saving Meas 2013 t New Evaluation \$134 \$34	Aeasures sures / Constr. 3 1 - 4 Total \$3,461 \$878
Measure Life & Source Free Rider Rate & Source Spillover Rate & Source Participants*	Retrofit: 5,780 GJ New Construction 15 years - Variabl 10% - Variable. D Not available Service Region FEI FEVI FEW Total Service Region FEI FEVI FEU FEW	: 3,161 GJ e. Dependent ependent upor Retrofit 19 5 - 24 Incentives \$3,255 \$824 \$41	upon participal n participal 2012 New C 2012 - Admin \$64 \$16 \$1	cipant's propos nt's propos Constr. 4 1 - Retrofit Commun \$1 \$	Retrofi 15 4 - 19 nication	ergy Saving N v Saving Meas 2013 t New Evaluation \$134 \$34 \$2	Aeasures sures / Constr. 3 1 - 4 Total \$3,461 \$878 \$878 \$44
Measure Life & Source Free Rider Rate & Source Spillover Rate & Source Participants*	Retrofit: 5,780 GJ New Construction 15 years - Variabl 10% - Variable. D Not available Service Region FEI FEVI FEW Total Service Region FEI FEVI FEW Total	Retrofit 19 5 10 10 10 10 10 10 10 10 10 10	2012 New (2012 - Admin \$64 \$16 \$1 \$81	cipant's pro nt's propos Constr. 4 1 - Retrofit Commun \$1 \$ 5	Retrofi 15 4 - 19 nication 13 3	ergy Saving N v Saving Meas 2013 t New Evaluation \$134 \$34 \$2 \$170	Aeasures sures / Constr. 3 1 - 4 Total \$3,467 \$878 \$44 \$4,385
Measure Life & Source Free Rider Rate & Source Spillover Rate & Source Participants*	Retrofit: 5,780 GJ New Construction 15 years - Variabl 10% - Variable. D Not available Service Region FEI FEVI FEW Total Service Region FEI FEVI FEW Total	: 3,161 GJ e. Dependent ependent upor Retrofit 19 5 - 24 Incentives \$3,255 \$824 \$41 \$4,121 20	2012 New (2012 - Admin \$64 \$16 \$1 \$81 2012 - New	cipant's pro nt's propos Constr. 4 1 - Retrofit Commun \$1 \$ 5 - Retrofit \$ 5 - 8 1 \$ 5	Retrofi 15 4 - 19 nication 13 3 - 17 tion	ergy Saving N v Saving Meas 2013 t New Evaluation \$134 \$34 \$2 \$170	Aeasures sures / Constr. 3 1 - 4 Total \$3,46 \$878 \$878 \$44 \$4,38
Measure Life & Source Free Rider Rate & Source Spillover Rate & Source Participants*	Retrofit: 5,780 GJ New Construction 15 years - Variabl 10% - Variable. D Not available Service Region FEI FEVI FEW Total Service Region FEI FEVI FEW Total Service Region	: 3,161 GJ e. Dependent ependent upor Retrofit 19 5 - 24 Incentives \$3,255 \$824 \$41 \$4,121 2(Incentives	upon participal n participal 2012 New (2012 - Admin \$64 \$16 \$1 \$81 \$81 012 - New Admin	cipant's propos nt's propos Constr. 4 1 - 5 - Retrofit Commun \$1 \$1 \$1 \$1 \$1 \$1 \$1 \$1 \$1 \$1 \$1 \$1 \$1	Retrofi 15 4 - 19 nication 13 3 - - 17 stion	ergy Saving N v Saving Meas 2013 t New Evaluation \$134 \$34 \$2 \$170 Evaluation	Aeasures sures 7 Constr. 3 1 - 4 Total \$3,467 \$878 \$44 \$4,389 Total
Measure Life & Source Free Rider Rate & Source Spillover Rate & Source Participants*	Retrofit: 5,780 GJ New Construction 15 years - Variabl 10% - Variable. D Not available Service Region FEI FEVI FEW Total Service Region FEI FEVI FEW Total Service Region FEI	: 3,161 GJ e. Dependent ependent upor Retrofit 19 5 - 24 Incentives \$3,255 \$824 \$41 \$4,121 2(Incentives \$988	upon participal n participal 2012 New (2012 - Admin \$64 \$11 \$81 012 - New Admin \$13	cipant's propos nt's propos Constr. 4 1 - 5 - Retrofit Commun \$1 \$1 \$1 (Construc Commun \$1	Retrofi 15 4 - 19 nication 13 3 - 17 tion 1 3	ergy Saving Meas Saving Meas 2013 t New Evaluation \$134 \$2 \$170 Evaluation \$27	Aeasures sures 7 Constr. 3 1 - 4 Total \$3,467 \$878 \$44 \$4,389 \$44 \$4,389 Total \$1,030
Measure Life & Source Free Rider Rate & Source Spillover Rate & Source Participants*	Retrofit: 5,780 GJ New Construction 15 years - Variable 10% - Variable. D Not available Service Region FEI FEVI FEW Total Service Region FEI FEVI FEW Total Service Region FEI FEVI	: 3,161 GJ e. Dependent ependent upor Retrofit 19 5 - 24 Incentives \$3,255 \$824 \$41 \$4,121 2(Incentives \$988 \$250	upon participal n participal 2012 New C 2012 - Admin \$64 \$16 \$11 \$81 012 - New Admin \$13 \$1	cipant's propos nt's propos Constr. 4 1 - 5 - Retrofit Commun \$1 \$1 \$1 \$1 \$1 \$1 \$1 \$1 \$1 \$1 \$1 \$1 \$1	Retrofi 15 4 - 19 nication 3 - - - - - - - - - - - - -	ergy Saving Meas 2013 t New Evaluation \$134 \$34 \$2 \$170 Evaluation \$27 \$3	Aeasures sures (Constr. 3 1 - 4 Total \$3,467 \$878 \$44 \$4,389 \$44 \$4,389 Total \$1,030 \$255
Measure Life & Source Free Rider Rate & Source Spillover Rate & Source Participants*	Retrofit: 5,780 GJ New Construction 15 years - Variabl 10% - Variable. D Not available Service Region FEI FEVI FEW Total Service Region FEI FEVI FEW Total Service Region FEI FEVI FEW	: 3,161 GJ e. Dependent ependent upor Retrofit 19 5 - 24 Incentives \$3,255 \$824 \$41 \$4,121 2(Incentives \$988 \$250 \$13	upon participal n participal 2012 New C 2012 - Admin \$64 \$16 \$1 \$81 012 - New Admin \$13 \$1 -	cipant's propos nt's propos Constr. 4 1 - 5 - Retrofit Commun \$1 \$1 \$1 (Construc Commun \$1 - - - - - - - - - - - - - - - - - -	Retrofi 15 4 - 19 nication 3 - - - - - - - - - - - - -	ergy Saving Meas 2013 t New Evaluation \$134 \$34 \$2 \$170 Evaluation \$27 \$3 -	Aeasures sures (Constr. 3 1 - 4 Total \$3,467 \$878 \$44 \$4,389 \$44 \$4,389 Total \$1,030 \$255 \$13

2013 - Retrofit



Service Region	Incentives	Admin	Communication	Evaluation	Total
FEI	\$2,577	\$168	\$7	\$134	\$2,886
FEVI	\$652	\$43	\$2	\$34	\$731
FEW	\$33	\$2	-	\$2	\$37
Total	\$3,262	\$213	\$9	\$170	\$3,653

	2013 – New Construction										
Service Region	Incentives	Admin	Communication	Evaluation	Total						
FEI	\$790	\$33	\$1	\$27	\$851						
FEVI	\$200	\$4	-	\$3	\$207						
FEW	\$10	-	-	-	\$11						
Total	\$1,000	\$38	\$2	\$30	\$1,069						



6.4.7 Continuous Optimization Program

Program Description	This Program will provide financial incentives to commercial customers who capture energy savings through building commissioning and other improvement strategies.											
	Partnership with E	BC Hydro.										
Target Market	Commercial Custo	omers										
New vs Retrofit	Retrofit											
Eligible Measures	Re/Retro commiss monitoring	sioning study,	employee	training, and real tim	ne energy cons	umption						
Incremental Measure Cost	\$43,384 (Average	gas side inve	stment)									
Incentive Amount	\$23,812 (Average	23,812 (Average incentive over 8 years)										
Savings per Participant	70 GJ/year for the first 3 years 1,086 GJ/year thereafter (Average of 705 GJ/year used in the analysis)											
Measure Life & Source	8 years - None											
Free Rider Rate & Source	0% - BC Hydro											
Spillover Rate & Source	Not available											
	Service Region		2012		2013							
	FEI		145		187							
Participants	FEVI		6		8							
-	FEW		2		2							
	Total		153		197							
			20	012								
	Service Region	Incentives	Admin	Communication	Evaluation	Total						
	FEI	\$1,740	\$143	\$5	\$67	\$1,954						
	FEVI	\$73	\$6	-	\$8	\$87						

Expenditures (\$,000s)*

Expenditures (\$,000S)*	2013										
	Service Region	Incentives	Admin	Communication	Evaluation	Total					
	FEI	\$2,429	\$143	\$5	\$89	\$2,665					
	FEVI	\$102	\$6	-	\$10	\$118					
	FEW	\$26	\$2	-	\$1	\$28					
	Total	\$2,557	\$150	\$5	\$100	\$2,812					
*Totala may not add avaat	v: onv difforonce or	duo to roundi	20			•••••••••••••••••••••••••••••••••••••••					

\$18

\$1,832

\$2

\$150

-

\$5

Totals may not add exactly; any differences are due to rounding.

FEW

Total

\$1

\$75

\$21

\$2,062



6.4.8 Commercial Kitchen Program

Program Description	This Program offe cooking equipmer	rs a suite of re nt.	bates for tl	he installation of higl	n efficiency con	nmercial						
Target Market	Commercial Custo	omers										
New vs Retrofit	Both											
Eligible Measures	High Efficiency de	ep fryers, over	ns, ranges	, griddles								
Incremental Measure Cost	\$2,700 (Average)											
Incentive Amount	\$1,500 (Average)											
Savings per Participant	35.11 GJ's											
Measure Life & Source	12 years - The Fo	od Service Teo	chnology C	Center and OEB DSN	Assumptions							
Free Rider Rate & Source	5% - The Food Se	i% - The Food Service Technology Center and OEB DSM Assumptions										
Spillover Rate & Source	Not available											
	Service Region		2012		2013							
	U	Retrofit	New C	onstr. Retrof	it New	Constr.						
	FEI	36	4	48		5						
Participants [*]	FEVI	4	-	. 5		1						
	FEW	-	-	· 1		-						
	Total	40	4	l 54		6						
			2012 -	Retrofit								
	Service Region	Incentives	Admin	Communication	Evaluation	Total						
	FEI	\$53	\$2	\$6	-	\$61						
	FEVI	\$6	-	\$1	-	\$7						
	FEW	\$1	-	-	-	\$1						
	Total	\$60	\$2	\$7	-	\$69						
		20)12 – New	Construction								
	Service Region	Incentives	Admin	Communication	Evaluation	Total						
	FEI	\$5	-	\$1	-	\$6						
	FEVI	\$1	-	-	-	\$1						
	FEW	-	-	-	-	-						
	Total	\$6	-	\$1	-	\$7						
Expenditures (\$ 000s)*												
			2013 -	Retrofit								
	Service Region	Incentives	Admin	Communication	Evaluation	Total						
	FEI	\$72	\$2	\$6	-	\$80						
	FEVI	\$8	-	\$1	-	\$9						
	HEW	\$1	-	-	-	\$1						
	Iotal	\$81	\$2	\$7	-	\$90						
		20)13 – New	Construction								

		-				
	Service Region	Incentives	Admin	Communication	Evaluation	Total
	FEI	\$8	-	\$1	-	\$9
	FEVI	\$1	-	-	-	\$1
	FEW	-	-	-	-	-
	Total	\$9	-	\$1	-	\$10
-				-		



6.4.9 MURB Program

Program Description	ogram Description This Program offers an assortment of rebates targeted primarily at "In-Suite" gas savin measures for multi-unit residential buildings (MURBs).											
	Note: In the first two to be limited to the measures will be in	o years of ope installation of cluded as mo	eration energy savin low flow aerators ar re business cases a	g measures are nd shower head rre developed.	currently expected s. Additional							
Target Market	Commercial Custor	mers										
New vs Retrofit	Both											
Eligible Measures	Low flow faucet ae (Assume 2 aerators	Low flow faucet aerators and Low flow showerhead Assume 2 aerators and 1 showerhead per suite)										
Incremental Measure Cost	\$8,440 per building	8,440 per building (\$75 per suite)										
Incentive Amount	\$8,440 per building	(\$75 per suit	e)									
Savings per Participant	450 GJ per building	g (4 GJ per su	ite)									
Measure Life & Source	5 years - OEB appi	roved DSM as	sumptions and Con	servation Poten	tial Review							
Free Rider Rate & Source	10% - OEB approv	ed DSM assu	mptions									
Spillover Rate & Source	Not available											
	Service Region		2012		2013							
		Retrofit	New Constr.	Retrofit	New Constr.							
Participante*	FEI	35	9	53	13							
Faiticipants	FEVI	9	2	13	3							
	FEW	-	-	1	-							
	Total	44	11	67	17							
			2012 – Retrofit									

		2012 -	- Retrofit			
Service Region	Incentives	Admin	Communication	Evaluation	Total	
FEI	\$293	\$6	\$16	-	\$315	
FEVI	\$74	\$2	\$4	-	\$80	
FEW	\$4	-	-	-	\$4	
Total	\$371	\$8	\$20	-	\$399	
	20)12 – New	Construction			
Service Region	Incentives	Admin	Communication	Evaluation	Total	
FEI	\$73	\$2	\$4	-	\$79	
FEVI	\$19	-	\$1	-	\$20	
FEW	\$1	-	-	-	\$1	
Total	\$93	\$2	\$5	-	\$100	

Expenditures (\$,000s)*

		2013 -	- Retrofit		
Service Region	Incentives	Admin	Communication	Evaluation	Total
FEI	\$447	\$6	\$16	-	\$469
FEVI	\$113	\$2	\$4	-	\$119
FEW	\$6	-	-	-	\$6
Total	\$565	\$8	\$20	-	\$593
	20)13 – New	Construction	-	
Service Region	Incentives	Admin	Communication	Evaluation	Total
FEI	\$113	\$2	\$5	-	\$119
FEVI	\$29	-	\$1	-	\$30
FEW	\$1	-	-	-	\$2
Total	\$143	\$2	\$5	-	\$150



6.4.10 Process Heat Program

Program Description	This Program prov towards Manufact	vides rebates to uring processe	o encoura s.	ge energy efficiency	retrofits targete	ed							
Target Market	Commercial Custo	omers											
New vs Retrofit	Retrofit												
Eligible Measures	High efficiency bo	ilers, Stack Ec	onomizers	, Boiler controls, Dry	ving ovens								
Incremental Measure Cost	\$70,000												
Incentive Amount	\$25,000												
Savings per Participant	1,250 GJ	250 GJ											
Measure Life & Source	20 years - Assume	0 years - Assumed value											
Free Rider Rate & Source	20% - Assumed value												
Spillover Rate & Source	Not available												
	Sonvice Pegien			0040									
	Service Region		2012		2013								
	FEI		2012		2013 21								
Participants*	FEI FEVI		2012 21 2		2013 21 2								
Participants*	FEI FEVI FEW		2012 21 2 -		2013 21 2 -								
Participants*	FEI FEVI FEW Total		2012 21 2 - 23		2013 21 2 - 23								
Participants*	FEI FEVI FEW Total		2012 21 2 - 23 23 2	012	2013 21 2 - 23								
Participants*	FEI FEVI FEW Total	Incentives	2012 21 2 - 23 23 2 Admin	012 Communication	2013 21 2 - 23 Evaluation	Total							
Participants*	FEI FEVI FEW Total Service Region FEI	Incentives \$513	2012 21 2 - 23 23 2 Admin \$4	012 Communication \$8	2013 21 2 - 23 Evaluation -	Total \$525							
Participants*	FEI FEVI FEW Total Service Region FEI FEVI	Incentives \$513 \$58	2012 21 2 - 23 23 Admin \$4 -	012 Communication \$8 \$1	2013 21 2 - 23 Evaluation - -	Total \$525 \$59							
Participants*	Service Region FEI FEW Total Service Region FEI FEVI FEW	Incentives \$513 \$58 \$6	2012 21 2 - 23 23 23 Admin \$4 - -	012 Communication \$8 \$1 -	2013 21 2 - 23 Evaluation - -	Total \$525 \$59 \$6							
Participants*	Service Region FEI FEW Total Service Region FEI FEVI FEW Total	Incentives \$513 \$58 \$6 \$576	2012 21 2 23 23 23 Admin \$4 - \$5	012 Communication \$8 \$1 - \$10	2013 21 2 - 23 Evaluation - - - -	Total \$525 \$59 \$6 \$590							
Participants*	FEI FEVI FEW Total Service Region FEI FEVI FEW Total	Incentives \$513 \$58 \$6 \$576	2012 21 2 - 23 2 Admin \$4 - \$5 2	012 Communication \$8 \$1 - \$10 013	2013 21 2 - 23 Evaluation - - - -	Total \$525 \$59 \$6 \$590							
Participants*	FEI FEVI FEW Total Service Region FEI FEVI FEW Total Service Region	Incentives \$513 \$58 \$6 \$576 Incentives	2012 21 2 23 23 Admin \$4 - \$5 2 Admin	012 Communication \$8 \$1 - \$10 013 Communication	2013 21 2 - 23 Evaluation - - - - Evaluation	Total \$525 \$59 \$6 \$590 Total							
Participants* Expenditures (\$,000s)*	FEI FEVI FEW Total Service Region FEI FEVI FEW Total Service Region FEI	Incentives \$513 \$58 \$6 \$576 Incentives \$513	2012 21 2 23 23 2 Admin \$4 - \$5 2 Admin \$4 - \$5 2 Admin	012 Communication \$8 \$1 - \$10 013 Communication \$8	2013 21 2 - 23 Evaluation - - - - Evaluation - -	Total \$525 \$59 \$6 \$590 Total \$525							
Participants* Expenditures (\$,000s)*	FEI FEVI FEW Total Service Region FEI FEW Total Service Region FEI FEVI	Incentives \$513 \$58 \$6 \$576 Incentives \$513 \$58	2012 21 2 23 23 23 2 Admin \$4 - \$5 2 Admin \$4 - \$5 2 Admin \$4 - - \$5	012 Communication \$8 \$1 - \$10 013 Communication \$8 \$1	2013 21 2 - 23 Evaluation - - - - - - - - - - - - -	Total \$525 \$59 \$6 \$590 Total \$525 \$590							
Participants* Expenditures (\$,000s)*	FEI FEVI FEW Total Service Region FEI FEW Total Service Region FEI FEVI FEVI FEVI FEVI FEVI FEW	Incentives \$513 \$58 \$6 \$576 Incentives \$513 \$58 \$6	2012 21 2 23 23 Admin \$4 - \$5 2 Admin \$4 - \$5 2 Admin \$4 - - - - - - - - - - - - -	012 Communication \$8 \$1 - \$10 013 Communication \$8 \$1 -	2013 21 2 - 23 Evaluation - - - - - - - - - - - - -	Total \$525 \$59 \$6 \$590 Total \$525 \$6 \$590							
Participants* Expenditures (\$,000s)*	Service Region FEI FEW Total Service Region FEI FEVI FEW Total Service Region FEI FEVI FEW Total	Incentives \$513 \$58 \$6 \$576 Incentives \$513 \$58 \$6 \$576	2012 21 2 - 23 23 2 Admin \$4 - \$5 2 Admin \$4 - \$5 2 Admin \$4 - \$5 2 Admin \$4 - \$5 2 3 2 2 2 2 2 2 2 2 2 2 2 2 2	012 Communication \$8 \$1 - \$10 013 Communication \$8 \$1 - \$10	2013 21 2 - 23 Evaluation - - - - - - - - - - - - -	Total \$525 \$59 \$6 \$590 Total \$525 \$59 \$6 \$590							



6.4.11 Fireplace Timers Pilot Program

Program Description	This Pilot Progran operation" control	his Pilot Program will assess the natural gas savings potential of fireplace "time-of- peration" controllers in multi-unit residential buildings.											
	Note: There are n being evaluated.	o participants i The 2013 num	n 2012, as ber is bas	s the pilot is closed a ed on an assumed f	and the results a ull program roll	are out.							
Target Market	Commercial Custo	omers											
New vs Retrofit	Retrofit												
Eligible Measures	Electronic fireplac	e "time-of-ope	ration" cor	ntroller									
Incremental Measure Cost	\$50												
Incentive Amount	\$50												
Savings per Participant	3 GJ	GJ											
Measure Life & Source	5 years - Assume	years - Assumed value. No similar equipment is known to exist											
Free Rider Rate & Source	0% - Pilot program assumption												
Spillover Rate & Source	Not available												
	Service Region		2012		2013								
	FEI		-		8,455								
Participants	FEVI		-		950								
	FEW		-		95								
	Total		-		9,500								
			20	012									
	Service Region	Incentives	Admin	Communication	Evaluation	Total							
	FEI	-	-	-	\$67	\$67							
	FEVI	-	-	-	\$8	\$8							
	FEW	-	-	-	\$1	\$1							
	Total	-	-	-	\$75	\$75							
Expenditures (\$,000s)*			20	013									
	Service Region	Incentives	Admin	Communication	Evaluation	Total							
	FEI	\$423	\$9	\$13	-	\$445							
	FEVI	\$48	\$1	\$2	-	\$50							
	FEW	\$5	-	-	-	\$5							
	Total	\$475	\$10	\$15	-	\$500							



6.4.12 Radiant Tube Heaters Pilot Program

Program Description	This Pilot Program tube heaters wher	n will assess th n used for spac	e increme ce heating	ntal costs and savin in place of standard	gs potential of i unit heaters.	radiant							
Target Market	Commercial Custo	omers											
New vs Retrofit	Retrofit												
Eligible Measures	Radiant tube heat	ers											
Incremental Measure Cost	Variable. Depende following: \$1,220	ent upon indivi	dual partic	ipant's facility / build	ing. Assumed t	he							
Incentive Amount	If TRC ≥ 1.0 then standard unit heat \$915	up to 75% of ir ers. Assumed	ncrementa the followi	l cost between radia ing:	nt tube heaters	and							
Savings per Participant	Variable. Depend following: 57.5 GJ	/ariable. Dependent upon individual participant's facility / building. Assumed the ollowing: j7.5 GJ											
Measure Life & Source	20 years - OEB ap	proved DSM a	assumption	ns									
Free Rider Rate & Source	0% - Pilot progran	n assumption											
Spillover Rate & Source	Not available												
Participants	Service Region FEI FEVI FEW Total		2012 13 - - 13		2013								
			20	012									
	Service Region	Incentives	Admin	Communication	Evaluation	Total							
	FEI	\$12	\$1	-	\$4	\$17							
	FEVI	-	\$1	-	\$2	\$3							
		-	- ¢0	-	- ¢0	-							
	Iotai	\$1Z	\$Z	-	\$0	\$20							
Expenditures (\$,000s)*			20	013									
	Service Region	Incentives	Admin	Communication	Evaluation	Total							
	FEI												
	FEVI												
	FEW												
	Total												



6.4.13 Energy Specialist Program

Program Description	This Program will opportunities for th Energy Specialist reduction projects more efficiently.	This Program will create Energy Specialist positions, whose key priority is to identify opportunities for their organization to participate in FortisBC's EEC programs. The Energy Specialist reports to and supports the Energy Manager on holistic energy reduction projects, while also focusing on identifying opportunities to use natural gas more efficiently. Energy Specialist positions are funded by FortisBC up to \$60,000 for a period of one year. This Program will be funded as an enabling program.												
	Energy Specialist year. This Prograr	positions are f n will be funde	unded by f d as an er	FortisBC up to \$60,0 abling program.	00 for a perioc	l of one								
Target Market	Large Commercia	l and Institution	nal Custon	ners										
New vs Retrofit	Retrofit													
Eligible Measures	Energy Specialist	position												
Incremental Measure Cost	\$60,000	0,000												
Incentive Amount	\$60,000	0,000												
Savings per Participant	Not applicable	Not applicable												
Measure Life & Source	Not applicable													
Free Rider Rate & Source	0% - Learnings fro	om 2010/2011	Energy Sp	ecialist Pilot Progra	n									
Spillover Rate & Source	Not available													
	Service Region		2012		2013									
	FEI		14		13									
Participants*	FEVI		2		2									
	FEW		-		-									
	Total		15		15									
			20)12										
	Service Region	Incentives	Admin	Communication	Evaluation	Total								
	FEI	\$810	\$159	-	\$36	\$1,005								
	FEVI	\$90	\$18	-	\$4	\$112								
	FEW	-	-	-	-	-								
	Total	\$900	\$177	-	\$40	\$1,117								
Expenditures (\$,000s)*			20)13										
	Service Region	Incentives	Admin	Communication	Evaluation	Total								
	FEI	\$780	\$108	-	\$36	\$924								
	FEVI	\$120	\$12	-	\$4	\$136								
		· -			·····									

-

-

\$120

\$40

\$1,060

 Total
 \$900
 \$

 *Totals may not add exactly; any differences are due to rounding.

FEW



7 Conservation Education & Outreach Programs

7.1 Introduction

The Conservation Education and Outreach ("CEO") Programs provide general conservation and non-program specific communications. CEO initiatives support the EEC's portfolio goals of energy conservation and GHG emissions reduction established by the Government of BC. This program area is also intended to foster a culture of conservation within the province by educating customers about changing their awareness and behaviours in regards to conserving energy. The goal of these initiatives is to ensure customers learn about taking small steps towards energy conservation and that customers will be receptive to incentive programs when they are proposed.

Many of the initiatives listed are a continuation from 2011, with a goal of program expansion for 2012 and 2013. CEO programs are not individually run through the California Standards Tests at a program level, and do not have any energy savings directly associated with them. However, costs are included at the portfolio level in the overall EEC portfolio TRC. Some of the programs which are being piloted in 2011, such as the Home Efficiency Measures and Behaviour Change Programs – Online Community Site, are attempting to measure potential energy savings from behaviour change.

The 2012/2013 suite of Conservation Education & Outreach Program offerings is listed below:

- Residential Mass Education on Conservation and Energy Literacy
- Residential Home Shows and Community Events Outreach
- Canadian Home Builders' Association Promotions and Support
- Residential Outreach Education Tools
- Energy Champion Program
- Home Efficiency Measures
- Municipal Partnerships Other
- Medium-Large Commercial Education Sessions
- Small Commercial Education and Outreach
- Commercial Trade Shows and Association Events
- Commercial Multi Family
- Behaviour Programs Online Community Site
- Behaviour Programs Energy Specialists
- Conservation Assistance Education and Outreach
- School Programs: Class and Online Curriculum



- School Programs: K-12 In-Class Programs and Presentations
- School Programs: K-12 Home Efficiency Measures
- School Programs: Post Secondary

The scope of CEO Programs noted above includes continuation of the 2011 initiatives, as well as several new initiatives for the 2012/2013 period. Selected highlights are listed below.

- A Home Efficiency Measures Partnership Program will disseminate low flow kits to other municipalities, big box retailers, multi-family housing, and even students through school programs.
- Customer Behaviour Programs will be expanded as large commercial customers, including municipalities, continue to look for low cost behaviour adjustments in their efforts to reduce energy costs within their facilities, including behaviour projects carried out by Energy Specialists.
- School programs will also continue to expand in the 2012/2013 period, with a new program for post secondary students.
- A mass education campaign on natural gas conservation programs and energy literacy will be delivered that will educate customers on the differences in energy efficiency ratings (eg. AFUE vs. Energy Factor), rating percentages, and efficiency labeling (eg. ENERGY STAR[®], EnerChoice, and EnerGuide).

7.2 Overview of Results

Exhibit 7 provides a summary of the estimated savings, program expenditures and costeffectiveness results for each of the programs noted above and for the CEO Portfolio, as a whole.



Exhibit 7: Conservation Education & Outreach Program Results

Program	Annual G	as Savings	NPV Gas				Utility Ex	penditure	es (\$1000s)	1			Benefit/Cost Ratios		ios		
and Service	(GJ	l/yr.)	Savings		Incentive	s	No	n-Incenti	ves	Α	II Spendi	ng	TRC	1141114	Dorticipont	DIM	Conintal
Territory	2012	2013	(GJ)	2012	2013	Total	2012	2013	Total	2012	2013	Total	TRU	Utility	Participant	RIN	Societai
Residential Ma	ass Educatio	on on Consei	rvation and Er	nergy Lite	racy												
FEI	0	0	0	0	0	0	590	590	1,179	590	590	1,179	0.00	0.00		0.00	0.00
FEVI	0	0	0	0	0	0	66	66	131	66	66	131	0.00	0.00		0.00	0.00
Total	0	0	0	0	0	0	655	655	1,310	655	655	1,310	0.00	0.00		0.00	0.00
Residential Ho	ome Shows	and Commur	nity Events O	utreach													
FEI	0	0	0	0	0	0	320	320	639	320	320	639	0.00	0.00		0.00	0.00
FEVI	0	0	0	0	0	0	76	76	151	76	76	151	0.00	0.00		0.00	0.00
Total	0	0	0	0	0	0	395	395	790	395	395	790	0.00	0.00		0.00	0.00
Canadian Hom	ne Builders'	Association	Promotions a	nd Suppo	rt												
FEI	0	0	0	0	0	0	153	153	306	153	153	306	0.00	0.00		0.00	0.00
FEVI	0	0	0	0	0	0	17	17	34	17	17	34	0.00	0.00		0.00	0.00
Total	0	0	0	0	0	0	170	170	340	170	170	340	0.00	0.00		0.00	0.00
Residential Ou	utreach Edu	cation Tools															
FEI	0	0	0	0	0	0	180	180	360	180	180	360	0.00	0.00		0.00	0.00
FEVI	0	0	0	0	0	0	20	20	40	20	20	40	0.00	0.00		0.00	0.00
Total	0	0	0	0	0	0	200	200	400	200	200	400	0.00	0.00		0.00	0.00
Energy Cham	pion Prograr	n															
FEI	0	0	0	0	0	0	688	688	1,376	688	688	1,376	0.00	0.00		0.00	0.00
FEVI	0	0	0	0	0	0	162	162	324	162	162	324	0.00	0.00		0.00	0.00
Total	0	0	0	0	0	0	850	850	1,700	850	850	1,700	0.00	0.00		0.00	0.00
Home Efficien	cy Measure	S															
FEI	0	0	0	0	0	0	405	423	828	405	423	828	0.00	0.00		0.00	0.00
FEVI	0	0	0	0	0	0	45	47	92	45	47	92	0.00	0.00		0.00	0.00
Total	0	0	0	0	0	0	450	470	920	450	470	920	0.00	0.00		0.00	0.00
Municipal Part	tnerships - C	Other															
FEI	0	0	0	0	0	0	135	144	279	135	144	279	0.00	0.00		0.00	0.00
FEVI	0	0	0	0	0	0	15	16	31	15	16	31	0.00	0.00		0.00	0.00
Total	0	0	0	0	0	0	150	160	310	150	160	310	0.00	0.00		0.00	0.00



Exhibit 7: Conservation Education & Outreach Program Results (cont'd)

Program	Annual G	as Savings	NPV Gas				Utility Ex	penditure	s (\$1000s))				Be	nefit/Cost Rat	ios	
and Service	(G.	J/yr.)	Savings		Incentive	s	No	n-Incenti	ves	Α	II Spendi	ng	TRC	1141114	Dorticinent	DIM	Conintal
Territory	2012	2013	(GJ)	2012	2013	Total	2012	2013	Total	2012	2013	Total	TRC	Utility	Participant	RIW	Societai
Medium-Large	e Commercia	al Education S	Sessions														
FEI	0	0	0	0	0	0	63	63	126	63	63	126	0.00	0.00		0.00	0.00
FEVI	0	0	0	0	0	0	7	7	14	7	7	14	0.00	0.00		0.00	0.00
Total	0	0	0	0	0	0	70	70	140	70	70	140	0.00	0.00		0.00	0.00
Small Comme	ercial Educat	tion and Outre	each														
FEI	0	0	0	0	0	0	80	80	160	80	80	160	0.00	0.00		0.00	0.00
FEVI	0	0	0	0	0	0	20	20	40	20	20	40	0.00	0.00		0.00	0.00
Total	0	0	0	0	0	0	100	100	200	100	100	200	0.00	0.00		0.00	0.00
Commercial T	rade Shows	and Associa	tion Events														
FEI	0	0	0	0	0	0	130	130	259	130	130	259	0.00	0.00		0.00	0.00
FEVI	0	0	0	0	0	0	31	31	61	31	31	61	0.00	0.00		0.00	0.00
Total	0	0	0	0	0	0	160	160	320	160	160	320	0.00	0.00		0.00	0.00
Commercial N	/lulti-Family																
FEI	0	0	0	0	0	0	297	297	594	297	297	594	0.00	0.00		0.00	0.00
FEVI	0	0	0	0	0	0	33	33	66	33	33	66	0.00	0.00		0.00	0.00
Total	0	0	0	0	0	0	330	330	660	330	330	660	0.00	0.00		0.00	0.00
Behaviour Pro	grams - Onl	ine Communi	ty Site														
FEI	0	0	0	0	0	0	200	216	416	200	216	416	0.00	0.00		0.00	0.00
FEVI	0	0	0	0	0	0	50	54	104	50	54	104	0.00	0.00		0.00	0.00
Total	0	0	0	0	0	0	250	270	520	250	270	520	0.00	0.00		0.00	0.00
Behaviour Pro	grams - Ene	ergy Specialis	sts														
FEI	0	0	0	0	0	0	180	180	360	180	180	360	0.00	0.00		0.00	0.00
FEVI	0	0	0	0	0	0	20	20	40	20	20	40	0.00	0.00		0.00	0.00
Total	0	0	0	0	0	0	200	200	400	200	200	400	0.00	0.00		0.00	0.00
Conservation	Assistance -	- Education a	nd Outreach														
FEI	0	0	0	0	0	0	216	216	432	216	216	432	0.00	0.00		0.00	0.00
FEVI	0	0	0	0	0	0	54	54	108	54	54	108	0.00	0.00		0.00	0.00
Total	0	0	0	0	0	0	270	270	540	270	270	540	0.00	0.00		0.00	0.00



Exhibit 7: Conservation Education & Outreach Program Results (cont'd)

Program	Annual G	as Savings	NPV Gas				Utility Ex	penditure	s (\$1000s)				Benefit/Cost			os	
and Service	(GJ	J/yr.)	Savings	I	Incentive	s	No	n-Incenti	ves	Α	I Spendi	ng	TPC	l Hility	Participant	DIM	Societal
Territory	2012	2013	(GJ)	2012	2013	Total	2012	2013	Total	2012	2013	Total	INC	Ounty	Farticipant	IX II VI	Societai
School Progra	ms: Class a	and Online Cu	urriculum														
FEI	0	0	0	0	0	0	40	0	40	40	0	40	0.00	0.00		0.00	0.00
FEVI	0	0	0	0	0	0	10	0	10	10	0	10	0.00	0.00		0.00	0.00
Total	0	0	0	0	0	0	50	0	50	50	0	50	0.00	0.00		0.00	0.00
School Progra	ıms: K-12 In	-Class Progra	ams and Pres	sentations													
FEI	0	0	0	0	0	0	227	227	454	227	227	454	0.00	0.00		0.00	0.00
FEVI	0	0	0	0	0	0	53	53	106	53	53	106	0.00	0.00		0.00	0.00
Total	0	0	0	0	0	0	280	280	560	280	280	560	0.00	0.00		0.00	0.00
School Progra	ms: K-12 H	ome Efficiend	y Measures														
FEI	0	0	0	0	0	0	216	216	432	216	216	432	0.00	0.00		0.00	0.00
FEVI	0	0	0	0	0	0	24	24	48	24	24	48	0.00	0.00		0.00	0.00
Total	0	0	0	0	0	0	240	240	480	240	240	480	0.00	0.00		0.00	0.00
School Progra	ms: Post S	econdary															
FEI	0	0	0	0	0	0	162	162	324	162	162	324	0.00	0.00		0.00	0.00
FEVI	0	0	0	0	0	0	18	18	36	18	18	36	0.00	0.00		0.00	0.00
Total	0	0	0	0	0	0	180	180	360	180	180	360	0.00	0.00		0.00	0.00
ALL PROGRA	AMS																
FEI	0	0	0	0	0	0	4,281	4,284	8,564	4,281	4,284	8,564	0.00	0.00		0.00	0.00
FEVI	0	0	0	0	0	0	720	717	1,436	720	717	1,436	0.00	0.00		0.00	0.00
Total	0	0	0	0	0	0	5,000	5,000	10,000	5,000	5,000	10,000	0.00	0.00		0.00	0.00



7.3 **Program Profiles**

The following pages provide profiles for each of the programs shown above in Exhibit 7.

7.3.1 Residential Mass Education on Conservation and Energy Literacy

Program Description	This Program will consumers with th outreach events, it literacy, is required efficiency is impor	promote natura e information t t has become a d to educate re tant.	al gas cons hey need apparent th sidential c	servation and energy to make smart energy nat greater education sustomers on unders	y literacy by pro gy choices. Thro n, as well as en standing why er	oviding ough ergy ergy
	An energy literacy in energy efficienc efficiency labeling	campaign will y ratings (eg. / (eg. ENERGY	educate c AFUE and STAR [®] , E	ustomers on topics Energy Factor), rati inerChoice, and Ene	such as: the dif ng percentages erGuide).	ferences , and
	Mass media educa newspaper adverti advertising trackin of utilizing a mix of effectiveness in re and informing cust Using a mix of ma community events	ation will incluc ising, as well a g will also be u f mass media a aching all cust tomers on com ss media will s	le print an s, ethnic n used to effe as part of a omers, me uplex inforr upplemen	d online communica nedia channels, radi ectively evaluate the an education campa essage retention due nation through an ap t EEC outreach at h	tions such as b to, and televisio campaign. The ign include cost to stronger fre ppropriate medi ome shows and	ill inserts, n. Media benefits quency, um. I
Target Market	Residential custon	ners and gene	ral public			
New vs Retrofit	Retrofit					
Eligible Measures	N/A					
Incremental Measure Cost	N/A					
Incentive Amount	N/A					
Savings per Participant	N/A					
Measure Life & Source	N/A					
Free Rider Rate & Source	N/A					
Spillover Rate & Source	N/A					
Participants	Service Region			2012 - 2013		
P	All			N/A		
			2	012		
	Service Region	Incentives	Admin	Communication	Evaluation	Total
	All	-	\$25	\$560	\$70	\$655
Expenditures (\$,000s)			~	042		
	Sandaa Baaian	Incontivos	2	Communication	Evoluction	Total
		incentives	Aumin ¢or	Communication		¢err
	All	-	₽∠⊃	Udc¢	Φ (Π	CCOE



7.3.2 Residential Home Shows and Community Events Outreach

Program Description	This Program will encourage energy community, the pr National Exhibition Additionally, educa etc., that are inten distributed at thes	maintain a pre- r efficiency and ogram will take n prize home s ational tools su ded to reinforc e events and h	sence with conserva advantag howcase, ich as sho e the ener ave been	nin the community to tion practices. To ge ge of regional home and community outr wer timer prizes, we rgy conservation me included in the budg	provide information t its message of shows, the Pace each events. atherstripping n ssage at home, jet.	ation and ut to the ific naterials, will be
Target Market	Residential custor	ners and gene	ral public			
New vs Retrofit	Retrofit					
Eligible Measures	N/A					
Incremental Measure Cost	N/A					
Incentive Amount	N/A					
Savings per Participant	N/A					
Measure Life & Source	N/A					
Free Rider Rate & Source	N/A					
Spillover Rate & Source	N/A					
	Service Region	2	012		2013	
	FEI	34	,600		34,600	
Participants	FEVI	3,	500		3,500	
-	FEW	1	50		150	
	Total	40	,000		40,000	
			2	012		
	Service Region	Incentives	Admin	Communication	Evaluation	Total
	FEI	-	\$20	\$280	\$16	\$316
	FEVI	-	\$5	\$67	\$4	\$75
	FEW	-	-	\$4	-	\$4
	Iotal	-	\$25	\$350	\$20	\$395
Expenditures (\$,000s)			2	013		
	Service Region	Incentives	Admin	Communication	Evaluation	Total
	FEI	-	\$20	\$280	\$16	\$316
	FEVI	-	\$5	\$67	\$4	\$75
	FEW	-	-	\$4	-	\$4
	Total	-	\$25	\$350	\$20	\$395



7.3.3 Canadian Home Builders' Association Promotions and Support

Program Description	This Program will events associated offices. This will in for a "green home	encourage end I with the regio Include building I' showcase, a	ergy efficie nal Canad award eve nd trade sl	ncy practices throug ian Home Builders A ents, training sessior hows.	gh promotions a Association (CH ns, efficient app	and IBA) Iliances
Target Market	Builders / renovat	ors, Associatio	n member	s and general public	;	
New vs Retrofit	Both					
Eligible Measures	N/A					
Incremental Measure Cost	N/A					
Incentive Amount	N/A					
Savings per Participant	N/A					
Measure Life & Source	N/A					
Free Rider Rate & Source	N/A					
Spillover Rate & Source	N/A					
Participants	Service Region			2012 - 2013 N/A		
			2	012		
	Service Region	Incentives	Admin	Communication	Evaluation	Total
	All	-	\$150	\$20	-	\$170
Expenditures (\$,000s)			2	013		
	Service Region	Incentives	Admin	Communication	Evaluation	Total
	All	-	\$150	\$20	-	\$170



7.3.4 Residential Outreach Education Tools

Program Description	This Program will	demonstrate a	nd give av	vay energy savings o	devices to the p	ublic.
	Giveaways and to timers, furnace filt giveaways for outr survey kiosk.	ois required to ers, weathersti reach events a	r the show ripping, an nd sports	s and outreach ever d other prizes. The p partnerships events,	program will fea , kid's materials	wer iture , and a
Target Market	Residential custor	ners and child	en at ever	nts		
New vs Retrofit	Retrofit					
Eligible Measures	N/A					
Incremental Measure Cost	N/A					
Incentive Amount	N/A					
Savings per Participant	N/A					
Measure Life & Source	N/A					
Free Rider Rate & Source	N/A					
Spillover Rate & Source	N/A					
Participants	Service Region			2012 - 2013 N/A		
			2	012		
	Service Region	Incentives	Admin	Communication	Evaluation	Total
	All	-	\$180	\$20	-	\$200
Expenditures (\$,000s)			2	013		
	Service Region	Incentives	Admin	Communication	Evaluation	Total
	All	-	\$180	\$20	-	\$200



7.3.5 Energy Champion Program

Program Description	This Program will Canucks, BC Lion energy conservati competitions, face channels, and eve Additionally, educa etc., that are inten distributed at these	partner with loo s, Western Ho on to consume -to-face interace en school outre ational tools su ded to reinforc e events and h	cal sports ckey Leag rs through ctions, pre ach progra ch as sho e the ener ave been	organizations, such jue, and BC Hockey a variety of method and in-game activiti ams delivered by the wer timer prizes, we gy conservation me- included in the budg	as the Vancoux League, to pro s, including onl es, leveraging local team. atherstripping r ssage at home, jet.	ver mote ine on media naterials, will be
Target Market	Residential custor	ners, students	and schoo	ols, and general pub	lic	
New vs Retrofit	Retrofit					
Eligible Measures	N/A					
Incremental Measure Cost	N/A					
Incentive Amount	N/A					
Savings per Participant	N/A					
Measure Life & Source	N/A					
Free Rider Rate & Source	N/A					
Spillover Rate & Source	N/A					
	Service Region	20	012		2013	
	FEI	11	,350		11,350	
Participants	FEVI	3,	500		3,500	
	FEW	1	50		150	
	Total	15	,000		15,000	
			2	012		
	Service Region	Incentives	Admin	Communication	Evaluation	Total
	FEI	-	\$80	\$584	\$16	\$680
	FEVI	-	\$19	\$139	\$4	\$162
	FEW	-	\$1	\$7	-	\$9
	Total	-	\$100	\$730	\$20	\$850
Expenditures (\$,000s)*			2	013		
	Service Region	Incentives	Admin	Communication	Evaluation	Total
	FEI	-	\$80	\$584	\$16	\$680
	FEVI	-	\$19	\$139	\$4	\$162
	FEW	-	\$1	\$7	-	\$9
	Total	-	\$100	\$730	\$20	\$850



7.3.6 Home Efficiency Measures

Program Description	This Program will apply to achieve e program dissemin municipalities.	promote efficie nergy savings ation through p	ent, low-co . There are partnership	st measures that ho e potential leverage os with big box retail	meowners can opportunities fo ers, and with	easily r
Target Market	Residential custor	ners				
New vs Retrofit	Retrofit					
Eligible Measures	N/A					
Incremental Measure Cost	N/A					
Incentive Amount	N/A					
Savings per Participant	N/A					
Measure Life & Source	N/A					
Free Rider Rate & Source	N/A					
Spillover Rate & Source	N/A					
Particinants	Service Region			2012 - 2013		
	All			N/A		
			2	012		
	Service Region	Incentives	Admin	Communication	Evaluation	Total
	All	-	\$300	\$100	\$50	\$450
Expenditures (\$,000s)			2	013		
	Service Region	Incentives	Admin	Communication	Evaluation	Total
	All	-	\$300	\$120	\$50	\$470



7.3.7 Municipal Partnerships - Other

Program Description	This Program will builders, develope small businesses practices during th programs. Initiatives in this p	support munici ers, and munici through the Cli ne permit applic rogram area w	pal initiativ pal employ mate Sma cation proc	ves that target comn yees. Measures will rt program, promoti cess, and employee w EEC programs to ming carbon poutral	nercial custome include educati on of efficient b behaviour char	rs, on for uilding ige
	Action Charter, the	ereby supportir	ng governr	nent policy.		
Target Market	Commercial custo	mers, builders,	/developer	s and municipal em	ployees	
New vs Retrofit	Retrofit					
Eligible Measures	N/A					
Incremental Measure Cost	N/A					
Incentive Amount	N/A					
Savings per Participant	N/A					
Measure Life & Source	N/A					
Free Rider Rate & Source	N/A					
Spillover Rate & Source	N/A					
Participante	Service Region			2012 - 2013		
	All			N/A		
			2	012		
	Service Region	Incentives	Admin	Communication	Evaluation	Total
	All	-	\$100	\$30	\$20	\$150
Expenditures (\$,000s)			~	042		
	Service Pegion	Incentives	Z Admin	Communication	Evaluation	Total
		-	\$100	\$40	\$20	\$160
		-	ψιυυ	ΨΨΟ	ΨΖΟ	ψιου



7.3.8 Medium-Large Commercial Education Sessions

Program Description	This Program will operators around Canada specifical FortisBC Energy S	develop and d the province. V ly for natural g Solution Manag	eliver educ Vith a curr as conserv gers.	cation sessions to co iculum developed by vation, these sessior	ommercial buildi / Natural Resou ns will be delive	ng irces red by
Target Market	Commercial buildi	ng operators				
New vs Retrofit	Retrofit					
Eligible Measures	N/A					
Incremental Measure Cost	N/A					
Incentive Amount	N/A					
Savings per Participant	N/A					
Measure Life & Source	N/A					
Free Rider Rate & Source	N/A					
Spillover Rate & Source	N/A					
Participants	Service Region			2012 - 2013 N/A		
			2	012		
	Service Region	Incentives	Admin	Communication	Evaluation	Total
	All	-	\$60	-	\$10	\$70
Expenditures (\$,000s)			2	013		
	Service Region	Incentives	Admin	Communication	Evaluation	Total
	All	-	\$60	-	\$10	\$70



7.3.9 Small Commercial Education and Outreach

Program Description	This program will through print and o include bill inserts as the Business In businesses.	promote energ online commur , ethnic commu nprovement Ar	y efficient nications, a unication n reas of Brit	practices for small c and event support. T naterials, and will su ish Columbia (BIAB	ommercial cust hese initiatives pport organizat C) that target si	omers will ions such mall
Target Market	Small commercial	customers				
New vs Retrofit	Retrofit					
Eligible Measures	N/A					
Incremental Measure Cost	N/A					
Incentive Amount	N/A					
Savings per Participant	N/A					
Measure Life & Source	N/A					
Free Rider Rate & Source	N/A					
Spillover Rate & Source	N/A					
Participants	Service Region All			2012 - 2013 N/A		
			2	012		
	Service Region	Incentives	Admin	Communication	Evaluation	Total
	All	-	\$50	\$20	\$30	\$100
Expenditures (\$,000s)			2	013		
	Service Region	Incentives	Admin	Communication	Evaluation	Total
	All	-	\$50	\$20	\$30	\$100



7.3.10 Commercial Trade Shows and Association Events

Program Description	This Program will meetings and ever conservation praction	take advantag nts, and buildir tices to comme	e of indus ng award e ercial cust	try trade shows, indu events to promote er omers.	istry association nergy efficiency	า and		
Target Market	Commercial custo	mers						
New vs Retrofit	Both							
Eligible Measures	N/A							
Incremental Measure Cost	N/A							
Incentive Amount	N/A							
Savings per Participant	N/A							
Measure Life & Source	N/A							
Free Rider Rate & Source	N/A							
Spillover Rate & Source	N/A							
	Service Region	2	012		2013			
	FEI	1,	200		1,200			
Participants	FEVI	2	295		295			
	FEW		5		5			
	Total	1,	500		1,500			
			2	2012				
	Service Region	Incentives	Admin	Communication	Evaluation	Total		
	FEI	-	\$88	\$40	-	\$128		
	FEVI	-	\$21	\$10	-	\$30		
	FEW	-	\$1	\$1	-	\$2		
	Total	-	\$110	\$50	-	\$160		
Expenditures (\$,000s)*				040				
	Sonvice Region	Incontivos	2 Admin	2013 Communication	Evoluction	Total		
		incentives			Evaluation	¢100		
		-	00¢	<u>ወ</u> 40 ድኅር	-	¢20		
		-	ক্∠া ¢1	ው 1 ወገር	-	ეპე დე		
		-	۹۱ مربع	۹۲ ۵۳	-	ቅረ ¢160		
*Totala may not add avaathu		-	\$11U	\$5U	-	\$160		



7.3.11 Commercial Multi Family

Program Description	This Program will include education programs and distribution of efficient, low-cost measures that multi-family customers can apply to achieve energy savings.					
Target Market	Commercial customers, multi-family buildings					
New vs Retrofit	Retrofit					
Eligible Measures	N/A					
Incremental Measure Cost	N/A					
Incentive Amount	N/A					
Savings per Participant	N/A					
Measure Life & Source	N/A					
Free Rider Rate & Source	N/A					
Spillover Rate & Source	N/A					
Participants	Service Region All	2012 - 2013 N/A				

	2012							
	Service Region	Incentives	Admin	Communication	Evaluation	Total		
	All	-	\$250	\$50	\$30	\$330		
Expenditures (\$,000s)	2013							
	Service Region	Incentives	Admin	Communication	Evaluation	Total		
	All	-	\$250	\$50	\$30	\$330		


7.3.12 Behaviour Programs - Online Community Site

Program Description	This Program will which is currently to extend this beh institutional and m	support the ex being impleme aviour change unicipal custor	isting Hea ented in 20 program te mers.	Ith Authority Staff Er 11. In addition, in 20 o other health autho	ngagement Pilo 12 and 2013, tl rities and/or lar	: Program ne goal is ge
	With an online too this behaviour pro organizations that Action Charter, the	I, the Compan gram. This pro have committe ereby supportin	ies hope to gram wou ed to beco ng governr	o capture the attribut Id also act as an EE ming carbon neutral ment policy.	tion of energy sa C tool for those under the BC (avings to Climate
Target Market	Commercial / mur	nicipal / instituti	onal orgar	nizations and their e	mployees	
New vs Retrofit	Retrofit					
Eligible Measures	N/A					
Incremental Measure Cost	N/A					
Incentive Amount	N/A					
Savings per Participant	N/A					
Measure Life & Source	N/A					
Free Rider Rate & Source	N/A					
Spillover Rate & Source	N/A					
Bartiainanta	Service Region			2012 - 2013		
r ai liuipaniis	All			N/A		
			2	012		
	Service Region	Incentives	Admin	Communication	Evaluation	Total
	All	-	\$150	\$80	\$20	\$250
Expenditures (\$,000s)			2	013		
	Service Region	Incentives	Admin	Communication	Evaluation	Total
	All	-	\$150	\$100	\$20	\$270
			Ψ·~~	¥ · • •	¥= ¥	¥=· ~



7.3.13 Behaviour Programs - Energy Specialists

	All	-	\$50	\$130	\$20	\$200								
	Service Region	Incentives	Admin	Communication	Evaluation	Total								
Expenditures (\$,000s)			^	013										
	All	-	\$50	\$130	\$20	\$200								
	Service Region	Incentives	Admin	Communication	Evaluation	Total								
			2	012										
-	All			IN/A										
Participants	Service Region			2012 - 2013										
-														
Spillover Rate & Source	N/A													
Free Rider Rate & Source	N/A													
weasure Lite & Source	N/A													
Magguro Life & Source	N//A													
Savings per Participant	N/A													
Incentive Amount	N/A	/Α												
Cost														
Incremental Measure	N/A	/A												
Eligible Measures	N/A	/A												
New vs Retrofit	Retrofit	etrofit												
Target Market	Commercial / mun	ommercial / municipal / institutional organizations and their employees												
	staff and further re campaigns take th competitions, and	taff and further reduce energy consumption in facilities. Many of their education ampaigns take the form of education fairs, education sessions, "green" teams, competitions, and communications.												
Program Description	This Program will support behaviour education programs developed by Energy Specialists for their respective organizations, thereby supporting their efforts to educate													



7.3.14 Conservation Assistance - Education and Outreach

Program Description	This Program will Program aimed at water usage, the B online communica and family service	This Program will support initiatives such as the BC Housing Tenant Engagement Pilot Program aimed at educating tenants on behaviour change to reduce their heat and hot water usage, the BC Non Profit Housing Association annual conference, print and online communications, as well as outreach to service providers such as food banks and family services organizations.												
Target Market	Low income, resid	lential custome	ers											
New vs Retrofit	Retrofit													
Eligible Measures	N/A													
Incremental Measure Cost	N/A	Α												
Incentive Amount	N/A	Α												
Savings per Participant	N/A	V/A												
Measure Life & Source	N/A													
Free Rider Rate & Source	N/A													
Spillover Rate & Source	N/A													
Participants	Service Region			2012 - 2013 N/A										
			2	012										
	Service Region	Incentives	Admin	Communication	Evaluation	Total								
	All - \$200 \$50 \$20 \$270													
Expenditures (\$,000s)			2	013										
	Service Region Incentives Admin Communication Evaluation Total													
	All	-	\$200	\$50	\$20	\$270								



7.3.15 School Programs: Class and Online Curriculum

Program Description	This Program will d printed collateral, n students curriculum	levelop Phase nobile applicat n. Phase 1 is	2 of the E tions, and currently b	EC in-class module teacher resources fo peing developed in 2	es, online modul or the EEC scho 2011.	es, ools and			
	This program area R.S.B.C 1996, c.47 it includes an educa service area.	also supports '3, s.125.1 (4) ation program	section 44 (e), where for stude	4.1 (8) (c) of the Util e a public utility's pla nts enrolled in scho	ities Commissio an portfolio is ad ols in the Comp	n Act, lequate if anies'			
Target Market	Students / teachers	s / school adm	inistration						
New vs Retrofit	N/A								
Eligible Measures	N/A								
Incremental Measure Cost	N/A								
Incentive Amount	N/A								
Savings per Participant	N/A								
Measure Life & Source	N/A								
Free Rider Rate & Source	N/A								
Spillover Rate & Source	N/A								
_	Service Region			2012 - 2013					
Participants	All			N/A					
			2	012					
	Service Region	Incentives	Admin	Communication	Evaluation	Iotal			
	All	-	-	\$50	-	\$50			
Expenditures (\$,000s)			2	013					
	Service Region	Incentives	Admin	Communication	Evaluation	Total			
All									



7.3.16 School Programs: K-12 In-Class Programs and Presentations

Program Description	This Program will as Destination Co Recycling, and En supporting many c	This Program will provide support for a variety of in-school and student programs such as Destination Conservation, BC Green Games, Environmental Mind Grind, Beyond Recycling, and Energy Champion Assembly presentations. The Companies have been supporting many of these initiatives since 2009.												
	This program area R.S.B.C 1996, c.4 it includes an educ service area.	also supports 73, s.125.1 (4) cation program	section 4 (e), where for stude	4.1 (8) (c) of the Utili e a public utility's pla nts enrolled in schoo	ities Commissio an portfolio is ac ols in the Comp	n Act, lequate if anies'								
Target Market	Students / Teache	ers												
New vs Retrofit	Both													
Eligible Measures	N/A													
Incremental Measure Cost	N/A	A												
Incentive Amount	N/A													
Savings per Participant	N/A	A												
Measure Life & Source	N/A	J/A												
Free Rider Rate & Source	N/A													
Spillover Rate & Source	N/A													
	Service Region	2	012		2013									
	FEI	20	,000		20,000									
Participants	FEVI	4,	750		4,750									
	FEW	2	250		250									
	Total	25	,000		25,000									
			2	012										
	Service Region	Incentives	Admin	Communication	Evaluation	Total								
	FEI	-	\$184	-	\$40	\$224								
	FEVI	-	\$44	-	\$10	\$54								
	FEW	-	\$2	-	\$1	\$3								
	Total	-	\$230	-	\$50	\$280								
Expenditures (\$,000s)*														
	Service Region Incentives Admin Communication Evaluation Total													
	FEI - \$184 - \$40 \$224													
	FEVI	-	\$44	-	\$10	\$54								
	FEW	-	\$2	-	\$1	\$3								
	Total	-	\$230	-	\$50	\$280								

*Totals may not add exactly; any differences are due to rounding.

7.3.17 School Programs: K-12 Home Efficiency Measures

Program Description	This Program will bring home, linking conservation. This program area R.S.B.C 1996, c.4 it includes an educ service area.	educate studer g their classroo a also supports 73, s.125.1 (4) cation program	section 44 (e), where for stude	stribute efficient low- als with home behav 4.1 (8) (c) of the Utili e a public utility's pla nts enrolled in schoo	cost fixtures for iours on natural ities Commissio an portfolio is ac ols in the Comp	them to gas n Act, lequate if anies'								
Target Market	Students and resid	dential custom	ers											
New vs Retrofit	N/A													
Eligible Measures	N/A	۱ ۱												
Incremental Measure Cost	N/A	Ά												
Incentive Amount	N/A	/A												
Savings per Participant	N/A													
Measure Life & Source	N/A													
Free Rider Rate & Source	N/A													
Spillover Rate & Source	N/A													
Participante	Service Region			2012 - 2013										
	All			N/A										
			2	012										
	Service Region	Incentives	Admin	Communication	Evaluation	Total								
	All	-	\$200	\$20	\$20	\$240								
Expenditures (\$,000s)			2	013										
	Service Region	Incentives	Admin	Communication	Evaluation	Total								
	All	-	\$200	\$20	\$20	\$240								



7.3.18 School Programs: Post Secondary

Program Description	This Program will initiatives, such as programs will enco	This Program will develop and administer post secondary programs/competitions and initiatives, such as goBEYOND, directed at students living on campuses. These programs will encourage post secondary students to make energy saving choices.												
	This program area R.S.B.C 1996, c.4 it includes an educ service area.	'his program area also supports section 44.1 (8) (c) of the Utilities Commission Act, δ.S.B.C 1996, c.473, s.125.1 (4) (e), where a public utility's plan portfolio is adequate if includes an education program for students enrolled in schools in the Companies' ervice area.												
Target Market	Students													
New vs Retrofit	N/A													
Eligible Measures	N/A													
Incremental Measure Cost	N/A													
Incentive Amount	N/A													
Savings per Participant	N/A													
Measure Life & Source	N/A													
Free Rider Rate & Source	N/A													
Spillover Rate & Source	N/A													
Participants	Service Region All			2012 - 2013 N/A										
			2	012										
		Incentives	Admin \$150	Communication \$10	Evaluation \$20	\$180								
Expenditures (\$,000s)	7 111	_	2	013	ΨΖΟ	φιου								
	Service Region	Incentives	Admin	Communication	Evaluation	Total								
	All	-	\$150	\$10	\$20	\$180								



8 Industrial Sector Programs

8.1 Introduction

The Industrial Sector Program area will continue to offer opportunities for energy efficiency and conservation activities throughout the 2012/2013 period. The Companies believe that the investments in this portfolio will lay the foundation for significant capital investments by large industrial customers that will produce significant energy and cost savings.

The 2012/2013 suite of Industrial Sector Program offerings is listed below:

- Industrial Technology Retrofit Program
- Industrial Energy Audit and Analysis Program

8.2 **Overview of Results**

Exhibit 8 provides a summary of the estimated savings, program expenditures and costeffectiveness results for each of the programs noted above and for the Industrial Sector Portfolio, as a whole.



Exhibit 8: Industrial Sector Program Results

Annual Ga	ual Gas Savings NPV Gas Utility Expenditures (\$						s (\$1000s)	000s) Benefit/Cost Ratios								
(GJ	/yr.)	Savings	I	ncentives	5	No	n-Incenti	ves	A	I Spendir	ng	TDO	114114	Destisinent	DIM	Contestal
2012	2013	(GJ)	2012	2013	Total	2012	2013	Total	2012	2013	Total	IRC	Utility	Participant	KIW	Societai
nology Retro	ofit Program															
181,468	362,936	2,689,407	1,487	1,487	2,974	223	223	446	1,710	1,710	3,420	3.90	7.47	5.51	0.79	9.48
rgy Audit and	d Analysis P	rogram														
0	56,970	393,198	353	353	705	35	35	70	388	388	775	2.78	4.86	4.02	0.75	6.69
MS																
172,758	402,486	2,879,123	1,840	1,840	3,679	258	258	516	2,098	2,098	4,195	3.73	6.49	5.34	0.78	9.00
	Annual Ga (GJ) 2012 anology Retro 181,468 rgy Audit and 0 MMS 172,758	Annual Gas Savings (GJ/yr.) 2012 2013 anology Retrofit Program 181,468 362,936 rgy Audit and Analysis P 0 56,970 0 56,970 MS 172,758 402,486	Annual Gas Savings (GJ/yr.) NPV Gas Savings (GJ) 2012 2013 2010 CGJ anology Retrofit Program 2,689,407 181,468 362,936 2,689,407 rgy Audit and Analysis Program 393,198 0 56,970 393,198 MMS 172,758 402,486 2,879,123	Annual Gas Savings (GJ/yr.) NPV Gas Savings (GJ) I 2012 2013 (GJ) 2012 anology Retrofit Program 181,468 362,936 2,689,407 1,487 rgy Audit and Analysis Program 0 56,970 393,198 353 MS 172,758 402,486 2,879,123 1,840	Annual Gas Savings (GJ/yr.) NPV Gas Savings (GJ) Incentives 2012 2013 (GJ) 2012 2013 anology Retrofit Program 181,468 362,936 2,689,407 1,487 1,487 181,468 362,936 2,689,407 1,487 1,487 rgy Audit and Analysis Program 0 56,970 393,198 353 353 MS 172,758 402,486 2,879,123 1,840 1,840	Annual Gas Savings (GJ/yr.) NPV Gas Savings (GJ) Incentives 2012 2013 (GJ) 2012 2013 Total anology Retrofit Program 1,487 1,487 2,974 181,468 362,936 2,689,407 1,487 1,487 2,974 rgy Audit and Analysis Program 0 56,970 393,198 353 353 705 MS 172,758 402,486 2,879,123 1,840 1,840 3,679	Annual Gas Savings (GJ/yr.) NPV Gas Savings (GJ) Incentives No 2012 2013 (GJ) 2012 2013 Total 2012 anology Retrofit Program 1,487 1,487 2,974 223 181,468 362,936 2,689,407 1,487 1,487 2,974 223 gy Audit and Analysis Program 0 56,970 393,198 353 353 705 35 MS 172,758 402,486 2,879,123 1,840 1,840 3,679 258	Annual Gas Savings (GJ/yr.) NPV Gas Savings (GJ) Incentives Non-Incentives 2012 2013 (GJ) 2012 2013 Total 2012 2013 anology Retrofit Program 181,468 362,936 2,689,407 1,487 1,487 2,974 223 223 rgy Audit and Analysis Program 0 56,970 393,198 353 353 705 35 35 MS 172,758 402,486 2,879,123 1,840 1,840 3,679 258 258	Annual Gas Savings (GJ/yr.) NPV Gas Savings (GJ) Incentives Non-Incentives 2012 2013 (GJ) 2012 2013 Total 2012 2013 Total anology Retrofit Program 181,468 362,936 2,689,407 1,487 1,487 2,974 223 223 446 rgy Audit and Analysis Program 0 56,970 393,198 353 353 705 35 35 70 MS 172,758 402,486 2,879,123 1,840 1,840 3,679 258 258 516	Annual Gas Savings (GJ/yr.) NPV Gas Savings (GJ) Utility Expenditures (\$1000s) 2012 2013 Incentives Non-Incentives All 2012 2013 (GJ) 2012 2013 Total 2012 2013 101 101 101 101 101 101 101 101 101 101 101	Annual Gas Savings (GJ/yr.) NPV Gas Savings (GJ) Incentives Non-Incentives All Spendir 2012 2013 (GJ) 2012 2013 Total 2012 20	Annual Gas Savings (GJ/yr.) NPV Gas Savings (GJ) Incentives Non-Incentives All Spending 2012 2013 (GJ) 2012 2013 Total 2012 2	Utility Expenditures (\$1000s) Annual Gas Savings (GJ)/yr.) NPV Gas Savings (GJ) Incentives Non-Incentives All Spending TRC 2012 2013 (GJ) 2012 2013 Total 2012 2013 3.90 Total data Analysis Program Total data Analysis Program	Annual Gas Savings (GJ/yr.) NPV Gas Savings (GJ) Incentives Non-Incentives All Spending TRC Utility 2012 2013 (GJ) 2012 2013 Total 2012 2013	Annual Gas Savings (GJ/yr.) NPV Gas Savings (GJ) Utility Expenditures (\$1000s) All Spending 2012 TRC Benefit/Cost Rate 2012 2013 GGJ 7012 2013 Total 2012 2013 Total 1,710 1,710 <	Annual Gas Savings (GJ/yr.) NPV Gas Savings (GJ) Incentives Non-Incentives All Spending TRC Utility Participant RIM 2012 2013 GJ) GJ Total 2012 2013 Total 1,710

Note: Whistler (FEW) is included in the FEI service territory



8.3 **Program Profiles**

The following pages provide profiles for each of the programs shown above in Exhibit 8.

8.3.1 Industrial Technology Retrofit Program

Program Description	This Program provides financial technologies will be added over heat exchangers, boiler manage	incentives for the retrofit of s time, but in the 2012 and 201 ment systems, lime kiln chair	pecific eligible technologies. Eligible 3 period the program will focus on ns, and boiler upgrades.
Target Market	Medium and Large Industrial Fa	cilities	
New vs. Retrofit	Retrofit		
Eligible Measures	 Retrofit shell and tube Replacement of existin units Upgrade existing lime I Boiler replacement and 	neat exchangers to plate and g burner management systen kiln chain systems boiler component upgrades	frame heat exchangers ns with electronic modulation control
Incremental Measure Cost	 Varies by measure as follows: Shell and tube heat exe Burner management sy Lime kiln chain system Boiler replacement and 	changers – \$2M /stem upgrade –\$14,000 upgrade – \$1M l boiler component upgrades	- \$400,000
Incentive Amount	Varies by measure as follows: • Shell and tube heat exe • Burner management sy • Lime kiln chain system • Boiler replacement and	changers – up to \$869,591 /stem upgrade – up to \$8,696 upgrade – up to \$434,795 l boiler component upgrades	5 – up to \$173,918
Savings per Participant	Variable		
Measure Life & Source	 Varies by measure as follows: Shell and tube heat exa as well as E-source res Burner management sy reports as well as E-so Lime kiln chain system Boiler replacement and Potential Study) 	changers – 10 years (Source search) /stem upgrade – 10 years (So urce research) upgrade – 10 years (Source: boiler component upgrades	: Customer and manufacturer reports ource: Customer and manufacturer : Conservation Potential Study) – 25 years (Source: Conservation
Free Rider Rate & Source	Varies by measure as follows: shell and tube heat exc burner management sy lime kiln chain system Boiler replacement and 	hangers – 10% (Source: bes stem upgrade – 10% (Source upgrade – 10% (Source: best boiler component upgrades	t estimate) e: best estimate) t estimate) – 25% (Source: best estimate)
Spillover Rate & Source	All conservatively estimated to b	e zero	
	Service Region	2012	2013
Participants	FEI FEVI FEW	4	4
	Total	4	- 4



			2012			
	Service Region	Incentives	Admin	Communication	Evaluation	Total
	FEI	\$1,487	\$153	\$20	\$50	\$1,710
xpenditures \$,000s)	FEVI	-	-	-	-	-
	FEW	-	-	-	-	-
	Total	\$1,487	\$153	\$20	\$50	\$1,710
Expenditures (\$,000s)			2013			
	Service Region	Incentives	Admin	Communication	Evaluation	Total
	FEI	\$1,487	\$153	\$20	\$50	\$1,710
	FEVI	-	-	-	-	-
	FEW	-	-	-	-	-
	Total	\$1,487	\$153	\$20	\$50	\$1,710



8.3.2 Industrial Energy Audit and Analysis Program

Program Description	This Program will industrial manufac	This Program will assess the scope of existing natural gas efficiency opportunities in industrial manufacturing processes.												
	When assessing c successful, would	opportunities, e have widesprea	mphasis w ad opportu	rill be given to seled nity for replication th	cting pilot proje proughout the se	cts that, if ector.								
	The program will f maximum \$18,250	und up to 50% . The program	of the cos will also fu	st of the audits for e nd a free energy an	ligible custome alysis up to \$6,	rs up to a 800.								
Target Market	Medium and Large	e Industrial Fac	ilities											
New vs Retrofit	Retrofit	Retrofit												
Eligible Measures	IndustrialIndustrialIndustrial	 Industrial energy audit Industrial energy analysis Industrial energy audit implementation 												
Incremental Measure Cost	Not applicable	lot applicable												
Incentive Amount	 50% of th \$18,250. Free high sector, up 	 50% of the cost of energy audits for eligible customers up to a maximum \$18,250. Free high level energy analysis for medium sized customers in manufacturing sector, up to \$6,800 												
Savings per Participant	Variable													
Measure Life & Source	Variable													
Free Rider Rate & Source	10% for audits, 30	% for energy a	nalysis (be	st estimate)										
Spillover Rate & Source	Conservatively est	imated to be ze	ero											
Participants	Service Region	2	012		2013									
-	FEI		35		36									
	FEVI		-		-									
	FW		-		-									
	Total		35		36									
			20)12										
	Service Region	Incentives	Admin	Communication	Evaluation	Total								
	FEI	\$353	\$20	\$5	\$10	\$388								
	FEVI	-	-	-	-	-								
	FEW	-	-	-	-	-								
	Total	\$353	\$20	\$5	\$10	\$388								
Expenditures (\$,000s)			20)13										
	Service Region	Incentives	Admin	Communication	Evaluation	Total								
	FEI	\$353	\$20	\$5	\$10	\$388								
	FEVI	-	-	-	-	-								
	FEW	-	-	-	-	-								
	Total	\$353	\$20	\$5	\$10	\$388								



9 Innovative Technologies Programs

9.1 Introduction

The Innovative Technologies⁵ Program evaluates market-ready technologies and conducts pilot studies to validate manufacturer's claims related to equipment and system performance. The program also assesses actual savings and customer acceptance of these newer technologies. Technologies that successfully emerge from the Innovative Technologies Program will be considered for inclusion within the applicable sector programs within the larger EEC portfolio.

FortisBC believes that the funding envelope for Innovative Technologies as referenced in Appendix K-1, (Section 3.2.1 Innovative Technologies - Non-NGV Initiatives, Exhibit B-1) should be \$1.5 million for 2012 and \$1.5 million for 2013. The \$1.5 million annual budget will be allocated as follows:

- \$1 million for pilots and demonstration projects;
- \$300,000 for EM&V to confirm savings claims, and
- \$200,000 for prefeasibility studies.

As prefeasibility studies are not yet complete, it is premature to define the specific pilots that will be supported in 2012 and 2013. However, FortisBC has identified the following pilots and demonstration projects to be primary areas of focus, subject to results from the prefeasibility studies:

Thermal Curtains

Thermal curtains decrease heat losses (conduction, convection, and radiation losses) in greenhouses. Typically, they are installed horizontally inside the greenhouse, near the greenhouse gutter line and are deployed during night time hours, and open during daytime hours. When applied in this manner, thermal curtains reduce greenhouse heat loss (mostly at night) and therefore reduce fuel consumption.

As part of the BC Farms Phase 1 study conducted by Prism Engineering, the use of thermal curtains for greenhouse applications was recognised as a potential energy management opportunity. FortisBC requires further data to better understand the applicability and overall energy saving potential within British Columbia. A prefeasibility study is expected to be completed for November 2011.

• Solar Air Heating System

Solar air heating systems preheat outdoor air that is required for ventilation. This reduces the heating demand for conventional natural gas-fired heating in the existing rooftop air-handling unit.

FortisBC requires further data to understand the energy saving potential within British Columbia and the appropriate applications. A prefeasibility study is expected to be completed for Q1 of 2012.

⁵ Innovative technologies are market ready technologies that have little or no market penetration in BC. They can be defined as emerging and/or enabling technologies.



Occupancy Sensors/Controls

Room controlled HVAC systems maintain a set temperature when the room is occupied. When the room is vacant, the occupancy sensor device sends a signal back to a controller that allows the room temperature to drift downward to a pre-programmed setback temperature. Energy savings are realized by the resulted reduction in space heating load. The device automatically shuts off air conditioning or space heating when a monitored door or window has been open for a period of time.

FortisBC requires further data to understand the energy saving potential, market barriers and the appropriate applications for this technology within British Columbia. A prefeasibility study is expected to be completed for Q1 2012.

Condensing Make-up Air Units (MUA)

Condensing makeup air units have recently entered the BC marketplace. Compared to the widely adopted standard efficiency MUA, condensing units claim natural gas savings of up to 20% per year.

FortisBC requires further data to understand the energy saving potential, market barriers and the appropriate applications for this technology within British Columbia. A prefeasibility study is expected to be completed for November 2011.

Advanced Control of Lumber Drying Using an Energy Management System

Conventional controls for direct fired (natural gas) lumber dry kilns at dimension lumber mills provide no direct way of scheduling fan speed based on actual measures of drying rate. There are claims that having a measure of the drying rate will allow adaptive drying schedules that dry the lumber precisely with less margin of error. The resulting drying schedule will dry as fast as feasible with acceptable charge degrade, minimizing drying time, and thus electrical power and natural gas usage.

FortisBC has partnered with BC Hydro to evaluate the energy savings claims and determine the feasibility of launching a prescriptive program.

Catalytic Radiant Burner Technology

There are claims that catalytic infrared ovens are far more energy efficient than convection ovens for paint drying because the wave length of the magnetic radiation is tuned to that of a paint molecule. When properly designed, the oven will focus the waves to produce even heating and a perfectly thermoset paint job. The elimination of the high air flow from convection heating ovens also can improve the quality of the painting.

FortisBC requires further data to understand the energy saving potential, market barriers and the appropriate applications for this technology within British Columbia. A prefeasibility study is expected to be completed for Q1 2012.

Ceramic Manufacturing Using Microwave Assist Technology

British Columbia accounts for 26% of Canada's total ceramic manufacturing. There are claims that microwave assist technology, in conjunction with a kiln, can reduce energy consumption and the time required to process ceramics.



The conventional firing technique heats the outside surface of the items either directly by radiation or indirectly by relying on conduction to transfer heat to the interior of the body. Ceramic materials in their unfired state (especially at lower temperatures) are usually very poor thermal conductors. Thus, heat transfer to the inside of single or to the center of densely stacked items such as bricks is energetically inefficient. Dielectric heating by means of microwave energy uses the material properties of the body itself in a rapidly changing electromagnetic field to produce the heat. Thus, if the material is suitable, heat is generated evenly throughout the body including the center.

FortisBC requires further data to understand the energy saving potential, market barriers and the appropriate applications for this technology within British Columbia. A prefeasibility study is expected to be completed for Q1 2012.

9.2 CAVEAT

FortisBC would like to emphasize that the inputs used to calculate the cost effectiveness for Innovative Technologies are estimates as there is a lack of measure-specific performance data since these technologies have little or no market penetration in BC.

FortisBC has derived those estimates based on manufacturer data, industry information, informal conversations and professional experience. FortisBC intends to update those assumptions and determine the feasibility of launching a pilot for each of these technologies in 2012 or 2013 upon receiving further information such as the prefeasibility study.

9.3 Overview of Results

Exhibit 9 provides a summary of the estimated savings, program expenditures and costeffectiveness results for each of the programs noted above and for the Innovative Technologies Portfolio, as a whole.



Exhibit 9: Innovative Technologies Program Results

Program	Annual G	as Savings	NPV Gas				Utility Ex	penditure	s (\$1000s))			Benefit/Cost Ratios				05
and Service	(GJ	l/yr.)	Savings		Incentive	s	No	on-Incenti	ves	Α	II Spendi	ng	TRO	Listia .	Deuticinent	DIM	Contestal
Territory	2012	2013	(GJ)	2012	2013	Total	2012	2013	Total	2012	2013	Total	TRC	Utility	Participant	RIM	Societai
Thermal Curta	ains																
FEI	6,990	20,970	191,080	131	261	392	51	51	101	181	312	493	1.98	4.28	3.09	0.74	4.96
FEVI	0	6,990	64,190	0	131	131	17	17	34	17	148	164	2.05	4.43	4.82	0.49	4.99
Total	6,990	27,960	255,270	131	392	523	68	68	135	198	460	658	1.99	4.30	3.26	0.71	4.96
Solar Air Heat	ting Systems	S															
FEI	2,564	6,410	78,404	105	158	263	93	93	185	198	250	448	1.31	2.09	2.78	0.63	3.66
Occupancy S	ensors/Cont	rols															
FEI	10,044	10,044	74,438	810	0	810	77	77	153	887	77	963	1.17	0.77	1.47	0.85	2.16
FEVI	1,116	1,116	8,427	90	0	90	9	9	17	99	9	107	1.20	0.79	1.82	0.70	2.16
Total	11,160	11,160	82,866	900	0	900	85	85	170	985	85	1,070	1.18	0.77	1.51	0.83	2.16
Condensing M	/lake Up Air ((MUA) Units															
FEI	0	1,444	12,842	0	6	6	24	24	48	24	30	54	2.46	2.64	18.44	0.67	6.10
FEVI	0	361	3,315	0	2	2	6	6	12	6	8	14	2.54	2.73	29.76	0.46	6.09
Total	0	1,805	16,157	0	8	8	30	30	60	30	38	68	2.47	2.65	19.57	0.65	6.10
Advanced Cor	ntrol of Lumb	er Drying Us	ing an Energ	y Manage	ment Syst	em											
FEI	0	19,050	77,320	0	75	75	23	23	45	23	98	120	6.98	6.67	8.73	1.04	13.65
FEVI	0	6,350	26,127	0	25	25	8	8	15	8	33	40	7.07	6.73	12.72	0.73	13.64
Total	0	25,400	103,448	0	100	100	30	30	60	30	130	160	6.99	6.67	9.13	1.01	13.65
Catalytic Rad	iant Burner T	Fechnology															
FEI	0	4,917	33,936	0	195	195	39	39	79	39	234	274	0.79	1.36	1.64	0.54	1.89
FEVI	0	1,639	11,581	0	65	65	13	13	26	13	78	91	0.80	1.38	2.36	0.39	1.89
Total	0	6,556	45,518	0	260	260	53	53	105	53	313	365	0.79	1.36	1.71	0.52	1.89
Ceramic Man	ufacturing Us	sing Microwa	ve Assist Teo	chnology													
FEI	0	12,000	141,979	0	175	175	53	53	105	53	228	280	3.61	6.22	6.74	0.77	10.25
ALL PROGR	AMS																
FEI	19,598	74,835	610,000	1,046	870	1,916	358	358	716	1,404	1,228	2,632	1.81	2.57	2.79	0.78	4.25
FEVI	1,116	16,456	113,641	90	222	312	52	52	104	142	274	416	2.00	2.96	4.19	0.55	4.38
Total	20,714	91,291	723,641	1,136	1,092	2,228	410	410	820	1,546	1,502	3,048	1.84	2.62	2.99	0.73	4.27

Note: Whistler (FEW) is included in the FEI service territory



9.4 **Program Profiles**

The following pages provide profiles for each of the programs shown above in Exhibit 9.

9.4.1 Thermal Curtain Pilot

Program Description	This Pilot Program will determine the savings associated with thermal curtains installed in Industrial Greenhouse applications.					
Target Market	Small/Medium/La	Small/Medium/Large Greenhouses				
New vs Retrofit	Retrofit	Retrofit				
Eligible Measures	Thermal curtains	Thermal curtains				
Incremental Measure Cost	\$320,166					
Incentive Amount	\$130,680					
Savings per Participant	6,990 GJ					
Measure Life & Source	15 years – Estimate					
Free Rider Rate & Source	0%					
Spillover Rate & Source	Not available					
	Service Region		2012		2013	
Particinants	FEI		1		2	
i anticipanto	FEVI		-		1	
	Total		1		3	
			2012	2 - 2013		
Expenditures (\$,000s)	Service Region	Incentives	Admin	Communication	Evaluation	Total
	FEI / FEVI	\$523	\$5	\$5	\$125	\$658
	Total	\$523	\$5	\$5	\$125	\$658



9.4.2 Solar Air Heating System Pilot

Total

Program Description	This Pilot Program will determine the savings associated with Solar Air Heating systems installed in agricultural applications.					
Target Market	Agricultural, poultr	y coups, crop	drying			
New vs Retrofit	Both					
Eligible Measures	Solar Air					
Incremental Measure Cost	\$500,000					
Incentive Amount	\$250,000					
Savings per Participant	1,500 GJ					
Measure Life & Source	30 years – Estima	te				
Free Rider Rate & Source	0%					
Spillover Rate & Source	Not available					
	Service Region			2012 - 2013		
Participants	FEI / FEVI			3		
	Total			3		
			2012	2 - 2013		
Expenditures (\$,000s)	Service Region	Incentives	Admin	Communication	Evaluation	Total
	FEI / FEVI	\$750	\$10	\$10	\$150	\$920

\$750

\$10

\$10

\$150

\$920

9.4.3 Occupancy Sensors Lodging Pilot

Program Description	This Pilot Program will determine the savings associated with installing occupancy sensors within the Hotel/Lodging industry.					
Target Market	Commercial Secto	or MURBS/ Hot	tels			
New vs Retrofit	Retrofit					
Eligible Measures	Occupancy senso	rs				
Incremental Measure Cost	\$1,000	\$1,000				
Incentive Amount	\$500					
Savings per Participant	6.2 GJ					
Measure Life & Source	10 years - Estimate					
Free Rider Rate & Source	0%					
Spillover Rate & Source	Not available					
	Service Region		2012		2013	
Particinants	FEI		1,620		-	
i unicipanto	FEVI		180		-	
	Total		1,800		-	
			2012	- 2013		
Expenditures (\$,000s)	Service Region	Incentives	Admin	Communication	Evaluation	Total
	FEI / FEVI	\$500	\$20	\$25	\$125	\$670
	Total	\$500	\$20	\$25	\$125	\$670



9.4.4 Condensing Make up Air Units Pilot

Program Description	This Pilot Program will determine the savings associated with installing condensing make up air units in Multi-Unit Residential Buildings (MURB) applications.					
Target Market	Commercial Secto	Commercial Sector MURBS				
New vs Retrofit	Both	Both				
Eligible Measures	Condensing make up air units Pilot					
Incremental Measure Cost	\$2,500					
Incentive Amount	\$1,500					
Savings per Participant	361 GJ					
Measure Life & Source	15 years – Estima	te				
Free Rider Rate & Source	0%					
Spillover Rate & Source	Not available					
	Service Region			2012 - 2013		
Participants	FEI / FEVI	-		5		
	Total			5		
	2012 - 2013					
Expenditures (\$,000s)	Service Region	Incentives	Admin	Communication	Evaluation	Total
	FEI / FEVI	\$8	\$5	\$5	\$50	\$68
	Total	\$8	\$5	\$5	\$50	\$68



\$50

\$160

9.4.5 Advanced Control Lumber Drying Using Energy Management System Pilot

Program Description	This Pilot Program management system	This Pilot Program will determine the savings associated with installing energy management systems in lumber Kilns.				
Target Market	Industrial Sector, I	Lumber Kilns				
New vs Retrofit	Retrofit	Retrofit				
Eligible Measures	Energy Managem	Energy Management System				
Incremental Measure Cost	\$50,000					
Incentive Amount	\$25,000					
Savings per Participant	6,350 GJ					
Measure Life & Source	5 years – Estimate	9				
Free Rider Rate & Source	0% - Estimate					
Spillover Rate & Source	Not available					
	Service Region			2012 - 2013		
Participants	FEI / FEVI			4		
-	Total			4		
			2012	2 - 2013		
Expenditures (\$,000s)	Service Region	Incentives	Admin	Communication	Evaluation	Total
	FEL/ FEVI	\$100	\$5	\$5	\$50	\$160

\$100

\$5

\$5

Total



9.4.6 Catalytic Radiant Burner Pilot

Program Description	This Pilot Program will determine the savings associated with Catalytic Radiant Burners installed in painting booths.					
Target Market	Commercial Secto	Commercial Sector, Painting Booths				
New vs Retrofit	Both	Both				
Eligible Measures	Catalytic Radiant I	Catalytic Radiant Burner				
Incremental Measure Cost	\$130,000	\$130,000				
Incentive Amount	\$65,000	\$65,000				
Savings per Participant	1,639 GJ	1,639 GJ				
Measure Life & Source	10 years – Estima	10 years – Estimate				
Free Rider Rate & Source	0% – Estimate	0% – Estimate				
Spillover Rate & Source	Not available					
	Service Region		2012		2013	
Participanto	FEI		-		3	
Faiticipants	FEVI		-		1	
	Total		-		4	
	2012 - 2013					
Expanditures (* 000s)	Service Region	Incentives	Admin	Communication	Evaluation	Total
Experialtures (\$,0005)	FEI	\$195	\$11	\$4	\$64	\$274
	FEVI	\$65	\$4	\$1	\$21	\$91
	Total	\$260	\$15	\$5	\$85	\$365



9.4.7 Ceramic Manufacturing Efficiency Pilot

Program Description	This Pilot Program Microwave Assist	n will determine Technology (N	e the savin IAT) techr	igs associated with i hology within Ceram	nstalling/retrofit ic Manufacturing	ting g kilns.
Target Market	Ceramic Mfg Kilns	3				
New vs Retrofit	Both					
Eligible Measures	Microwave Assist	Technology				
Incremental Measure Cost	\$350,000					
Incentive Amount	\$175,000					
Savings per Participant	12,000 GJ					
Measure Life & Source	30 years – Manufa	acturers' Estim	ate			
Free Rider Rate & Source	0% - Estimate					
Spillover Rate & Source	Not available					
	Service Region			2012 - 2013		
Participants	FEI/FEVI			1		
•	Total			1		
			2012	2 - 2013		
Expenditures (\$,000s)	Service Region	Incentives	Admin	Communication	Evaluation	Total
	FEI / FEVI	\$175	-	\$5	\$100	\$280
	Total	\$175	-	\$5	\$100	\$280



10 Summary

The information presented in this EEC Plan provides:

- A comprehensive suite of programs for each of the previously approved EEC activity areas.
- Descriptions of each of the programs, including target markets, eligible measures, expected levels of participation, energy savings and forecast expenditures by administrative category.
- A full reporting of the cost-effectiveness of those programs at the level of individual program, program area and total portfolio.

The EEC plan illustrates that there remains significant cost-effective opportunities for energy efficiency within FortisBC's service territory, which is consistent with the results provided in FortisBC's Conservation Potential Review – 2010⁶. This remaining opportunity reflects, in part, how the continued technology cost and performance improvements have increased the availability of energy efficiency options. This is particularly the case in the commercial sector. The CPR 2010 study concluded that this sector accounted for over 40% of the total near term achievable energy savings potential; this emphasis is reflected in the current EEC plan, which forecasts that approximately 50% of 2013 savings will be from the commercial sector programs.

However, some markets are challenged. More specifically:

- The scope for program induced natural gas savings in the residential sector are challenged by the impacts of new space and water heating equipment performance standards as well as those due to new residential construction standards. Consequently the residential program portfolio has a TRC value of 0.94.
- The low-income portfolio is similarly challenged with a TRC of 0.54, due largely to the labour intensive nature of the programs relative to the size of available energy savings.

Overall the portfolio of programs contained in the EEC Plan provides a positive TRC value of 1.28. Based on the positive TRC value and the results of FortisBC's earlier economic impact study, implementation of this EEC Plan will result in a positive net impact on provincial GDP and employment. That earlier study concluded that for each \$1 million invested in natural gas DSM, provincial GDP would increase by about \$350,000 and approximately 5.8 - 6.7 jobs would be created.

As noted previously in Section 2, this EEC Plan also applies a societal cost test (SCT) to each of the programs. In contrast to the TRC inputs, the SCT employs a societal discount rate of 3.0% and a levelized avoided gas commodity cost of \$15.28/GJ. Overall, the portfolio of programs contained in the EEC Plan provides a SCT value of 3.07, which is significantly greater than the TRC value. The cost-effectiveness results for the residential and low income portfolios, note above also improve significantly under the SCT. The residential portfolio has a positive SCT value of 2.4 and the low-income portfolio has a SCT value of 0.99.

⁶ The annual energy savings reported in CPR 2010 include the cumulative effects of technologies implemented in prior years, which provides an accurate comparison with FortisBC's load forecast. However, the annual savings calculation method used for the purpose of this EEC Plan does not include the effects of those prior year technologies. Consequently, the reported savings from each approach are not directly comparable.

Appendix 2 CALIFORNIA STANDARD PRACTICE MANUAL AND CALIFORNIA ENERGY EFFICIENCY POLICY MANUAL

CALIFORNIA STANDARD PRACTICE MANUAL: ECONOMIC ANALYSIS OF DEMAND-SIDE PROGRAMS AND PROJECTS

July 2002



Gray Davis, Governor

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Basic Methodology

Background

Since the 1970s, conservation and load management programs have been promoted by the California Public Utilities Commission (CPUC) and the California Energy Commission (CEC) as alternatives to power plant construction and gas supply options. Conservation and load management (C&LM) programs have been implemented in California by the major utilities through the use of ratepayer money and by the CEC pursuant to the CEC legislative mandate to establish energy efficiency standards for new buildings and appliances.

While cost-effectiveness procedures for the CEC standards are outlined in the Public Resources Code, no such official guidelines existed for utility-sponsored programs. With the publication of the *Standard Practice for Cost-Benefit Analysis of Conservation and Load Management Programs* in February 1983, this void was substantially filled. With the informal "adoption" one year later of an appendix that identified cost-effectiveness procedures for an "All Ratepayers" test, C&LM program cost effectiveness consisted of the application of a series of tests representing a variety of perspectives-participants, non-participants, all ratepayers, society, and the utility.

The Standard Practice Manual was revised again in 1987-88. The primary changes (relative to the 1983 version), were: (1) the renaming of the "Non-Participant Test" to the "Ratepayer Impact Test"; (2) renaming the All-Ratepayer Test" to the "Total Resource Cost Test."; (3) treating the "Societal Test" as a variant of the "Total Resource Cost Test;" and, (4) an expanded explanation of "demand-side" activities that should be subjected to standard procedures of benefit-cost analysis.

Further changes to the manual captured in this (2001) version were prompted by the cumulative effects of changes in the electric and natural gas industries and a variety of changes in California statute related to these changes. As part of the major electric industry restructuring legislation of 1996 (AB1890), for example, a public goods charge was established that ensured minimum funding levels for "cost effective conservation and energy efficiency" for the 1998-2002 period, and then (in 2000) extended through the year 2011. Additional legislation in 2000 (AB1002) established a natural gas surcharge for similar purposes. Later in that year, the Energy Security and Reliability Act of 2000 (AB970) directed the California Public Utilities Commission to establish, by the Spring of 2001, a distribution charge to provide revenues for a self generation program and a directive to consider changes to cost-effectiveness methods to better account for reliability concerns.

In the Spring of 2001, a new state agency — the Consumer Power and Conservation Financing Authority — was created. This agency is expected to provide additional revenues in the form of state revenue bonds that could supplement the amount and type of public financial resources to finance energy efficiency and self generation activities.

The modifications to the Standard Practice Manual reflect these more recent developments in several ways. First, the "Utility Cost Test" is renamed the "Program Administrator Test" to include the assessment of programs managed by other agencies. Second, a definition of self generation as a type of "demand-side" activity is included. Third, the description of the various potential elements of "externalities" in the Societal version of the TRC test is

expanded. Finally the limitations section outlines the scope of this manual and elaborates upon the processes traditionally instituted by implementing agencies to adopt values for these externalities and to adopt the the policy rules that accompany this manual.

Demand-Side Management Categories and Program Definitions

One important aspect of establishing standardized procedures for cost-effectiveness evaluations is the development and use of consistent definitions of categories, programs, and program elements.

This manual employs the use of general program categories that distinguish between different types of demand-side management programs, conservation, load management, fuel substitution, load building and self-generation. Conservation programs reduce electricity and/or natural gas consumption during all or significant portions of the year. 'Conservation' in this context includes all 'energy efficiency improvements'. An energy efficiency improvement can be defined as reduced energy use for a comparable level of service, resulting from the installation of an energy efficiency measure or the adoption of an energy efficiency practice. Level of service may be expressed in such ways as the volume of a refrigerator, temperature levels, production output of a manufacturing facility, or lighting level per square foot. Load management programs may either reduce electricity peak demand or shift demand from on peak to non-peak periods.

Fuel substitution and load building programs share the common feature of increasing annual consumption of either electricity or natural gas relative to what would have happened in the absence of the program. This effect is accomplished in significantly different ways, by inducing the choice of one fuel over another (fuel substitution), or by increasing sales of electricity, gas, or electricity and gas (load building). Self generation refers to distributed generation (DG) installed on the customer's side of the electric utility meter, which serves some or all of the customer's electric load, that otherwise would have been provided by the central electric grid.

In some cases, self generation products are applied in a combined heat and power manner, in which case the heat produced by the self generation product is used on site to provide some or all of the customer's thermal needs. Self generation technologies include, but are not limited to, photovoltaics, wind turbines, fuel cells, microturbines, small gas-fired turbines, and gas-fired internal combustion engines.

Fuel substitution and load building programs were relatively new to demand-side management in California in the late 1980s, born out of the convergence of several factors that translated into average rates that substantially exceeded marginal costs. Proposals by utilities to implement programs that increase sales had prompted the need for additional procedures for estimating program cost effectiveness. These procedures maybe applicable in a new context. AB 970 amended the Public Utilities Code and provided the motivation to develop a cost-effectiveness method that can be used on a common basis to evaluate all programs that will remove electric load from the centralized grid, including energy efficiency, load control/demand-responsiveness programs and self-generation. Hence, self-generation was also added to the list of demand side management programs for cost-effectiveness evaluation. In some cases, self-generation programs installed with incremental load are also included since the definition of self-generation is not necessarily confined to projects that reduce electric load on the grid. For example, suppose an industrial customer installs a new facility with a peak consumption of 1.5 MW, with an integrated on-site 1.0 MW gas fired DG unit. The combined impact of the new facility is *load building* since the new facility can draw up to 0.5 MW from the grid, even when the DG unit is running. The proper characterization of each type of demand-side management program

is essential to ensure the proper treatment of inputs and the appropriate interpretation of costeffectiveness results.

Categorizing programs is important because in many cases the same specific device can be and should be evaluated in more than one category. For example, the promotion of an electric heat pump can and should be treated as part of a conservation program if the device is installed in lieu of a less efficient electric resistance heater. If the incentive induces the installation of an electric heat pump instead of gas space heating, however, the program needs to be considered and evaluated as a fuel substitution program. Similarly, natural gas-fired self-generation, as well as self-generation units using other non-renewable fossil fuels, must be treated as fuelsubstitution. In common with other types of fuel-substitution, any costs of gas transmission and distribution, and environmental externalities, must be accounted for. In addition, costeffectiveness analyses of self-generation should account for utility interconnection costs. Similarly, a thermal energy storage device should be treated as a load management program when the predominant effect is to shift load. If the acceptance of a utility incentive by the customer to, install the energy storage device is a decisive aspect of the customer's decision to remain an electric utility customer (i.e., to reject or defer the option of installing a gas-fired cogeneration system), then the predominant effect of the thermal energy storage device has been to substitute electricity service for the natural gas service that would have occurred in the absence of the program.

In addition to Fuel Substitution and Load Building Programs, recent utility program proposals have included reference to "load retention," "sales retention," "market retention," or "customer retention" programs. In most cases, the effect of such programs is identical to either a Fuel Substitution or a Load Building program — sales of one fuel are increased relative to sales without the program. A case may be made, however, for defining a separate category of program called "load retention." One unambiguous example of a load retention program is the situation where a program keeps a customer from relocating to another utility service area. However, computationally the equations and guidelines included in this manual to accommodate Fuel Substitution and Load Building programs can also handle this special situation as well.

Basic Methods

This manual identifies the cost and benefit components and cost-effectiveness calculation procedures from four major perspectives: Participant, Ratepayer Impact Measure (RIM), Program Administrator Cost (PAC), and Total Resource Cost (TRC). A fifth perspective, the Societal, is treated as a variation on the Total Resource Cost test. The results of each perspective can be expressed in a variety of ways, but in all cases it is necessary to calculate the net present value of program impacts over the lifecycle of those impacts.

Table I summarizes the cost-effectiveness tests addressed in this manual. For each of the perspectives, the table shows the appropriate means of expressing test results. The primary unit of measurement refers to the way of expressing test results that are considered by the staffs of the two Commissions as the most useful for summarizing and comparing demand-side management (DSM) program cost-effectiveness. Secondary indicators of cost-effectiveness represent supplemental means of expressing test results that are likely to be of particular value for certain types of proceedings, reports, or programs.

This manual does not specify how the cost-effectiveness test results are to be displayed or the level at which cost-effectiveness is to be calculated (e.g., groups of programs, individual programs, and program elements for all or some programs). It is reasonable to expect different levels and types of results for different regulatory proceedings or for different phases of the process used to establish proposed program-funding levels. For example, for summary tables in

general rate case proceedings at the CPUC, the most appropriate tests may be the RIM lifecycle revenue impact, Total Resource Cost, and Program Administrator Cost test results for programs or groups of programs. The analysis and review of program proposals for the same proceeding may include Participant test results and various additional indicators of cost-effectiveness from all tests for each individual program element. In the case of cost-effectiveness evaluations conducted in the context of integrated long-term resource planning activities, such detailed examination of multiple indications of costs and benefits may be impractical.

Table I	
Cost-Effectiveness	Tests

Participant				
Primary	Secondary			
Net present value (all participants)	Discounted payback (years) Benefit-cost ratio Net present value (average participant)			
Ratepayer Im	pact Measure			
Lifecycle revenue impact per Unit of energy (kWh or therm) or demand customer (kW) Net present value	Lifecycle revenue impact per unit Annual revenue impact (by year, per kWh, kW, therm, or customer) First-year revenue impact (per kWh, kW, therm, or customer) Benefit-cost ratio			
Total Res	ource Cost			
Net present value (NPV)	Benefit-cost ratio (BCR) Levelized cost (cents or dollars per unit of energy or demand) Societal (NPV, BCR)			
Program Administrator Cost				
Net present value	Benefit-cost ratio Levelized cost (cents or dollars per unit of energy or demand)			

Rather than identify the precise requirements for reporting cost-effectiveness results for all types of proceedings or reports, the approach taken in this manual is to (a) specify the components of benefits and costs for each of the major tests, (b) identify the equations to be used to express the results in acceptable ways; and (c) indicate the relative value of the different units of measurement by designating primary and secondary test results for each test.

It should be noted that for some types of demand-side management programs, meaningful costeffectiveness analyses cannot be performed using the tests in this manual. The following guidelines are offered to clarify the appropriated "match" of different types of programs and tests:

- 1. For generalized information programs (e.g., when customers are provided generic information on means of reducing utility bills without the benefit of on-site evaluations or customer billing data), cost-effectiveness tests are not expected because of the extreme difficulty in establishing meaningful estimates of load impacts.
- 2. For any program where more than one fuel is affected, the preferred unit of measurement for the RIM test is the lifecycle revenue impacts per customer, with gas and electric components reported separately for each fuel type and for combined fuels.

- 3. For load building programs, only the RIM tests are expected to be applied. The Total Resource Cost and Program Administrator Cost tests are intended to identify cost-effectiveness relative to other resource options. It is inappropriate to consider increased load as an alternative to other supply options.
- 4. Levelized costs may be appropriate as a supplementary indicator of cost per unit for electric conservation and load management programs relative to generation options and gas conservation programs relative to gas supply options, but the levelized cost test is not applicable to fuel substitution programs (since they combine gas and electric effects) or load building programs (which increase sales).

The delineation of the various means of expressing test results in **Table 1** is not meant to discourage the continued development of additional variations for expressing cost-effectiveness. Of particular interest is the development of indicators of program cost effectiveness that can be used to assess the appropriateness of program scope (i.e. level of funding) for General Rate Case proceedings. Additional tests, if constructed from the net present worth in conformance with the equations designated in this manual, could prove useful as a means of developing methodologies that will address issues such as the optimal timing and scope of demand-side management programs in the context of overall resource planning.

Balancing the Tests

The tests set forth in this manual are not intended to be used individually or in isolation. The results of tests that measure efficiency, such as the Total Resource Cost Test, the Societal Test, and the Program Administrator Cost Test, must be compared not only to each other but also to the Ratepayer Impact Measure Test. This multi-perspective approach will require program administrators and state agencies to consider tradeoffs between the various tests. Issues related to the precise weighting of each test relative to other tests and to developing formulas for the definitive balancing of perspectives are outside the scope of this manual. The manual, however, does provide a brief description of the strengths and weaknesses of each test (Chapters 2, 3, 4, and 5) to assist users in qualitatively weighing test results.

Limitations: Externality Values and Policy Rules

The list of externalities identified in Chapter 4, page 27, in the discussion on the Societal version of the Total Resource Cost test is broad, illustrative and by no means exhaustive. Traditionally, implementing agencies have independently determined the details such as the components of the externalities, the externality values and the policy rules which specify the contexts in which the externalities and the tests are used.

Externality Values

The values for the externalities have not been provided in the manual. There are separate studies and methodologies to arrive at these values. There are also separate processes instituted by implementing agencies before such values can be adopted formally.

Policy Rules

The appropriate choice of inputs and input components vary by program area and project. For instance, low income programs are evaluated using a broader set of non-energy benefits that have not been provided in detail in this manual. Implementing agencies traditionally have had the discretion to use or to not use these inputs and/or benefits on a project- or program-specific basis. The policy rules that specify the contexts in which it is appropriate to use the externalities,

their components, and tests mentioned in this manual are an integral part of any costeffectiveness evaluation. These policy rules are not a part of this manual.

To summarize, the manual provides the methodology and the cost-benefit calculations only. The implementing agencies (such as the California Public Utilities Commission and the California Energy Commission) have traditionally utilized open public processes to incorporate the diverse views of stakeholders before adopting externality values and policy rules which are an integral part of the cost-effectiveness evaluation.

Participant Test

Definition

The Participants Test is the measure of the <u>quantifiable</u> benefits and costs to the customer due to participation in a program. Since many customers do not base their decision to participate in a program entirely on quantifiable variables, this test cannot be a complete measure of the benefits and costs of a program to a customer.

Benefits and Costs

The <u>benefits</u> of participation in a demand-side program include the reduction in the customer's utility bill(s), any incentive paid by the utility or other third parties, and any federal, state, or local tax credit received. The reductions to the utility bill(s) should be calculated using the actual retail rates that would have been charged for the energy service provided (electric demand or energy or gas). Savings estimates should be based on gross savings, as opposed to net energy savings¹.

In the case of fuel substitution programs, benefits to the participant also include the avoided capital and operating costs of the equipment/appliance not chosen. For load building programs, participant benefits include an increase in productivity and/or service, which is presumably equal to or greater than the productivity/ service without participating. The inclusion of these benefits is not required for this test, but if they are included then the societal test should also be performed.

The costs to a customer of program participation are all out-of-pocket expenses incurred as a result of participating in a program, plus any increases in the customer's utility bill(s). The out-of-pocket expenses include the cost of any equipment or materials purchased, including sales tax and installation; any ongoing operation and maintenance costs; any removal costs (less salvage value); and the value of the customer's time in arranging for the installation of the measure, if significant.

¹ <u>Gross</u> energy savings are considered to be the savings in energy and demand seen by the participant at the meter. These are the appropriate program impacts to calculate bill reductions for the Participant Test. Net savings are assumed to be the savings that are attributable to the program. That is, net savings are gross savings minus those changes in energy use and demand that would have happened even in the absence of the program. For fuel substitution and load building programs, gross-to-net considerations account for the impacts that would have occurred in the absence of the program.
How the Results can be Expressed

The results of this test can be expressed in four ways: through a net present value per average participant, a net present value for the total program, a benefit-cost ratio or discounted payback. The primary means of expressing test results is net present value for the total program; discounted payback, benefit-cost ratio, and per participant net present value are secondary tests.

The discounted payback is the number of years it takes until the cumulative discounted benefits equal or exceed the cumulative discounted costs. The shorter the discounted payback, the more attractive or beneficial the program is to the participants. Although "payback period" is often defined as undiscounted in the textbooks, a discounted payback period is used here to approximate more closely the consumer's perception of future benefits and costs.²

Net present value (NPVp) gives the net dollar benefit of the program to an average participant or to all participants discounted over some specified time period. A net present value above zero indicates that the program is beneficial to the participants under this test.

The benefit-cost ratio (BCRp) is the ratio of the total benefits of a program to the total costs discounted over some specified time period. The benefit-cost ratio gives a measure of a rough rate of return for the program to the participants and is also an indication of risk. A benefit-cost ratio above one indicates a beneficial program.

Strengths of the Participant Test

The Participants Test gives a good "first cut" of the benefit or desirability of the program to customers. This information is especially useful for voluntary programs as an indication of potential participation rates.

For programs that involve a utility incentive, the Participant Test can be used for program design considerations such as the minimum incentive level, whether incentives are really needed to induce participation, and whether changes in incentive levels will induce the desired amount of participation.

These test results can be useful for program penetration analyses and developing program participation goals, which will minimize adverse ratepayer impacts and maximize benefits.

For fuel substitution programs, the Participant Test can be used to determine whether program participation (i.e. choosing one fuel over another) will be in the long-run best interest of the customer. The primary means of establishing such assurances is the net present value, which looks at the costs and benefits of the fuel choice over the life of the equipment.

Weaknesses of the Participant Test

None of the Participant Test results (discounted payback, net present value, or benefit-cost ratio) accurately capture the complexities and diversity of customer decision-making processes for demand-side management investments. Until or unless more is known about customer attitudes and behavior, interpretations of Participant Test results continue to require considerable

² It should be noted that if a demand-side program is beneficial to its participants (NPVp ≥ 0 and BCRp ≥ 1.0) using a particular discount rate, the program has an internal rate of return (IRR) of at least the value of the discount rate.

judgment. Participant Test results play only a supportive role in any assessment of conservation and load management programs as alternatives to supply projects.

Formulae

The following are the formulas for discounted payback, the net present value (NPVp) and the benefit-cost ratio (BCRp) for the Participant Test.

NPV_{P}	=	Bp - Cp
NPVavp	=	(Bp - Cp) / P
BCRp	=	Bp/ Cp
DPp	=	Min j such that $Bj > Cj$

Where:

=	Net present value to all participants
=	Net present value to the average participant
=	Benefit-cost ratio to participants
=	Discounted payback in years
=	NPV of benefit to participants
=	NPV of costs to participants
=	Cumulative benefits to participants in year j
=	Cumulative costs to participants in year j
=	Number of program participants
=	First year in which cumulative benefits are cumulative costs.
=	Interest rate (discount)

The Benefit (Bp) and Cost (Cp) terms are further defined as follows:

$$BP = \prod_{t=1}^{N} \frac{BR_t + TC_t + INC_t}{(1+d)^{t-1}} + \prod_{t=1}^{N} \frac{AB_{at} + PA_{at}}{(1+d)^{t-1}}$$

$$C = \sum_{t=1}^{N} \frac{PC_{t} + BI_{t}}{(1+d)^{t-1}}$$

Where:

BRt	=	Bill reductions in year t
Bit	=	Bill increases in year t
TCt	=	Tax credits in year t
INCt	=	Incentives paid to the participant by the sponsoring utility in year t^3
PCt	=	Participant costs in year t to include:
		• Initial capital costs, including sales tax ⁴

³ Some difference of opinion exists as to what should be called an incentive. The term can be interpreted broadly to include almost anything. Direct rebates, interest payment subsidies, and even energy audits can be called incentives. Operationally, it is necessary to restrict the term to include only dollar benefits such as rebates or rate incentives (monthly bill credits). Information and services such as audits are not considered incentives for the purposes of these tests. If the incentive is to offset a specific participant cost, as in a rebate-type incentive, the full customer cost (before the rebate must be included in the PC_t term

		Ongoing operation and maintenance costs in	clude fuel cost
		Removal costs, less salvage value	
		• Value of the customer's time in arranging for	installation, if
		significant	
PACat	=	Participant avoided costs in year t for alternate fuel	devices (costs of
		devices not chosen)	
Abat	=	Avoided bill from alternate fuel in year t	

The first summation in the Bp equation should be used for conservation and load management programs. For fuel substitution programs, both the first and second summations should be used for Bp.

Note that in most cases, the customer bill impact terms (BRt, BIt, and AB_{at}) are further determined by costing period to reflect load impacts and/or rate schedules, which vary substantially by time of day and season. The formulas for these variables are as follows:

$$BR_{t} = \prod_{i=1}^{I} (EG_{it} \times AC : E_{it} \times K_{it}) + \prod_{i=1}^{I} (DG_{it} \times AC : D_{it} \times K_{it}) + OBR_{t}$$

 $AB_{at} = (Use BRt formula, but with rates and costing periods appropriate for the alternate fuel utility)$

$$BI_{t} = \prod_{i=1}^{I} (EG_{it} \times AC : E_{it} \times (K_{it} - 1)) + \prod_{i=1}^{I} (DG_{it} \times AC : D_{it} \times (K_{it} - 1)) + OBI_{t}$$

Where:

EG_{it}	=	Reduction in gross energy use in costing period i in year t
DG _{it}	=	Reduction in gross billing demand in costing period i in year t
AC:E _{it}	=	Rate charged for energy in costing period i in year t
AC:D _{it}	=	Rate charged for demand in costing period i in year t
K _{it}	=	1 when EGit or DGit is positive (a reduction) in costing period i in
		year t, and zero otherwise
OBR,	=	Other bill reductions or avoided bill payments (e.g.,, customer charges,
ť		standby rates).
OBI,	=	Other bill increases (i.e. customer charges, standby rates).
I	=	Number of periods of participant's participation

In load management programs such as TOU rates and air-conditioning cycling, there are often no direct customer hardware costs. However, attempts should be made to quantify indirect costs customers may incur that enable them to take advantage of TOU rates and similar programs.

⁴ If money is borrowed by the customer to cover this cost, it may not be necessary to calculate the annual mortgage and discount this amount if the present worth of the mortgage payments equals the initial cost. This occurs when the discount rate used is equal to the interest rate of the mortgage. If the two rates differ (e.g., a loan offered by the utility), then the stream of mortgage payments should be discounted by the discount rate chosen.

If no customer hardware costs are expected or estimates of indirect costs and value of service are unavailable, it may not be possible to calculate the benefit-cost ratio and discounted payback period.

The Ratepayer Impact Measure Test⁵

Definition

The Ratepayer Impact Measure (RIM) test measures what happens to customer bills or rates due to changes in utility revenues and operating costs caused by the program. Rates will go down if the change in revenues from the program is greater than the change in utility costs. Conversely, rates or bills will go up if revenues collected after program implementation are less than the total costs incurred by the utility in implementing the program. This test indicates the direction and magnitude of the expected change in customer bills or rate levels.

Benefits and Costs

The benefits calculated in the RIM test are the savings from avoided supply costs. These avoided costs include the reduction in transmission, distribution, generation, and capacity costs for periods when load has been reduced and the increase in revenues for any periods in which load has been increased. The avoided supply costs are a reduction in total costs or revenue requirements and are included for both fuels for a fuel substitution program. The increase in revenues are also included for both fuels for fuel substitution programs. Both the reductions in supply costs and the revenue increases should be calculated using net energy savings.

The costs for this test are the program costs incurred by the utility, *and/or other entities incurring costs and creating or administering the program,* the incentives paid to the participant, decreased revenues for any periods in which load has been decreased and increased supply costs for any periods when load has been increased. The utility program costs include initial and annual costs, such as the cost of equipment, operation and maintenance, installation, program administration, and customer dropout and removal of equipment (less salvage value). The decreases in revenues and the increases in the supply costs should be calculated for both fuels for fuel substitution programs using net savings.

How the Results can be Expressed

The results of this test can be presented in several forms: the lifecycle revenue impact (cents or dollars) per kWh, kW, therm, or customer; annual or first-year revenue impacts (cents or dollars per kWh, kW, therms, or customer); benefit-cost ratio; and net present value. The primary units of measurement are the lifecycle revenue impact, expressed as the change in rates (cents per kWh for electric energy, dollars per kW for electric capacity, cents per therm for natural gas) and the net present value. Secondary test results are the lifecycle revenue impact per customer, first-year and annual revenue impacts, and the benefit-cost ratio. LRI_{RIM} values for programs affecting electricity and gas should be calculated for each fuel individually (cents per kWh or dollars per kW and cents per therm) and on a combined gas and electric basis (cents per customer).

⁵ The Ratepayer Impact Measure Test has previously been described under what was called the "Non-Participant Test." The Non-Participant Test has also been called the "Impact on Rate Levels Test."

The lifecycle revenue impact (LRI) is the one-time change in rates or the bill change over the life of the program needed to bring total revenues in line with revenue requirements over the life of the program. The rate increase or decrease is expected to be put into effect in the first year of the program. Any successive rate changes such as for cost escalation are made from there. The first-year revenue impact (FRI) is the change in rates in the first year of the program or the bill change needed to get total revenues to match revenue requirements only for that year. The annual revenue impact (ARI) is the series of differences between revenues and revenue requirements in each year of the program. This series shows the cumulative rate change or bill change in a year needed to match revenues to revenue requirements. Thus, the ARIRIM for year six per kWh is the estimate of the difference between present rates and the rate that would be in effect in year six due to the program. For results expressed as lifecycle, annual, or first-year revenue impacts, negative results indicate favorable effects on the bills of ratepayers or reductions in rates. Positive test result values indicate adverse bill impacts or rate increases.

Net present value (NPV_{RIM}) gives the discounted dollar net benefit of the program from the perspective of rate levels or bills over some specified time period. A net present value above zero indicates that the program will benefit (lower) rates and bills.

The benefit-cost ratio (BCR RIM) is the ratio of the total benefits of a program to the total costs discounted over some specified time period. A benefit-cost ratio above one indicates that the program will lower rates and bills.

Strengths of the Ratepayer Impact Measure (RIM) Test

In contrast to most supply options, demand-side management programs cause a direct shift in revenues. Under many conditions, revenues lost from DSM programs have to be made up by ratepayers. The RIM test is the only test that reflects this revenue shift along with the other costs and benefits associated with the program.

An additional strength of the RIM test is that the test can be used for all demand-side management programs (conservation, load management, fuel substitution, and load building). This makes the RIM test particularly useful for comparing impacts among demand-side management options.

Some of the units of measurement for the RIM test are of greater value than others, depending upon the purpose or type of evaluation. The lifecycle revenue impact per customer is the most useful unit of measurement when comparing the merits of programs with highly variable scopes (e.g.,, funding levels) and when analyzing a wide range of programs that include both electric and natural gas impacts. Benefit-cost ratios can also be very useful for program design evaluations to identify the most attractive programs or program elements.

If comparisons are being made between a program or group of conservation/load management programs and a specific resource project, lifecycle cost per unit of energy and annual and first-year net costs per unit of energy are the most useful way to express test results. Of course, this requires developing lifecycle, annual, and first-year revenue impact estimates for the supply-side project.

Weaknesses of the Ratepayer Impact Measure (RIM) Test

Results of the RIM test are probably less certain than those of other tests because the test is sensitive to the differences between long-term projections of marginal costs and long-term projections of rates, two cost streams that are difficult to quantify with certainty.

RIM test results are also sensitive to assumptions regarding the financing of program costs. Sensitivity analyses and interactive analyses that capture feedback effects between system changes, rate design options, and alternative means of financing generation and non-generation options can help overcome these limitations. However, these types of analyses may be difficult to implement.

An additional caution must be exercised in using the RIM test to evaluate a fuel substitution program with multiple end use efficiency options. For example, under conditions where marginal costs are less than average costs, a program that promotes an inefficient appliance may give a more favorable test result than a program that promotes an efficient appliance. Though the results of the RIM test accurately reflect rate impacts, the implications for long-term conservation efforts need to be considered.

Formulae: The formulae for the lifecycle revenue impact (LRI RIM)' net present value (NPV RIM), benefit-cost ratio (BCR RIM)' the first-year revenue impacts and annual revenue impacts are presented below:

LRIRIM	=	(CRIM - BRIM) / E	
FRIRIM	=	(CRIM - BRIM) / E	for $t = I$
ARIRIMt	=	FRIRIM	for $t = I$
	=	(CRIMt - BRIMt)/Et	for t=2,, N
NPVRIM	=	BRIM-CRIM	

- BCRRIM` = BRIM/CRIM where:
- LRIRIM = Lifecycle revenue impact of the program per unit of energy (kWh or therm) or demand (kW) (the one-time change in rates) or per customer (the change in customer bills over the life of the program). (Note: An appropriate choice of kWh, therm, kW, and customer should be made)
- FRIRIM = First-year revenue impact of the program per unit of energy, demand, or per customer.
- ARIRIM = Stream of cumulative annual revenue impacts of the program per unit of energy, demand, or per customer. (Note: The terms in the ARI formula are not discounted; thus they are the nominal cumulative revenue impacts. Discounted cumulative revenue impacts may be calculated and submitted if they are indicated as such. Note also that the sum of the discounted stream of cumulative revenue impacts does not equal the LRI RIM')
- NPVRIM = Net present value levels
- BCRRIM = Benefit-cost ratio for rate levels
- BRIM = Benefits to rate levels or customer bills
- CRIM = Costs to rate levels or customer bills
- E = Discounted stream of system energy sales (kWh or therms) or demand sales (kW) or first-year customers. (See Appendix D for a description of the derivation and use of this term in the LRIRIM test.)

The B_{RIM} and C_{RIM} terms are further defined as follows:

$$B_{RIM} \sum_{t=1}^{N} \frac{UAC_{t} + RG_{t}}{(1+d)^{t-1}} + \sum_{t=1}^{N} \frac{UAC_{at}}{(1+d)^{t-1}}$$

$$C_{RIM} \sum_{t=1}^{N} \frac{UIC_{t} + RL_{t} + PRC_{t} + INC_{t}}{(1+d)^{t-1}} + \sum_{t=1}^{N} \frac{RL_{at}}{(1+d)^{t-1}}$$

$$E = \sum_{t=1}^{N} E_{t}$$

$$E = \frac{-t}{(1+d)^{t-1}}$$

Where:

UACt	=	Utility avoided supply costs in year t
UICt	=	Utility increased supply costs in year t
RGt	=	Revenue gain from increased sales in year t
RLt	=	Revenue loss from reduced sales in year t
PRCt	=	Program Administrator program costs in year t
Et	=	System sales in kWh, kW or therms in year t or first year customers
UACat	=	Utility avoided supply costs for the alternate fuel in year t
Rlat	=	Revenue loss from avoided bill payments for alternate fuel in year t (i.e.,
		device not chosen in a fuel substitution program)

For fuel substitution programs, the first term in the B RIM and C RIM equations represents the sponsoring utility (electric or gas), and the second term represents the alternate utility. The RIM test should be calculated separately for electric and gas and combined electric and gas.

The utility avoided cost terms (UAC_t, UIC_t, and UAC_{at}) are further determined by costing period to reflect time-variant costs of supply:

$$UCA_{t} = \prod_{i=1}^{l} (EN_{it} \times MC : E_{it} \times K_{it}) + \prod_{i=1}^{l} (DN_{it} \times MC : D_{it} \times K_{it})$$

 $UAC_{at} = (Use UACt formula, but with marginal costs and costing periods appropriate for the alternate fuel utility.)$

$$UIC_{t} \prod_{i=1}^{I} (EN_{it} \times MC : E_{it} \times (K_{it} - 1)) + \prod_{i=1}^{I} (DN_{it} \times MC : D \times (K_{it} - 1))$$

Where:

[Only terms not previously defined are included here.]

ENit	= Reduction in net energy use in costing period i in year t
DNit	= Reduction in net demand in costing period i in year t
MC:Eit	= Marginal cost of energy in costing period i in year t
MC:Dit	= Marginal cost of demand in costing period i in year t

The revenue impact terms (RG_t , RL_t , and RL_{at}) are parallel to the bill impact terms in the Participant Test. The terms are calculated exactly the same way with the exception that the net impacts are used rather than gross impacts. If a net-to-gross ratio is used to differentiate gross savings from net savings, the revenue terms and the participant's bill terms will be related as follows:

RGt = BIt * (net-to-gross ratio) RLt = BRt * (net-to-gross ratio) Rlat = Abat * (net-to-gross ratio)

Total Resource Cost Test⁶

Definition

The Total Resource Cost Test measures the net costs of a demand-side management program as a resource option based on the total costs of the program, including both the participants' and the utility's costs.

The test is applicable to conservation, load management, and fuel substitution programs. For fuel substitution programs, the test measures the net effect of the impacts from the fuel not chosen versus the impacts from the fuel that is chosen as a result of the program. TRC test results for fuel substitution programs should be viewed as a measure of the economic efficiency implications of the total energy supply system (gas and electric).

A variant on the TRC test is the Societal Test. The Societal Test differs from the TRC test in that it includes the effects of externalities (e.g.,, environmental, national security), excludes tax credit benefits, and uses a different (societal) discount rate.

Benefits and Costs: This test represents the combination of the effects of a program on both the customers participating and those not participating in a program. In a sense, it is the summation of the benefit and cost terms in the Participant and the Ratepayer Impact Measure tests, where the revenue (bill) change and the incentive terms intuitively cancel (except for the differences in net and gross savings).

The benefits calculated in the Total Resource Cost Test are the avoided supply costs, the reduction in transmission, distribution, generation, and capacity costs valued at marginal cost for the periods when there is a load reduction. The avoided supply costs should be calculated using net program savings, savings net of changes in energy use that would have happened in the absence of the program. For fuel substitution programs, benefits include the avoided device costs and avoided supply costs for the energy, using equipment not chosen by the program participant.

The costs in this test are the program costs paid by both the utility and the participants plus the increase in supply costs for the periods in which load is increased. Thus all equipment costs, installation, operation and maintenance, cost of removal (less salvage value), and administration costs, no matter who pays for them, are included in this test. Any tax credits are considered a reduction to costs in this test. For fuel substitution programs, the costs also include the increase in supply costs for the utility providing the fuel that is chosen as a result of the program.

⁶ This test was previously called the All Ratepayers Test

How the Results Can be Expressed

The results of the Total Resource Cost Test can be expressed in several forms: as a net present value, a benefit-cost ratio, or as a levelized cost. The net present value is the primary unit of measurement for this test. Secondary means of expressing TRC test results are a benefit-cost ratio and levelized costs. The Societal Test expressed in terms of net present value, a benefit-cost ratio, or levelized costs is also considered a secondary means of expressing results. Levelized costs as a unit of measurement are inapplicable for fuel substitution programs, since these programs represent the net change of alternative fuels which are measured in different physical units (e.g., kWh or therms). Levelized costs are also not applicable for load building programs.

Net present value (NPVTRC) is the discounted value of the net benefits to this test over a specified period of time. NPVTRC is a measure of the change in the total resource costs due to the program. A net present value above zero indicates that the program is a less expensive resource than the supply option upon which the marginal costs are based.

The benefit-cost ratio (BCRTRC) is the ratio of the discounted total benefits of the program to the discounted total costs over some specified time period. It gives an indication of the rate of return of this program to the utility and its ratepayers. A benefit-cost ratio above one indicates that the program is beneficial to the utility and its ratepayers on a total resource cost basis.

The levelized cost is a measure of the total costs of the program in a form that is sometimes used to estimate costs of utility-owned supply additions. It presents the total costs of the program to the utility and its ratepayers on a per kilowatt, per kilowatt hour, or per therm basis levelized over the life of the program.

The Societal Test is structurally similar to the Total Resource Cost Test. It goes beyond the TRC test in that it attempts to quantify the change in the total resource costs to society as a whole rather than to only the service territory (the utility and its ratepayers). In taking society's perspective, the Societal Test utilizes essentially the same input variables as the TRC Test, but they are defined with a broader societal point of view. More specifically, the Societal Test differs from the TRC Test in at least one of five ways. First, the Societal Test may use higher marginal costs than the TRC test if a utility faces marginal costs that are lower than other utilities in the state or than its out-of-state suppliers. Marginal costs used in the Societal Test would reflect the cost to society of the more expensive alternative resources. Second, tax credits are treated as a transfer payment in the Societal Test, and thus are left out. Third, in the case of capital expenditures, interest payments are considered a transfer payment since society actually expends the resources in the first year. Therefore, capital costs enter the calculations in the year in which they occur. Fourth, a societal discount rate should be used⁷ Finally, Marginal costs used in the Societal Test would also contain externality costs of power generation not captured by the market system. An illustrative and by no means exhaustive list of 'externalities and their components' is given below (Refer to the Limitations section for elaboration.) These values are also referred to as 'adders' designed to capture or internalize such externalities. The list of potential adders would include for example:

1. The benefit of avoided environmental damage: The CPUC policy specifies two 'adders' to internalize environmental externalities, one for electricity use and one for natural gas use. Both are statewide average values. These adders are intended to help distinguish between

⁷ Many economists have pointed out that use of a market discount rate in social cost-benefit analysis undervalues the interests of future generations. Yet if a market discount rate is not used, comparisons with alternative investments are difficult to make

cost-effective and non cost-effective energy-efficiency programs. They apply to an average supply mix and would not be useful in distinguishing among competing supply options. The CPUC electricity environmental adder is intended to account for the environmental damage from air pollutant emissions from power plants. The CPUC-adopted adder is intended to cover the human and material damage from sulfur oxides (SOX), nitrogen oxides (NOX), volatile organic compounds (VOC, sometimes called reactive organic gases or ROG), particulate matter at or below 10 micron diameter (PM10), and carbon. The adder for natural gas is intended to account for air pollutant emissions from the direct combustion of the gas. In the CPUC policy guidance, the adders are included in the tabulation of the benefits of energy efficiency programs. They represent reduced environmental damage from displaced electricity generation and avoided gas combustion. The environmental damage is the result of the net change in pollutant emissions in the air basins, or regions, in which there is an impact. This change is the result of direct changes in powerplant or natural gas combustion emission resulting from the efficiency measures, and changes in emissions from other sources, that result from those direct changes in emissions.

- 2. The benefit of avoided transmission and distribution costs energy efficiency measures that reduce the growth in peak demand would decrease the required rate of expansion to the transmission and distribution network, eliminating costs of constructing and maintaining new or upgraded lines.
- 3. The benefit of avoided generation costs energy efficiency measures reduce consumption and hence avoid the need for generation. This would include avoided energy costs, capacity costs and T&D line
- 4. The benefit of increased system reliability: The reductions in demand and peak loads from customers opting for self generation, provide reliability benefits to the distribution system in the forms of:
 - a. Avoided costs of supply disruptions
 - b. Benefits to the economy of damage and control costs avoided by customers and industries in the digital economy that need greater than 99.9 level of reliable electricity service from the central grid
 - c. Marginally decreased System Operator's costs to maintain a percentage reserve of electricity supply above the instantaneous demand
 - d. Benefits to customers and the public of avoiding blackouts.
- 5. Non-energy benefits: Non-energy benefits might include a range of program-specific benefits such as saved water in energy-efficient washing machines or self generation units, reduced waste streams from an energy-efficient industrial process, etc.
- 6. Non-energy benefits for low income programs: The low income programs are social programs which have a separate list of benefits included in what is known as the 'low income public purpose test'. This test and the sepcific benefits associated with this test are outside the scope of this manual.
- 7. Benefits of fuel diversity include considerations of the risks of supply disruption, the effects of price volatility, and the avoided costs of risk exposure and risk management.

Strengths of the Total Resource Cost Test

The primary strength of the Total Resource Cost (TRC) test is its scope. The test includes total costs (participant plus program administrator) and also has the potential for capturing total benefits (avoided supply costs plus, in the case of the societal test variation, externalities). To the

extent supply-side project evaluations also include total costs of generation and/or transmission, the TRC test provides a useful basis for comparing demand- and supply-side options.

Since this test treats incentives paid to participants and revenue shifts as transfer payments (from all ratepayers to participants through increased revenue requirements), the test results are unaffected by the uncertainties of projected average rates, thus reducing the uncertainty of the test results. Average rates and assumptions associated with how other options are financed (analogous to the issue of incentives for DSM programs) are also excluded from most supply-side cost determinations, again making the TRC test useful for comparing demand-side and supply-side options.

Weakness of the Total Resource Cost Test

The treatment of revenue shifts and incentive payments as transfer payments, identified previously as a strength, can also be considered a weakness of the TRC test. While it is true that most supply-side cost analyses do not include such financial issues, it can be argued that DSM programs should include these effects since, in contrast to most supply options, DSM programs do result in lost revenues.

In addition, the costs of the DSM "resource" in the TRC test are based on the total costs of the program, including costs incurred by the participant. Supply-side resource options are typically based only on the costs incurred by the power suppliers.

Finally, the TRC test cannot be applied meaningfully to load building programs, thereby limiting the ability to use this test to compare the full range of demand-side management options.

Formulas

The formulas for the net present value $(NPV_{TRC})'$ the benefit-cost ratio (BCR_{TRC}) and levelized costs are presented below:

NPVTRC = BTRC - CTRC BCRTRC = BTRC / CTRC LCTRC = LCRC / IMP

Where:

NPVTRC	=	Net present value of total costs of the resource
BCRTRC	=	Benefit-cost ratio of total costs of the resource
LCTRC	=	Levelized cost per unit of the total cost of the resource (cents per kWh for
		conservation programs; dollars per kW for load management programs)
BTRC	=	Benefits of the program
CTRC	=	Costs of the program
LCRC	=	Total resource costs used for levelizing
IMP	=	Total discounted load impacts of the program
PCN	=	Net Participant Costs
		-

The $B_{TRC} C_{TRC}$ LCRC, and IMP terms are further defined as follows:

$$BTRC = \sum_{t=1}^{N} \frac{UAC_{t} + TC_{t}}{(1+d)^{t-1}} + \sum_{t=1}^{N} \frac{UAC_{at} + PAC_{at}}{(1+d)^{t-1}}$$

$$CTRC = \sum_{t=1}^{N} \frac{PRC_{t} + PCN_{t} + UIC_{t}}{(1+d)^{t-1}}$$
$$LCRC = \sum_{t=1}^{N} \frac{PRC_{t} + PCN_{t} - TC_{t}}{(1+d)^{t-1}}$$
$$IMP = \sum_{t=1}^{n} \binom{n}{i=1} EN_{it} \text{ or } (DN_{it} \text{ where } I = peak \text{ period})$$
$$(1+d)^{t-1}$$

[All terms have been defined in previous chapters.]

The first summation in the BTRC equation should be used for conservation and load management programs. For fuel substitution programs, both the first and second summations should be used.

Chapter 5 ____

Program Administrator Cost Test

Definition

The Program Administrator Cost Test measures the net costs of a demand-side management program as a resource option based on the costs incurred by the program administrator (including incentive costs) and excluding any net costs incurred by the participant. The benefits are similar to the TRC benefits. Costs are defined more narrowly.

Benefits and Costs

The benefits for the Program Administrator Cost Test are the avoided supply costs of energy and demand, the reduction in transmission, distribution, generation, and capacity valued at marginal costs for the periods when there is a load reduction. The avoided supply costs should be calculated using net program savings, savings net of changes in energy use that would have happened in the absence of the program. For fuel substitution programs, benefits include the avoided supply costs for the energy-using equipment not chosen by the program participant only in the case of a combination utility where the utility provides both fuels.

The costs for the Program Administrator Cost Test are the program costs incurred by the administrator, the incentives paid to the customers, and the increased supply costs for the periods in which load is increased. Administrator program costs include initial and annual costs, such as the cost of utility equipment, operation and maintenance, installation, program administration, and customer dropout and removal of equipment (less salvage value). For fuel substitution programs, costs include the increased supply costs for the energy-using equipment chosen by the program participant only in the case of a combination utility, as above.

In this test, revenue shifts are viewed as a transfer payment between participants and all ratepayers. Though a shift in revenue affects rates, it does not affect revenue requirements, which are defined as the difference between the net marginal energy and capacity costs avoided and program costs. Thus, if NPVpa > 0 and NPVRIM < 0, the administrator's overall total costs will decrease, although rates may increase because the sales base over which revenue requirements are spread has decreased.

How the Results Can be Expressed

The results of this test can be expressed either as a net present value, benefit-cost ratio, or levelized costs. The net present value is the primary test, and the benefit-cost ratio and levelized cost are the secondary tests.

Net present value (NPVpa) is the benefit of the program minus the administrator's costs, discounted over some specified period of time. A net present value above zero indicates that this demand-side program would decrease costs to the administrator and the utility.

The benefit-cost ratio (BCRpa) is the ratio of the total discounted benefits of a program to the total discounted costs for a specified time period. A benefit-cost ratio above one indicates that the program would benefit the combined administrator and utility's total cost situation.

The levelized cost is a measure of the costs of the program to the administrator in a form that is sometimes used to estimate costs of utility-owned supply additions. It presents the costs of the program to the administrator and the utility on per kilowatt, per kilowatt-hour, or per therm basis levelized over the life of the program.

Strengths of the Program Administrator Cost Test

As with the Total Resource Cost test, the Program Administrator Cost test treats revenue shifts as transfer payments, meaning that test results are not complicated by the uncertainties associated with long-term rate projections and associated rate design assumptions. In contrast to the Total Resource Cost test, the Program Administrator Test includes only the portion of the participant's equipment costs that is paid for by the administrator in the form of an incentive. Therefore, for purposes of comparison, costs in the Program Administrator Cost Test are defined similarly to those supply-side projects which also do not include direct customer costs.

Weaknesses of the Program Administrator Cost Test

By defining device costs exclusively in terms of costs incurred by the administrator, the Program Administrator Cost test results reflect only a portion of the full costs of the resource.

The Program Administrator Cost Test shares two limitations noted previously for the Total Resource Cost test: (1) by treating revenue shifts as transfer payments, the rate impacts are not captured, and (2) the test cannot be used to evaluate load building programs.

Formulas

The formulas for the net present value, the benefit-cost ratio and levelized cost are presented below:

NPVpa	= Bpa - Cpa
BCRpa	= Bpa/Cpa
LCpa	= LCpa/IMP

Where:

NPVpa	Net present value of Program Administrator costs
BCRpa	Benefit-cost ratio of Program Administrator costs
LCpa	Levelized cost per unit of Program Administrator cost of the resource
Bpa	Benefits of the program
Cpa	Costs of the program
LCpc	Total Program Administrator costs used for levelizing

$$B_{pa} = \sum_{t=1}^{N} \frac{UAC_{t}}{(1+d)^{t-1}} + \sum_{t=1}^{N} \frac{UAC_{at}}{(1+d)^{t-1}}$$

$$C_{pa} = \sum_{t=1}^{N} \frac{PRC_{t} + INC_{t} + UIC_{t}}{(1+d)^{t-1}}$$

$$LCpc = \int_{t=1}^{N} \frac{PRC_{t} + INC_{t}}{(1+d)^{t-1}}$$

[All variables are defined in previous chapters.]

The first summation in the Bpa equation should be used for conservation and load management programs. For fuel substitution programs, both the first and second summations should be used.

Inputs to Equations and Documentation

A comprehensive review of procedures and sources for developing inputs is beyond the scope of this manual. It would also be inappropriate to attempt a complete standardization of techniques and procedures for developing inputs for such parameters as load impacts, marginal costs, or average rates. Nevertheless, a series of guidelines can help to establish acceptable procedures and improve the chances of obtaining reasonable levels of consistent and meaningful cost-effectiveness results. The following "rules" should be viewed as appropriate guidelines for developing the primary inputs for the cost-effectiveness equations contained in this manual:

- 1. In the past, Marginal costs for electricity were based on production cost model simulations that clearly identify key assumptions and characteristics of the existing generation system as well as the timing and nature of any generation additions and/or power purchase agreements in the future. With a deregulated market for wholesale electricity, marginal costs for electric generation energy should be based on forecast market prices, which are derived from recent transactions in California energy markets. Such transactions could include spot market purchases as well as longer term bilateral contracts and the marginal costs should be estimated based on components for energy as well as demand and/or capacity costs as is typical for these contracts.
- 2. In the case of submittals in conjunction with a utility rate proceeding, average rates used in DSM program cost-effectiveness evaluations should be based on proposed rates. Otherwise, average rates should be based on current rate schedules. Evaluations based on alternative rate designs are encouraged.
- 3. Time-differentiated inputs for electric marginal energy and capacity costs, average energy rates, and demand charges, and electric load impacts should be used for (a) load management programs, (b) any conservation program that involves a financial incentive to the customer, and (c) any Fuel Substitution or Load Building program. Costing periods used should include, at a minimum, summer and winter, on-, and off-peak; further disaggregation is encouraged.
- 4. When program participation includes customers with different rate schedules, the average rate inputs should represent an average weighted by the estimated mix of participation or impacts. For General Rate Case proceedings it is likely that each major rate class within each program will be considered as program elements requiring separate cost-effectiveness analyses for each measure and each rate class within each program.
- 5. Program administration cost estimates used in program cost-effectiveness analyses should exclude costs associated with the measurement and evaluation of program impacts unless the costs are a necessary component to administer the program.
- 6. For DSM programs or program elements that reduce electricity and natural gas consumption, costs and benefits from both fuels should be included.

- 7. The development and treatment of load impact estimates should distinguish between gross (i.e., impacts expected from the installation of a particular device, measure, appliance) and net (impacts adjusted to account for what would have happened anyway, and therefore not attributable to the program). Load impacts for the Participants test should be based on gross, whereas for all other tests the use of net is appropriate. Gross and net program impact considerations should be applied to all types of demand-side management programs, although in some instances there may be no difference between gross and net.
- 8. The use of sensitivity analysis, i.e. the calculation of cost-effectiveness test results using alternative input assumptions, is encouraged, particularly for the following programs: new programs, programs for which authorization to substantially change direction is being sought (e.g.,, termination, significant expansion), major programs which show marginal cost-effectiveness and/or particular sensitivity to highly uncertain input(s).

The use of many of these guidelines is illustrated with examples of program cost effectiveness contained in Appendix B.

Appendix B _____

Summary of Equations and Glossary of Symbols

Basic Equations

Participant Test

Ratepayer Impact Measure Test

LRIRIM	=	(CRIM - BRIM) / E		
FRIRIM	=	(CRIM - BRIM) / E	for $t = 1$	
ARIRIMt	=	FRIRIM	for $t = 1$	
	=	(CRIMt-BRIMt)/Et	for t=2,	,N
NPVRIM	=	BRIM — CRIM		
BCRRIM	=	BRIM /CRIM		

Total Resource Cost Test

NPVTRC = BTRC - CTRC BCRTRC = BTRC / CTRC LCTRC = LCRC / IMP

Program Administrator Cost Test

NPVpa	= Bpa - Cpa
BCRpa	= Bpa / Cpa
LCpa	= LCpa / IMP

Benefits and Costs Participant Test

$$Bp = \prod_{t=1}^{N} \frac{BR_t + TC_t + INC_t}{(1+d)^{t-1}} + \prod_{t=1}^{N} \frac{AB_{at} + PAC_{at}}{(1+d)^{t-1}}$$

$$Cp_{t=1}^{N} \frac{PC_{t} + BI_{t}}{(1+d)^{t-1}}$$

Ratepayer Impact Measure Test

$$B_{RIM} = \sum_{t=1}^{N} \frac{UAC_t + RG_t}{(1+d)^{t-1}} + \sum_{t=1}^{N} \frac{UAC_{at}}{(1+d)^{t-1}}$$

$$C_{RIM} = \sum_{t=1}^{N} \frac{UIC_t + RL_t + PRC_t + INC_t}{(1+d)^{t-1}} + \sum_{t=1}^{N} \frac{RL_{at}}{(1+d)^{t-1}}$$

$$E = \sum_{t=1}^{N} \frac{E_t}{(1+d)^{t-1}}$$

Total Resource Cost Test

$$B_{TRC} = \sum_{t=1}^{N} \frac{UAC_t + TC_t}{(1+d)^{t-1}} + \sum_{t=1}^{N} \frac{UAC_{at} + PAC_{at}}{(1+d)^{t-1}}$$

$$C_{TRC} = \sum_{t=1}^{N} \frac{PRC_{t} + PCN_{t} + UIC_{t}}{(1+d)^{t-1}}$$

$$L_{TRC} = \sum_{t=1}^{N} \frac{PRC_{t} + PCN_{t} - TC_{t}}{(1+d)^{t-1}}$$

$$IMP = \underbrace{\prod_{t=1}^{n} (\prod_{i=1}^{n} EN_{it}) or(DN_{it} where I = peak period)}_{(1+d)^{t-1}}$$

Program Administrator Cost Test

$$B_{pa} = \sum_{t=1}^{N} \frac{UAC_{t}}{(1+d)^{t-1}} + \sum_{t=1}^{N} \frac{UAC_{at}}{(1+d)^{t-1}}$$

$$C_{pa} = \sum_{t=1}^{N} \frac{PRC_{t} + INC_{t} + UIC_{t}}{(1+d)^{t-1}}$$

$$LCPA = \sum_{t=1}^{N} \frac{PRC_t + INC_t}{(1+d)^{t-1}}$$

Glossary of Symbols

Abat	=	Avoided bill reductions on bill from alternate fuel in year t
AC:Dit	=	Rate charged for demand in costing period i in year t
AC:Eit	=	Rate charged for energy in costing period i in year t
ARIRIM	=	Stream of cumulative annual revenue impacts of the program per unit of
		energy, demand, or per customer. Note that the terms in the ARI formula are
		not discounted, thus they are the nominal cumulative revenue impacts.
		Discounted cumulative revenue impacts may be calculated and submitted if
		they are indicated as such. Note also that the sum of the discounted
		stream of cumulative revenue impacts does not equal the LRIRIM*
BCRp	=	Benefit-cost ratio to participants
BCRRIM	=	Benefit-cost ratio for rate levels
BCRTRC	=	Benefit-cost ratio of total costs of the resource
BCRpa	=	Benefit-cost ratio of program administrator and utility costs
BIt	=	Bill increases in year t
Bj	=	Cumulative benefits to participants in year j
Bp	=	Benefit to participants
BRIM	=	Benefits to rate levels or customer bills
BRt	=	Bill reductions in year t
BTRC	=	Benefits of the program
Bpa	=	Benefits of the program
Cj	=	Cumulative costs to participants in year i
Ср	=	Costs to participants
CRIM	=	Costs to rate levels or customer bills
CTRC	=	Costs of the program
Сра	=	Costs of the program
D	=	discount rate
Dgit	=	Reduction in gross billing demand in costing period i in year t

Dnit	=	Reduction in net demand in costing period i in year t
DPp	=	Discounted payback in years
E	=	Discounted stream of system energy sales-(kWh or therms) or demand sales (kW) or first-year customers
Egit	=	Reduction in gross energy use in costing period i in year t
Enit	=	Reduction in net energy use in costing period i in year t
Et	=	System sales in kWh kW or therms in year t or first year customers
FRIRIM	=	First-year revenue impact of the program per unit of energy, demand, or per customer.
IMP	=	Total discounted load impacts of the program
INCt	=	Incentives paid to the participant by the sponsoring utility in year t First year
		in which cumulative benefits are > cumulative costs.
Kit	=	1 when EGit or DGit is positive (a reduction) in costing period i in year t,
		and zero otherwise
LCRC	=	Total resource costs used for levelizing
LCTRC	=	Levelized cost per unit of the total cost of the resource
LCPA	=	Total Program Administrator costs used for levelizing
Lcpa	=	Levelized cost per unit of program administrator cost of the resource
LRIRIM	=	Lifecycle revenue impact of the program per unit of energy (kWh or therm)
		or demand (KW)-the one-time change in rates-or per customer-the change in
MCD		customer bills over the life of the program.
MC:Dit	=	Marginal cost of demand in costing period 1 in year t
MC:EII	=	Marginal cost of energy in costing period 1 in year t
NPvavp	=	Net present value to the average participant
NPVP	=	Net present value to all participants
NPVRIM	=	Net present value levels
NPVIKC	=	Net present value of total costs of the resource
NPvpa	=	Net present value of program administrator costs
OBIt	=	Other bill increases (i.e., customer charges, standby rates)
OBR	=	Other bill reductions or avoided bill payments (e.g., customer charges, standby rates).
Р	=	Number of program participants
PACat	=	Participant avoided costs in year t for alternate fuel devices

PCt	=	Participant costs in year t to include:
		Initial capital costs, including sales tax
		Ongoing operation and maintenance costs
		Removal costs, less salvage value
		• Value of the customer's time in arranging for installation, if significant
PRCt	=	Program Administrator program costs in year t
PCN	=	Net Participant Costs
RGt	=	Revenue gain from increased sales in year t
RLat	=	Revenue loss from avoided bill payments for alternate fuel in year t
		(i.e., device not chosen in a fuel substitution program)
RLt	=	Revenue loss from reduced sales in year t
TCt	=	Tax credits in year t
UACat	=	Utility avoided supply costs for the alternate fuel in year t
UACt	=	Utility avoided supply costs in year t
PAt	=	Program Administrator costs in year t
UICt	=	Utility increased supply costs in year t

Derivation of Rim Lifecycle Revenue Impact Formula

Most of the formulas in the manual are either self-explanatory or are explained in the text. This appendix provides additional explanation for a few specific areas where the algebra was considered to be too cumbersome to include in the text.

Rate Impact Measure

The Ratepayer Impact Measure lifecycle revenue impact test (LRIRIM) is assumed to be the one-time increase or decrease in rates that will re-equate the present valued stream of revenues and stream of revenue requirements over the life of the program.

Rates are designed to equate long-term revenues with long-term costs or revenue requirements. The implementation of a demand-side program can disrupt this equality by changing one of the assumptions upon which it is based: the sales forecast. Demand-side programs by definition change sales. This expected difference between the long-term revenues and revenue requirements is calculated in the NPVRIM The amount which present valued revenues are below present valued revenue requirements equals NPVRIM

The LRIRIM is the change in rates that creates a change in the revenue stream that, when present valued, equals the NPVRIM* If the utility raises (or lowers) its rates in the base year by the amount of the LRIRIM' revenues over the term of the program will again equal revenue requirements. (The other assumed changes in rates, implied in the escalation of the rate values, are considered to remain in effect.)

Thus, the formula for the LRIRIM is derived from the following equality where the present value change in revenues due to the rate increase or decrease is set equal to the NPVRIM or the revenue change caused by the program.

$$-NPV_{RIM} = \sum_{t=1}^{N} \frac{LRI_{RIM} \times E_{t}}{(1+d)^{t-1}}$$

Since the LRI_{RIM} term does not have a time subscript, it can be removed from the summation, and the formula is then:

$$-NPV_{RIM} = LRI_{RIM} \times \sum_{t=1}^{N} \frac{E_t}{(1+d)^{t-1}}$$

Rearranging terms, we then get:

$$LRI_{RIM} = -NPV_{RIM} / \sum_{t=1}^{N} \frac{E_t}{(1+d)^{t-1}}$$

Thus,

$$E = \sum_{t=1}^{N} \frac{E_t}{(1+d)^{t-1}}$$

ENERGY EFFICIENCY POLICY MANUAL, VERSION 4.0 (July 2008)

Applicable to post-2005 Energy Efficiency Programs

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APPENDIX A Reference Documents and E-Links

- 1. <u>Energy Action Plan</u>
- 1a. <u>Energy Action Plan Update</u>
- 2. <u>EE Administrative Structure, D.05-01-055</u>
- 3. Energy Savings Goals, D.04-09-060
- 4. <u>Standard Practice Manual</u>
- 5. Database for Energy Efficient Resources (DEER)
- 6. LT Avoided Cost Methodology and E3 Calculators
- 7. <u>EE Program Reporting Requirements Manual</u>
- 8. <u>EM&V Protocols</u>

<u>Approved Savings Goals (2004-2013)</u>
Fund Shifting Rules
Shareholder Incentive Mechanism Graphic Illustration

APPENDIX B – GLOSSARY Common EE Terms and Definitions

Adopted Program Budget	Free Riders (ridership)	Peer Review Group (PRG)
Advanced Technologies	Fuel Substitution	Performance Basis
Affiliate	Funding Cycle	Performance Earnings Basis (PEB)
Avoided Costs	Gas Savings	
Baseline Data	Hard To Reach, Non	Performance Uncertainties
	<u>Residential</u>	
Coincident Peak Demand	Hard To Reach, Residential	Portfolio
Community Choice		Portfolio Reporting
Aggregators		
Competitive Solicitation	Incremental Measure Cost	Pre-commercialization
Conservation	Information and Education	<u>Program</u>
	Programs	
Conservation Measures	Innovation Incubator	Program Activities
Conservation Programs	Institutional Barriers	Program Administrator
Cost Effectiveness	Least Cost/Best Fit	Program Administrator Cost Test
		<u>(PAC)</u>
Cream Skimming	Levelized Cost	Program Advisory Group PAG)
Cross Subsidization	Load Management	Program Cycle
Customer	Load Serving Entities	Program Implementers
Dual Test	Lost Opportunities	Program Strategy
E3 Calculator	Market Effect	Program Year(s)
Effective Useful Life	Marketing and Outreach	<u>Ratepayer</u>
Electricity Savings	<u>Measures</u>	<u>Rebate</u>
Emerging Technologies	Minimum Performance	<u>Report Month</u>
	Standard (MPS)	
Emissions Reductions	Net to Gross Ratio	Resource Value
Energy Efficiency Groupware	Non-price Factors	Service Area
Application 2006 (EEGA)		
End Use	Operating Program Budget	Short Term/Long Term
Energy Efficiency	Participant Test	Source BTU Consumption
Energy Efficiency Measure	<u>Partnership</u>	<u>Spillover</u>
Energy Efficiency Program	Peak Demand	Standard Practice Manual
Energy Efficiency Savings	Peak Demand, Coincident	<u>Statewide</u>
Evaluation, Measurement and	Peak Demand (General)	Third Party/Non-IOU
Verification (EM&V)		
Evaluation Project Budget	Peak Savings, Coincident	Total Resource Cost Test (TRC)
	<u>(kW)</u>	
Financial Incentive	<u>Peak Savings – Daily Average</u>	
	<u>(kW)</u>	
Free Drivers	Peak Savings, Non Coincident	Zero Net Energy

ENERGY EFFICIENCY POLICY MANUAL FOR POST-2005 PROGRAMS

I. Introduction

This document presents the California Public Utilities Commission's (Commission) policy rules and related reference documents for the development and evaluation of energy efficiency programs funded by ratepayers in California. Referred to as the Energy Efficiency Policy Manual, Version 4.0, this document shall apply to all energy efficiency activities commencing in program year (PY) 2005 and beyond. The policy rules, terms and definitions contained herein apply to energy efficiency activities funded through the following mechanisms:

- The electric public goods charge (PGC), as authorized by Public Utilities (PU) Code Sections 381 and 399.
- The gas surcharge, as authorized by PU Code Sections 890-900.
- Procurement rates, as authorized by the Commission.

The rules in this manual do **not** currently apply to:

- Low-income energy efficiency programs (LIEE) funded by the electric PGC or gas surcharges
- California Alternative Rates for Energy (CARE) for low-income customers funded out of electric or gas PGC¹
- Interruptible rate or load management programs²
- Self-generation and demand-responsiveness programs developed in response to AB970 (PU Code Section 399.15(b)).³

¹ A separate low-income rulemaking was initiated on January 25, 2007 (R.07-01-042).

² Interruptible and load management programs are addressed under Decision 05-11-009 (R.02-06-001).

³ These programs were adopted in D.01-03-073, in R.98-07-037.

This document supersedes all previous versions of the Energy Efficiency Policy Manual. Sections II-XI below articulate the Commission's policy rules ("Rules") governing energy efficiency activities, commencing in 2006.

The term "Program Administrators" refers to the following investor-owned utilities (IOUs): Pacific Gas and Electric Company (PG&E), Southern California Edison Company (SCE), San Diego Gas & Electric Company (SDG&E) and Southern California Gas Company (SoCalGas).

II. Energy Efficiency Policy Objectives and Program Funding Guidelines

1. Commission and state energy policy, as expressed in the Energy Action Plan and reaffirmed in Decision (D.) 04-12-048, make energy efficiency the utilities' highest priority procurement resource. In other words, cost-effective energy efficiency should be first in the "loading order" of resources used by the utilities to meet their customers' energy service needs. The Governor's and the state's policies also seek to reduce the environmental impact (including the greenhouse gas emissions) associated with the state's energy consumption, to protect the public's health and safety. Energy efficiency is a critical part of the state's strategy to achieve these goals.

1.a. For PY2009 and through 2020 and beyond, the utilities shall develop a single, comprehensive Strategic Plan updated annually for energy efficiency programs and program cycles. The plan shall incorporate collaboration with a wider range of stakeholders, integration with other demand-side management programs, and innovation of energy efficiency programs, as outlined under D.07-10-032. The utilities shall aggressively pursue energy efficiency as part of the Western Regional Climate Action Initiative, February 26, 2007 and the National Action Plan for Energy Efficiency (See http://www.epa.gov/solar/energy-programs/napee/index.html).

2. The Commission's overriding goal guiding its energy efficiency efforts is to pursue all cost-effective energy efficiency opportunities over both the shortand long-term. By D.04-09-060, the Commission translated this policy into specific annual and cumulative numerical goals for electricity and natural gas savings by utility service territory. These goals shall be updated periodically by the Commission as provided for in that decision. The Commission-adopted energy savings goals are expressed in terms of annual and cumulative gigawatt hours, million-therms and peak megawatt load reductions. By D.06-06-063, Ordering Paragraph 1, the definition of peak megawatt load reduction contained

in the 2005 Database for Energy Efficient Resources (DEER) shall be used for the purpose of verifying energy efficiency program and portfolio performance⁴. Program Administrators should develop their energy efficiency program portfolios so that they will meet or exceed these annual and cumulative savings goals, both over the short- and long-term.⁵ As clarified in D.07-10-032, cumulative savings represent the savings in that year from all previous measure installations (and reflecting any persistence decay that has occurred since the measures were installed) plus the first-year savings of the measures installed in that program year.

3. In order to promote the resource procurement policies articulated in the Energy Action Plan and by this Commission, energy efficiency activities funded by ratepayers should focus on programs that serve as alternatives to more costly supply-side resource options ("resource programs"). Focusing energy efficiency efforts in this way is the most equitable way to distribute program benefits: By keeping energy resource procurement costs as low as possible through the deployment of cost-effective portfolio of resource programs, over time *all* customers will share in the resource savings from energy efficiency.

4. "Lost opportunities" are those energy efficiency options which offer long-lived, cost-effective savings and which, if not exploited promptly or simultaneously with other low cost energy efficiency measures or in tandem with other load-reduction technologies or distributed generation technologies being installed at the site (e.g., solar heating or photovoltaics), are lost irretrievably or rendered much more costly to achieve. "Cream skimming" results in the pursuit of only the lowest cost energy efficiency measures, leaving behind other cost-effective opportunities. Cream skimming becomes a problem when lost opportunities are created in the process.

5. Program Administrators should manage their portfolio of programs to meet or exceed the short- and long-term savings goals established by the

⁴ D.06-06-063. As discussed in this decision, DEER defines peak demand as the average grid level impact for a measure between 2 p.m. and 5 p.m. during the three consecutive weekday periods containing the weekday temperature with the hottest temperature of the year.

⁵ While the energy savings achieved by LIEE programs will count towards the Commission's savings goals, per D.04-09-050, the Commission considers factors other than cost-effectiveness in determining LIEE program design and funding levels.

Commission by pursuing the most cost-effective energy efficiency resource programs first, while minimizing lost opportunities. In addition, the Program Administrators should demonstrate in their program planning applications how their proposed portfolio will aggressively increase overall capacity utilization and lower peak loads through the deployment of low load factor/high critical peak saving measures. The aggressive annual and cumulative savings goals established by the Commission will serve to discourage cream- skimming program designs or implementation approaches that create lost opportunities. Nonetheless, Program Administrators should actively develop strategies to minimize lost opportunities, and should describe those strategies in the applications they submit for each program cycle.

6. Compliance with Rule II.5 will generally dictate the appropriate balance for portfolio funding of resource programs across market sectors (e.g., residential, industrial, commercial) and geography, as well as the most appropriate program designs. Program Administrators should also include a selection of statewide marketing and outreach programs, upstream market transformation programs, information and education programs, support for codes and standards and other activities in their proposed portfolios that support the Commission's short-term and long-term energy savings goals. Program administrators shall allocate a sufficient portion of portfolio funding to statewide marketing and outreach to continue and build upon the success of the existing program. Statewide marketing and outreach programs should convey a consistent statewide message to energy consumers in all sectors.

7. To further support the Governor's and State's goals to reduce greenhouse gas emissions, Program Administrators should explore with their advisory groups ways in which to co-brand with the California Climate Action Registry that will encourage the accurate reporting of emissions in California. This might include, for example, marketing and outreach efforts that provide information about the Registry to IOU customers and encourage larger commercial and industrial customers to participate in the Registry reporting protocols. In their program plan applications, Program Administrators shall describe the ways in which such co-branding will be supported through their proposed programs. Similarly, energy efficiency marketing efforts should strive to co-brand with water conservation messaging, recycling, toxic reductions (particularly mercury from fluorescent lamps), solar, distributed generation, green buildings, low income, and other related programs. (D07-10-043, mimeo p. 59)

8. The deployment of new and improved energy efficiency products and applications can help sustain or increase current savings yields from program dollars, and serves to create a new generation of technologies available to tap the cost-effective potential of energy efficiency in ways we cannot predict today. In order to provide higher levels of bridging between available upstream innovations and the marketplace, annual funding for emerging technologies programs should increase. Program Administrators should work with the California Energy Commission (CEC) and other appropriate stakeholders to include appropriate levels of funding to demonstrate and commercialize emerging technologies funded through the California Public Interest Energy Research (PIER) program and other sources that otherwise would not receive funding for pre-commercialization demonstration. In their program planning applications, the Program Administrators shall jointly propose emerging technologies programs and increases to current funding levels for these programs. The main purpose of these programs should be to increase the probability that promising technologies will be commercialized within 6 years of program funding and thereby increase the chance of obtaining additional energy savings from these technologies in the long run. Program strategies should focus on reducing both the performance uncertainties associated with new products and applications and the institutional barriers to introducing them into the market.

9. Per D. 05-01-055, Program Administrators with input from the public and advisory groups will develop for Commission consideration their portfolios of energy efficiency programs utilizing selection criteria that are consistent with these Rules. Program Administrators will manage a portfolio of programs implemented by IOUs and non-IOUs that are selected and evaluated based on their ability to best meet the policy objectives articulated in these Rules.

10. Pursuant to PU Code sections 381, 381.1⁶, 399 and 890-900, PGC and gas surcharge funds must be spent to deliver energy efficiency benefits to ratepayers in the service territory from which the funds were collected.

⁶ Consistent with the provisions of AB117 (Chapter 838, Chaptered September 24, 2002), Section 381.1 was added to Public Utilities Code permitting community choice aggregators (CCAs) to apply to administer cost-effective energy efficiency and conservation programs. The Commission adopted certain procedures in Decision (D.) 03-07-034 (dated July 10, 2003) to implement portions of AB 117 affecting the allocation of energy efficiency program funds. [MOVED FROM FOOTNOTE 1]

Additionally, gas PGC collections must fund natural gas energy efficiency programs and electric PGC collections must fund electric energy efficiency programs. However, nothing in these Rules is intended to prohibit or limit the ability of the Commission to direct the IOUs to jointly fund with PGC, gas surcharges, or other collections (e.g., via procurement rates) selected measurement studies, statewide marketing and outreach programs, or other energy-efficiency activities that reach across service territory boundaries.

11. Fund Shifting Rules (D.05-09-043, Table 8) applicable to the 2006-2008 program cycle are added to these Policy Rules as an attachment to Appendix A. Appendix A is modified per D.07-10-032 for carry-back/carry-over funding to apply to the 2009-2011 funding cycle, and is repeated below.

12. Bridge Funding. Programs continuing from the 2006-2008 program cycle into the 2009-2011 cycle may use 2009-2011 funding, once the 2009-2011 portfolio has been approved and start-up costs for 2009-2011 programs may use 2009-2011 funding once the 2009-2011 portfolio has been approved. (D.07-10-032). Unspent or uncommitted funds from previous program years, or 2006-2008 funds that will not be needed should be used prior to using 2009-2011 funds. Both continuing program funding and start-up cost funding are limited to 15% of the current budget cycle without Commission approval. An Advice Letter is required for funding in excess of this percentage.

13. Funds may be committed for projects with lead times beyond three years under the following conditions:

- Long-term projects that require funding beyond the three-year program cycle shall be specifically identified in the utility portfolio plans and shall include an estimate of the total costs broken down by year and associated energy savings;
- Funds for long-term projects must be actually encumbered in the current program cycle;
- Contracts with all types of implementing agencies and businesses must explicitly allow completion of work beyond the end of a program cycle;
- Encumbered funds may not exceed 20% of the value of the current program cycle budget to come from the subsequent program cycle, except by approval in an advice letter process;
- Long-term obligations must be reported and tracked separately and include information regarding funds encumbered and estimated date of project completion; and
- Energy savings for projects with long lead times will be calculated by defining the baseline as the applicable codes and standards at the time of the issuance of the building permit.
- 14. For calculating the Performance Earnings Basis (PEB), funds encumbered for continuing programs or for programs with long lead times shall be counted when those funds are spent.
- 15. Mid-Cycle Funding Augmentations. See Rule IV.12 below.

III. Common Terms and Definitions

1. Common terms and definitions will facilitate the review, selection and evaluation of energy efficiency activities. In particular, program definitions should be designed to facilitate to the extent possible: (1) the identification of energy efficiency activities by end-use savings potential, (2) the evaluation, measurement and verification (EM&V) of those activities based on Commission-adopted EM&V protocols, and (3) the coordination of program development and evaluation with resource planning and procurement needs. To this end, Program Administrators and program implementers should use the definitions included in Appendix B to these Rules when characterizing any proposed program activity. The burden is on them to justify any departure from those terms and definitions.

IV. Cost-Effectiveness

1. The cost-effectiveness indicators referred to in these rules are described in the *California Standard Practices Manual: Economic Analysis of Demand-Side Management Programs* (SPM): Economic Analysis of Demand-Side Management Programs. Program Administrators and Implementers should perform cost-

effectiveness analyses consistent with the indicators and methodologies included in the SPM, unless otherwise indicated.⁷

2. This Commission relies on the Total Resource Cost Test (TRC) as the primary indicator of energy efficiency program cost effectiveness, consistent with our view that ratepayer-funded energy efficiency should focus on programs that serve as resource alternatives to supply-side options. The TRC measures the net resource benefits from the perspective of all ratepayers by combining the net benefits of the program to all ratepayers, both participants and non-participants. The benefits are the net present value of avoided costs of the supply-side resources avoided or deferred. The TRC costs encompass the net present value of the costs participants incur for the measures/equipment installed over the measure life and all non-rebate⁸ costs incurred by the program administrator.⁹ The TRC is calculated utilizing a discount rate that reflects each utility's weighted average cost of capital, as adopted by the Commission¹⁰.

⁸ The SPM restricts rebates to include only dollar benefits such as rebates or rate incentives (monthly bill credits) paid from the Program Administrator to participating ratepayers.

⁹ The TRC test uses the "incremental" measure cost (not the full cost) and incremental energy savings benefit (not the full energy savings benefit) when an energy-efficient appliance or measure promoted through the program is installed in lieu of the standard (less efficient) appliance/measure that would have been installed, without the utility EE activity. The TRC test uses the full measure cost (at the time of installation) and the full energy savings benefit (of the new measure) for the <u>remaining useful life</u> of the pre-existing equipment (e.g., 3 or more years), where the utility EE activity causes measure/equipment to be replaced much earlier. The TRC test then uses the incremental savings for the balance of the effective useful life of the newly installed measure/equipment and deducts the full cost of that equipment discounted back to the date of the measure/equipment installation.

¹⁰ For the 2006-8 program cycle an average IOU weighted cost of capital may have been used for cost effectiveness calculations. The value used for *ex ante* calculations should also be used for *ex post* calculations.

⁷ See Appendix A of this manual for information on how to obtain a copy of the SPM and its clarifications.

3. The Program Administrator Cost (PAC) test of cost-effectiveness should also be considered in evaluating program and portfolio cost-effectiveness. Under the PAC test, the program benefits are the same as the TRC test, but costs are defined differently to include the net present value of costs incurred by the program administrator (including financial incentives and rebates paid to anyone), but not the costs incurred by the participating customer. Like the TRC test, the PAC test is calculated utilizing a discount rate that reflects each utility's weighted cost of capital, as adopted by the Commission.

4. Applying both the TRC and PAC cost-effectiveness test is called the "Dual-Test". In almost all instances, an energy efficiency program that passes the TRC test will also pass the PAC test. However, if deployment of the program requires rebates or financial incentives to participants that exceed the measure cost, then the program may pass the TRC test, but fail the PAC test. Considering the results of both tests when evaluating program proposals ensures that program administrators and implementers do not spend more on financial incentives or rebates to participating customers than is necessary to achieve TRC net benefits.

5. TRC and PAC benefits should be computed utilizing the avoided cost methodologies and input assumptions, including non-price factors (e.g., for avoiding greenhouse gas and non-greenhouse gas pollutants) that have been developed for the evaluation of energy efficiency programs in our avoided cost rulemaking, R.04-04-025¹¹. The performance earnings basis (PEB) of energy efficiency resource programs shall be calculated from TRC and PAC benefits (being equal) minus TRC and PAC costs weighted two-thirds and one-third respectively. (D.05-04-051).

6. A prospective showing of cost-effectiveness using the Dual-Test for the entire portfolio of ratepayer-funded energy efficiency activities and programs (i.e., individual programs, plus all costs not assignable to individual programs, such as overhead, planning, evaluation, measurement verification and administrator compensation and performance, if applicable) is a threshold condition for eligibility for ratepayer funds. This prospective showing of cost-effectiveness shall include the costs for shareholder incentives that are projected

¹¹ See D.05-04-024 and D.06-06-063.

to be paid for portfolio performance under the energy efficiency risk/reward incentive mechanism in effect at that time.¹² This threshold requirement applies to each of the following: (1) the entire statewide portfolio of programs and (2) the service-territory wide program portfolios offered by each Program Administrator, excluding emerging technologies programs. Program administrators must demonstrate that this threshold requirement is met on a prospective basis in their program funding applications to the Commission. If a prospective showing of cost-effectiveness for the entire statewide portfolio including emerging technologies programs does not also pass the Dual-Test, Program Administrators shall describe the benefits associated with these programs that are not reflected in the TRC or PAC tests, and describe how these programs are expected to produce benefits in excess of costs for California ratepayers over the long-term. Program Administrators must also demonstrate that the proposed level of electric and natural gas energy efficiency program activities are expected to meet or exceed the Commission-adopted electric and natural gas savings goals, by service territory.¹³

7. As described in these Rules, fuel-substitution programs must also pass the Dual-Test to be considered for inclusion in the portfolio and eligible for funding. In addition, as a condition for the inclusion of solar water heating within the definition of energy efficiency measures, solar water heating installations must be cost-effective on a stand-alone basis, i.e., pass the Dual-Test of cost-effectiveness to be eligible for funding. Similarly, solar-powered water circulators must be cost-effective on a stand-alone basis (i.e., pass the Dual-Test) to be eligible for funding. ¹⁴ Other programs are not strictly required to pass the Dual test on a program level basis to be considered for funding, but their costeffectiveness must be carefully considered in order to design an overall portfolio that passes the Dual-Test, per Rule IV.6. Accordingly, except where otherwise indicated in these Rules, Program Administrators must present estimates of TRC and PAC net benefits for each program on a prospective basis in their program funding applications, along with any other information that may be requested by the Commission, Assigned Commissioner, Administrative Law Judge or Energy

¹² D.07-09-043, Mimeo page 220.

 ¹³ Per D.04-09-060, savings from LIEE programs will also count towards these goals.
 ¹⁴ Per D.07-11-004, eligible for 2006-2008 funding and cumulative savings goals.

Division.¹⁵ However, evaluation, measurement and verification costs should not be allocated to individual programs in the calculation of TRC and PAC net benefits. Rather, all costs associated with evaluation, measurement and verification should be allocated at the total portfolio level, rather than program by program.

8. To support comparisons of all resources in the utilities' procurement portfolio, the program administrators are required to also provide levelized unit cost estimates at the portfolio, end-use and measure level consistent with the methods described in the SPM. This information should be submitted with the program administrators' compliance filings on the competitive bid results, during each program cycle.

9. The usefulness of the TRC test as a primary indicator of costeffectiveness is limited for certain programs which do not necessarily focus on the timing or type of resource needs of the utility, such as programs designed to demonstrate or commercialize promising emerging energy efficiency technologies or structurally change the marketplace. For statewide marketing and outreach programs and information-only programs, the link between programs and savings is also difficult to discern. Therefore, the Commission and program administrators will need to consider factors and performance metrics other than the TRC and PAC Tests of cost-effectiveness when evaluating such program proposals for funding and when evaluating their results.

10. Fuel substitution programs may offer resource value and environmental benefits. Fuel-substitution programs should reduce the need for supply without degrading environmental quality. Fuel-substitution programs, whether applied to retrofit or new construction applications, must pass the following three-prong test to be considered further for funding:

- 1. The program must not increase source-BTU consumption. Proponents of fuel substitution programs should calculate the source-BTU impacts using the current CEC-established heat rate.
- 2. The program must have TRC and PAC benefit-cost ratio of 1.0 or greater. The TRC and PAC tests used for this purpose

¹⁵ See, for example, Ordering Paragraph 4, D.04-09-060.

should be developed in a manner consistent with these Rules.

3. The program must not adversely impact the environment. To quantify this impact, respondents should compare the environmental costs with and without the program using the most recently adopted values for residual emissions in the avoided cost rulemaking, R.04-04-025. The burden of proof lies with the sponsoring party to show that the material environmental impacts have been adequately considered in the analysis.

For purposes of applying these tests, fuel substitution proponents must compare the technologies offered by their program with the most efficient samefuel substitute technologies available to prospective participants that would have TRC and PAC benefit-cost ratio of 1.0 or greater. The burden of proof falls on the party sponsoring the analysis to show that the baseline comparison adheres to this requirement. Fuel substitution programs with a predominantly load building or load retention character are not eligible for funding, and the proponent of a fuel-substitution program carries the burden of proof to demonstrate that the program focuses on energy efficiency and creates net resource value.

11. To the extent possible, the assumptions that are used to estimate load impacts (e.g., kWh, kW and therm savings per unit, program net-to-gross ratios, incremental measure costs and useful lives) in the calculation of the TRC and PAC tests shall be taken from the most up-to-date version of the Database for Energy Efficiency Resources (DEER). ¹⁶ If the required cost-effectiveness test inputs for a measure to be included into a portfolio are not available in DEER, documentation supporting the inclusion of new information from alternate sources must be provided to Energy Division for review and approval prior to the inclusion of that measure's use in a savings claim or to a portfolio filing's approval. Cost-effectiveness parameters for non-DEER measures should be developed using methods and data from DEER to the extent possible. The evaluation, measurement and verification protocols for post-2005 programs will include a schedule and process for updating DEER on a regular basis. (See Rule V.2 below) (D.08-01-042)

¹⁶ See Appendix A of this manual for information on how to access DEER.

12. Costs and energy savings from mid-budget cycle funding additions for programs other than low income energy efficiency (LIEE) programs shall be counted when calculating portfolio cost-effectiveness and the performance earnings basis in applying the energy efficiency risk/return incentive mechanism. Energy savings from mid-budget cycle funding additions shall count towards the utilities' energy efficiency goals for resource planning purposes only. Such savings shall not be counted towards the energy efficiency goals for the purpose of 1) satisfying the minimum performance standard (MPS) associated with the energy efficiency risk/reward incentive mechanism, or 2) determining which "performance band" (e.g., deadband or applicable earnings tier level) should be used in calculating incentive payments or penalties. Each proposal to augment energy efficiency program funding must be carefully reviewed to ensure that such funding is not misclassified as LIEE, given the implications associated with LIEE classification that carry over to the adopted incentive mechanism. Savings associated with any mid-cycle funding augmentation to the LIEE program will not count towards the MPS. (OP 7, D.07-10-032)

V. Evaluation, Measurement and Verification (EM&V)

1. The development of energy efficiency programs that deliver reliable energy savings for California's ratepayers depends on well-designed methods of portfolio performance evaluation, measurement and verification (EM&V). Rigorous and strategically focused EM&V practices are required to gauge the performance of Program Administrators and Implementers, verify energy savings, improve the design and success of future energy efficiency programs and enhance the reliability of forecasted savings for resource planning purposes.

2. The performance basis and related EM&&V protocols for energy efficiency portfolios and programs for post-2005 energy efficiency activities were developed in the EM&&V phase of Rulemaking 01-08-028, and updated in Rulemaking 06-10-040, consistent with these Rules. The California Energy Efficiency Evaluation Protocols were initially adopted by ALJ Ruling dated April 25, 2006 (later updated in June 2006) to specify the current **minimum** acceptable approaches and procedures for the evaluation of utilities energy efficiency portfolios. Per D.05-01-055, Energy Division will have the lead role in the further development of EM&V protocols and procedures and the assigned ALJ may provide additional clarification and direction on EM&V administrative issues as needed.

3. In D.05-04-051 the Commission defined the current performance earnings basis, or PEB, as the net dollar benefits to ratepayers of the utilities portfolios calculated as specified in IV.5. above. In D. 07-09-043 the Commission defined the Minimum Performance Standard threshold, or MPS, for evaluation of the utility portfolios. Together the MPS and PEB form the "performance basis" focus for energy efficiency portfolio performance evaluation. Additionally, portfolio evaluation efforts are to be structured such that they can: 1) inform the program selection process, 2) provide early feedback to program implementers, 3) produce calculations of performance basis at the end of the funding period, and 4) feed back into the planning process for the next program cycle.

4. D.05-01-055 adopts an approach to EM&V administration whereby Energy Division has management and contracting responsibilities for all EM&V impact-related studies that will be used to 1) measure and verify energy and peak load savings; 2) generate data for savings estimates, cost-effectiveness inputs, and the Commission's adopted performance basis; and 3) evaluate whether portfolio goals are met.

5. As also directed in D.05-01-055, public participation in the development of impact-related evaluation studies will be provided in several stages including: 1) development of the EM&V protocols; 2) the overall EM&V plans, budget and the allocation of funding levels to studies will be addressed during each program planning cycle; 3) study results will be made available for public review and comment while in draft form; and 4) finalized studies will be made available for public review in an appropriate forum established by Assigned Commissioner's ruling.

6. D.05-01-055 adopts an approach to EM&V administration whereby Program Administrators and program implementers may directly contract for (and serve as technical lead in managing) program design evaluation and market assessment studies to assist them in selecting and managing a portfolio of programs to meet the Commission's objectives as well as provide them with access to information on a real-time basis to improve program delivery. While soliciting input from Energy Division, the Program Administrators should also take the lead in allocating Commission-authorized funding for this category of EM&V across individual studies, develop the scope of work for each study and prepare the RFPs. In their program plan applications, the Program Administrators should also describe each type of study (including general scope of work) they or their program implementers plan to manage and/or directly contract for in this category. All interested parties should have an opportunity to consider whether any of those proposed studies would create a conflict of

interest if the IOU Program Administrators or program implementers managed and directly contracted for them.

VI. Competitive Bidding and Partnership Programs

1. Competitive solicitations can help to identify innovative approaches or technologies for meeting savings goals with improved performance that might not otherwise be identified during the program planning process. However, not all program activities lend themselves to a competitive solicitation. It would be counterproductive to require open bids in instances where, for example, partnerships between IOUs and local governments ("local government partnership programs") can take advantage of the unique strengths that both partners bring to the table, or a combination of partnerships and bilateral contracting arrangements with private or public entities can deliver effective statewide initiatives, such as a statewide public awareness campaign or an upstream lighting program.

2. Competition in energy efficiency procurement should focus on soliciting good, new program ideas to achieve or exceed the Commission's savings goals, rather than allocating a specific percentage of program funding to particular implementers. Decisions on whether non-IOUs should be program implementers responsible for designing and delivering the program (rather than working to implement IOU-designed programs) should be made based on an evaluation of whether the program designs and delivery mechanisms proposed by non-IOUs are superior to those currently being implemented or planned for the future in achieving overall portfolio savings goals.

3. As directed in D.05-01-055, for each program planning cycle, the Program Administrators shall propose a portfolio of programs (with input from the Program Advisory Groups as described in that decision) that reflects the continuation of successful IOU and non-IOU implemented programs and new program initiatives designed to meet or exceed the Commission's savings goals with cost-effective energy efficiency. As part of that process, the Program Administrators will identify a minimum of 20% of funding for the entire portfolio of programs that will be put out to competitive bid to third-parties for the purpose of soliciting innovative ideas and proposals for improved portfolio performance. Per D.07-10-032, successful third-party programs from the 2006-2008 program cycle retained by the IOUs for successive budget cycles will count

towards the 20% and the extensions should be able to be structured as bilateral contracts. (D.07-10-032, OP 19) The portions to put out to bid could encompass programs currently designed and delivered by a combination of IOU and non-IOU program implementers. Any current program or group of programs (IOU or non-IOU designed and implemented) that can be improved upon in this way may be subject to open bids to replace, augment or otherwise enhance current efforts. However, open bids should not be required in instances where current or potential future partnerships between the Program Administrators and local governments can take advantage of the unique strengths that both partners bring to the table to deliver cost-effective energy efficiency services, or where combination of partnerships and bilateral contracting arrangements with private or public entities can deliver effective statewide initiatives that enhance portfolio performance. Such activities should be funded out of the 80% (maximum) core portfolio that is not put out to competitive bid.

4. As directed in D.05-01-055, the proposed portfolio of programs, portions to put out to bid and the bid evaluation criteria will be filed by the Program Administrators in their program plan applications for each funding cycle, and subject to Commission approval. Upon receiving Commission approval of the applications, the Program Administrators will complete the process of selecting programs and program implementers to design and deliver the programs in the next program cycle. During this process, the Program Administrators will develop and issue RFPs using criteria approved by the Commission and select a set of bids. For the 2007-2011 program cycle, thirdparty proposals will be included in the utility's portfolio application and the competitively bid RFP process and the PRG's review to ensure that the criteria are applied properly will occur prior to the utility's submittal of the application, as directed in D.07-10-032. The Peer Review Groups (including Energy Division's independent consultant(s)) will observe the Program Administrators' bid selection process to ensure that the criteria are applied properly. Before finalizing their selections, the Program Administrators will discuss the proposed results of their bid review process with the Peer Review Groups (and Energy Division's independent consultants). After incorporating feedback, the Program Administrators will make public all winning bids and submit compliance filings, as directed in D.05-01-055.

5. Future partnership programs need to be developed in a manner that places the Program Administrator and local government (or private) partner on more equal footing, in terms of involvement in program design and planning, information sharing and program implementation. We recognize that some program partners may prefer or be best suited to functioning as a subcontractor

to the Program Administrator and performing a supporting role for the program. However, this should not be the only option available for partnership programs. Other partnership arrangements, e.g., where the local government partner is fully involved in program planning and implementation, may take better advantage of the relative strengths of each partner. These arrangements must, in any event, be considered in light of other applicable Commission decisions, including the implementation of community choice aggregation , and should in no way diminish or dilute the responsibility and accountability of Program Administrators to meet the Commission-adopted savings goals.

6. Standard contract language should improve the effectiveness of future partnership programs. The standard language should establish the rights and responsibilities of the partners with sufficient flexibility to enable each partner to make improvements to program performance, as circumstances warrant. The standard language should also address information sharing, intellectual property ownership, reimbursement turn-around, dispute resolution, and other issues. Energy Division and Legal Division should work with the Program Administrators, interested local governments and other parties to develop a standard contract for future partnership programs, and submit that language with the program plans.

VII. Advisory Groups

Decision 07-10-032 eliminated the Public Advisory Groups (PAGs) for the purposes of planning for the 2009-11 program cycle and beyond. The following rules combine the functional descriptions of the PAGs with the Peer Review Groups (PRGs) for the 2006-2008 program cycle and the 2009-11 program cycle and beyond, and should be applied to the appropriate program cycle.

1. The Program Administrators should put together the advisory groups and implement the program design and selection process consistent with D.05-01-055 and D.07-10-032 and in the spirit of the collaborative approach they discuss in their filings. For 2009 and beyond, the Public Advisory Group (PAG) is eliminated while the Peer Review Group (PRG) is retained. Per Decision 07-10-032, the advisory function formerly performed by the PAG will be subsumed in the statewide strategic planning activity. These advisory groups should serve to: (1) promote transparency in the Program Administrator's decision-making process; (2) provide a forum to obtain valuable technical expertise from stakeholders and non-market participants; (3) encourage collaboration among stakeholders and (4) create an additional venue for public participation. The advisory groups will provide advice and feedback to the IOUs and provide

information to the Commission, but will not have any independent decisionmaking or contracting authority.

2. As discussed in D.05-01-055, members of the PAGs should be drawn from the energy efficiency expertise of both market and non-market participants across the full spectrum of program areas and strategies. One purpose of the PAGs is to provide guidance to the IOUs regarding region-specific customer and program needs, and provide a forum for input and collaboration with the local interests and stakeholders served by the programs. However, the PAGs must not focus exclusively on region-specific needs. The IOUs and their PAGs should also address statewide programs and consistency issues, bringing in national expertise as appropriate to consider these issues. For the purpose, the IOUs should form a subgroup of their PAG members who will closely collaborate and coordinate on statewide marketing and outreach, support for building codes and standards, education and training and other activities that secure both short- and long-term energy savings and peak demand reductions by providing a consistent and recognizable program presence throughout the state. In addition, the PAGs and IOUs should collaborate on statewide program designs and implementation strategies that increasingly integrate energy efficiency with demand response and distributed generation offerings to end-users. For 2009 and beyond, the Public Advisory Group (PAG) is eliminated while the Peer Review Group (PRG) is retained. Per Decision 07-10-032, the advisory function formerly performed by the PAG will be subsumed in the statewide strategic planning activity.

3. The IOUs and PAGs should ensure that statewide residential and nonresidential offerings take advantage of "best available practices" and avoid customer confusion by being as uniform and consistent as possible. While we recognize that differences in climate zones and other parameters may warrant some variations in program offerings to customers, these variations should be the exception and not the rule. If the need emerges to focus on a particular market segment, the IOUs and PAGs may also establish a separate working group of industry experts and stakeholders to address that need.

4. Energy Division and DRA staff will be *ex officio* members of each PAG and peer review subgroup described below, and CEC staff is invited to participate as *ex officio* members as well. The IOUs will select additional PAG members, but participation will be voluntary and there will be no formal voting rules or designation of voting or non-voting members. Within each PAG, the IOU will also identify and select a subgroup of non-financially interested members with extensive energy efficiency expertise that are willing to serve as

peer reviewers for the energy efficiency program evaluation and selection process, referred to as "Peer Review Groups" (PRGs.)

5. As described in D.05-01-055 and D.07-10-032, members of each PRG will be expected to: (1) oversee the development of criteria and selection of government partnership programs, (2) review the IOUs' submittals to the Commission and assess the IOUs' overall portfolio plans, their plans for bidding out pieces of the portfolio per the minimum bidding requirement and (3) review the bid evaluation utilized by the IOUs and their application of that criteria in selecting third-party programs. In addition, the three PRGs are expected to meet and assess the statewide portfolio in terms of its ability to meet or exceed short and long-term savings goals in compliance with these Rules.

6. The PAG meetings should be open to the public, and the IOUs should establish a clearinghouse website for noticing these meetings and posting documents to be discussed by the PAG at the meetings. In addition, the IOUs are expected to conduct public workshops, at least twice a year that are designed to solicit broad public input from non-PAG members concerning program design and implementation. For 2009 and beyond, the Public Advisory Group (PAG) is eliminated while the Peer Review Group (PRG) is retained. Per Decision 07-10-032, the advisory function formerly performed by the PAG will be subsumed in the statewide strategic planning activity.

VIII. Performance-Based Risk and Reward Incentive Mechanism

1. In accordance with Public Utilities Code Section 739.10, the Commission has established balancing accounts for each utility that remove significant regulatory disincentives for utility investments in energy efficiency and other demand-side management programs. With these balancing accounts, a large majority of the utilities' fixed-cost revenue requirements are no longer tied to the forecasted level of commodity electric and natural gas sales.

2. Per D.07-09-043 OP 2, as modified by D.08-01-042 OP 2, the risk/reward shareholder incentive mechanism applies to the energy efficiency programs funded for the 2006-2008 program cycle and for subsequent program cycles until further Commission notice. The risk/reward shareholder incentive mechanism is structured as follows:

a) To be eligible for earnings, SDG&E, PG&E and SCE shall meet the following minimum performance standard (MPS)

for the energy efficiency portfolio as a whole, on an *ex ante* basis for load impacts, with verified installations and costs:

- Achieve a minimum of 85% of the Commissionadopted savings goals, based on a simple average of the percentage of each individual gigawatt-hour (GWh), megawatt (MW) and, as applicable, million therm (MTherm) goal they achieve, *and also*
- (2) Meet a minimum of 80% of the goal for each individual savings metric.
- b) SoCalGas shall meet the MPS and be eligible for earnings if it achieves a minimum of 80% of the MTherm savings goal on an *ex ante* basis for load impacts, with verified installations and costs.
- c) Once the utility meets the MPS, earnings shall be calculated as a percentage (sharing rate) of the "performance earnings basis" (PEB) metric defined in Decision (D.) 94-10-059, as follows:
 - Portfolio net benefits calculated using the Total Resource Cost test of cost-effectiveness are weighted by two-thirds, and
 - (2) Portfolio net benefits calculated using the Program Administrator Cost test of cost-effectiveness are weighted by one-third.
- d) Program savings and costs shall be counted in determining whether the MPS is met and in calculating the PEB, as follows:
 - (1) Savings from low-income energy efficiency (LIEE) programs shall count towards determining whether the utilities have met their MPS, but neither LIEE program costs nor savings shall be included in the calculation of the PEB under the risk/reward shareholder incentive mechanism.
 - (2) With the exception of the Emerging Technologies Program and LIEE, all energy efficiency portfolio costs including associated evaluation, measurement and verification (EM&V) shall be included in the calculation of PEB.

- (3) Verified savings from Codes and Standards Advocacy Programs¹⁷ shall count as described in (a) and (b) below. Codes and Standards savings are to be *verified* (as opposed to *ex ante* estimates used for planning purposes).
 - (a) Fifty (50) percent of verified savings from pre-2006 Codes and Standards Advocacy Programs shall count towards the energy savings goals and minimum performance standards for the 2006-2008 (per D.07-09-043) and 2009-2011 (per D.07-10-032) program cycles.
 - (b One hundred (100) percent of verified savings from post-2005 Codes and Standards Advocacy Programs shall count towards the energy savings goals, minimum performance standards and performance earnings basis for the 2006-2008 and 2009-2011 program cycles.

Codes and Standards Advocacy costs are included as they are incurred in calculating the performance earnings basis and savings are included as they are realized.

e) If the utility has met the MPS, a first tier sharing rate of 9% shall apply. If the utility has met 100%

¹⁷ D.05-09-043 and Attachment 10. <u>Note</u> – The 50% verified savings calculation for Codes and Standards Advocacy work applies <u>only</u> to savings leading to the adoption of the 2005 standards developed by the CEC. At the time, installed savings and committed savings had been counted during the same budget cycle. D. 05-04-051 had adopted a policy to count only verified savings. To avoid double counting of committed savings with verified savings, a methodology was developed and adopted to derive the amount of savings attributable to reducing energy over the future years concerned (post 2005) using a calculation considering economic potential, market potential and naturally-occurring savings associated with the codes adopted. The result was 50%.

of the savings goals, a second tier sharing rate of 12% shall apply, up to the earnings cap adopted for each utility.

- (1) If the MPS is met, each individual savings metric must be no less than 5% below the second tier threshold to be considered within that tier based on the three-metric average.
- (2) If the MPS is met utilizing *ex ante* assumptions for load impacts, with verified installations and costs, but the *ex post* EM&V results take an individual metric below the 80% threshold or take the overall portfolio results to between 65% and 85% of the Commission-adopted savings goals, the utility shall continue to earn at the first tier sharing rate of 9%, applied to the *ex post* PEB, and shall not return any interim claims payments. If, however, *ex post* results take a utility below 65% of Commission goals for any individual metric, the utility shall pay back any interim payments, in addition to any applicable penalty.
- f) Penalties shall begin to accrue if portfolio performance for any single savings metric (GWh, MW or MTherm) falls to or below 65% of the savings goal for that metric. If this occurs, the larger of the following penalty provisions apply up to the penalty cap adopted for each utility:
 - (1) 5¢/kWh, 45¢/therm and \$25/kW per unit penalties applied to each unit below the savings goal, or (if larger):
 - (2) Dollar-for-dollar payback of negative net benefits ("cost-effectiveness guarantee"), where negative net benefits are calculated based on the PEB formula adopted in D.04-10-059.
- g) Total earnings and penalties are capped for the four utilities combined at \$450 million over each three-year program cycle, beginning with the 2006-2008 program cycle. The \$450 million combined cap is allocated to each utility as follows: PG&E--\$180 million; SCE--\$200 million; SDG&E-\$50 million and SoCalGas--\$20 million.
- 3. Earnings (or penalties) under the risk/reward shareholder incentive

mechanism shall be paid as follows:

- a) There shall be two "progress payment" interim earnings claims and one final true-up claim for each three-year program cycle. They shall be linked to Energy Division's Verification and Performance Basis Reports as described in D.07-09-043 and in its Attachment 6.
- b) Interim claims shall be evaluated on a "Cumulative-to-Date" basis, which counts the verified achievements from program year(s) in determining whether the MPS is met in each subsequent interim claim.
- c) Thirty-five (35) percent of the earnings calculated for each interim claim shall be "held back" until the final true-up claim, in order to minimize the risk of overpaying earnings before the *ex post* true-up of load impacts in the final claim. (D.08-01-042)
- d) The costs of shareholder incentives shall be included in calculations when (1) evaluating the cost-effectiveness of program plans submitted during the program planning cycle (on a projected basis), or (2) conducting a costeffectiveness review of portfolio performance in hindsight. These costs shall not be included in the calculation of PEB.

See Appendix A for a graphic illustrating this mechanism.

4. Per D.08-01-042, for the 2006-2008 program cycle, the following *ex ante* assumptions of energy savings and demand reductions shall be used in conjunction with verified installations and verified costs to calculate the 1st and 2nd Claims:

(a) Except as otherwise provided for below, the *ex ante* measure savings parameters that are contained in the utilities' E3 calculators, as of the 4th quarter 2007 report for the 1st Claim and as of the 4th quarter 2008 report for the 2nd Claim.

- (b) For measures contained in the Database for Energy Efficient Resources (DEER), the 2008 and 2009 DEER updates of *ex ante* measure savings parameters, including net-to-gross ratios and expected useful lives. The 2008 DEER update shall apply to the 1st Claim and the 2009 DEER update shall apply to the 2nd Claim.
- (c) For customized measures or customized projects that represent aggregated measures in the E3 calculator, Energy Division shall identify the appropriate installed measure(s) based on its measure verification results and develop the associated *ex ante* load impact values. For this purpose, Energy Division may use the utilities' tracking system information, engineering workpapers, DEER values and methods, or other current measurement and verification results that are available.

5. Per D.08-01-042, direction on the *ex ante* assumptions used to calculate interim claims during the 2009-2011 program cycle shall be provided in the decision authorizing the 2009-2011 program plans.

 Procedures for Review and Approval of Earnings/Penalties under the Energy Efficiency Risk/Reward Incentive Mechanism¹⁸. (D.07-09-043, OP 5, Attachment 7)

6a. *Interim Claims* - Payments under the interim claim(s) represent a "progress payment" towards total expected earnings:

(1.) Evaluation contractors use data requested from investor-owned utility
 (IOU) program tracking databases and reports to develop Contract
 Group¹⁹ level reports that verify unit installations.

Footnote continued on next page

¹⁸ These procedures augment and substitute for Attachment 4 to *Administrative Law Judge's Ruling Adopting Protocols for Process and Review of Post-2005 Evaluation, Measurement and Verification Activities,* dated January 11, 2006.

¹⁹ These procedures augment and substitute for Attachment 4 to Administrative

(2.) California Public Utility Commission (CPUC) audit team develops financial audit reports that verify portfolio costs for each utility.

(3.) Energy Division aggregates evaluation contractor reports and *ex ante* measure parameters (updated as directed in VIII.4 and VIII.5 above) for each utility to quantify the portfolio resource benefits and uses that quantity in connection with the audit team reports to develop the draft Verification Report, which is posted on a publicly accessible website. Energy Division notifies the CPUC Energy Efficiency service lists and lists of other interested stakeholders ²⁰ maintained by Energy Division of the availability of the draft Verification Report and the website posting location. Energy Division also notifies all of those stakeholders of the conference described in the next Step.

(4.) Energy Division holds a conference by telephone or in person. At this meeting, all stakeholders have an opportunity to discuss the draft Verification Report with those who prepared it (and supporting consultants). Stakeholders may raise questions about the draft report, receive responses from those who prepared it, and point out any errors they believe are contained in the report. The goal is to have a give and take between the stakeholders, report authors, and the supporting technical experts.

(5.) Stakeholders have an opportunity to provide written comments to Energy Division identifying any errors in the draft Verification Report. Stakeholders will be required to include in the written comments at least a brief description of every point in the draft report which they believe needs correction, even if discussed at the conference.

Law Judge's Ruling Adopting Protocols for Process and Review of Post-2005 Evaluation, Measurement and Verification Activities, dated January 11, 2006. ²⁰ "Stakeholders" refers to those listed on one of the CPUC's Energy Efficiency service list or who have notified Energy Division of their interest.

(6.) Energy Division makes any necessary changes to the Verification Report stimulated by the oral conference and written comments. All written comments, and Energy Division's treatment of them, will be reflected in an appendix to the Final Verification Report, which is posted on a publicly accessible website.

(7.) Final Verification Report is made publicly available.

(8.) Within 45 days of issuance of the Final Verification Report, the utility will file an advice letter for Energy Division disposition pursuant to section 7.6.1 of General Order 96-B, citing the Verification Report. The advice letter will address whether based on that report there are any earnings or penalties, and if so at what level, for the interim claim.

(9.) Energy Division will approve the advice letter as soon as practicable thereafter so long as it correctly incorporates the results of the Verification Report; if it does not, Energy Division will take other appropriate action under General Order 96-B.

6b. *<u>Final Claim</u>* - The final claim and true-up of savings and performance basis estimates will be based on the Final Performance Basis Report:

(1.)Evaluation contractors complete draft final evaluation reports²¹ and post them on a publicly accessible website. The evaluation contractors will notify the CPUC Energy Efficiency service lists and lists of other interested stakeholders maintained by Energy Division of the availability of the draft final evaluation reports and their website posting location(s). Energy Division will notify all of those stakeholders of the conference described in the next Step.

²¹ Evaluation reports refer to either interim or final reports submitted to Energy Division by program evaluation contractors describing results of evaluations (e.g., impact evaluation studies) of the Contract Groups.

(2.) Evaluation contractors hold a conference, under Energy Division sponsorship, with stakeholders, by telephone or in-person, to discuss draft final evaluation reports.

(3.) Stakeholders have an opportunity to provide written comments identifying any errors in the draft final evaluation reports. Stakeholders will be required to include in the written comments at least a brief description of every point in the draft report which they believe needs correction, even if discussed at the conference.

(4.) Energy Division directs evaluation contractors to make any necessary changes to final evaluation reports stimulated by the comments. All written comments, and Energy Division's treatment of them, will be reflected in appendices to the final evaluation reports. The final evaluation reports are posted on a publicly accessible website.

(5.) Within 60 days of public release, program administrators will respond in writing to the final report findings and recommendations indicating what action, if any, will be taken as a result of study findings as they relate to potential changes to the programs. Energy Division can choose to extend the 60 day limit if the administrator presents a compelling case that more time is needed and the delay will not cause any problems in the implementation schedule, and may shorten the time on a case-by-case basis if necessary to avoid delays in the schedule.

(6.) Energy Division aggregates evaluation contractor reports for each utility to quantify the portfolio resource benefits and uses that quantity in connection with the audit team reports to develop the draft Final Performance Basis Report. Energy Division will notify the CPUC Energy Efficiency service lists and lists of other interested stakeholders maintained by Energy Division of the availability of the draft Final Performance Basis Report and the website posting location. Energy Division also notifies all of those stakeholders of the conference described in the next Step.

(7.) Energy Division, with the assistance of relevant contractors holds a conference with stakeholders, by telephone or in-person. At this meeting,

all stakeholders have an opportunity to discuss the draft Final Performance Basis Report with those who prepared it (and supporting consultants). Stakeholders may raise questions about the draft report, receive responses from those who prepared it, and point out any errors they believe are contained in the report. The goal is to have a give and take between the stakeholders, report authors, and the supporting technical experts.

(8.) Stakeholders have an opportunity to provide written comments identifying any errors in the draft Final Performance Basis Report. Stakeholders will be required to include in the written comments at least a brief description of every point in the draft report or which they believe needs correction, even if discussed at the conference.

(9.) Energy Division makes any necessary changes to the Final Performance Basis Report stimulated by the oral conference and written comments. All written comments, and Energy Division's treatment of them, will be reflected in an appendix to the Final Performance Basis Report.

(10.) Final Performance Basis Report is made publicly available by posting on a publicly accessible website and sending it to the Energy Efficiency proceeding service list(s).

(11.) Within 60 days of issuance of the Final Performance Basis Report, the utility will file an advice letter for Energy Division disposition pursuant to section 7.6.1 of General Order 96b, citing the Final Performance Basis Report. The advice letter will address whether based on that report there are any earnings or penalties, and if so at what level, for the final claim.

(12.) Energy Division will approve the advice letter as practicable as possible thereafter so long as it correctly incorporates the results of the Final Performance Basis Report; if it does not, Energy Division will take other appropriate action under General Order 96-B.

IX. Affiliate and Disclosure Rules

1. To avoid anti-competitive behavior and cross-subsidies between IOUs and their affiliates, all transactions between the IOU administrator and any implementer that is an affiliate of PG&E, SCE, SDG&E or SoCalGas are banned, per D.05-01-055.

2. The Program Administrators will not provide preferential treatment to any provider of an energy efficiency service that uses energy efficiency program funds.

3. Bidders for EM&V contracts, including program design evaluation and market assessment studies, shall provide full disclosure of any potential conflicts of interest, including all current non-energy efficiency related contracts with Program Administrators and program implementers.

X. Reporting Requirements

1. The Program Administrators shall present information in their program planning applications in compliance with Ordering Paragraph 13 of D.04-12-048, and in compliance with any further direction by this Commission, the Assigned Commissioner or Administrative Law Judge regarding the content or format of these filings. Energy Division may develop reporting requirements through workshops or other means to ensure that the types of data and the format of the information presented in the Program Administrator filings and reports is as consistent as possible.

2. The Program Administrators shall file reports on portfolio and program activities on a regular basis during the program cycle using the standardized reporting formats, definitions, timelines and narratives established by the Energy Division, as updated from time to time. The design and oversight of program-specific, portfolio-level and financial reporting requirements for energy efficiency activities will remain the responsibility of the Energy Division, as discussed in D.05-01-055. Energy Division shall design the reporting requirements in consultation with the Assigned Commissioner and Administrative Law Judge.

3. In addition to other reports that may be required, the Program Administrators shall publish a summary of the achievements of the energy efficiency programs on an annual basis. This report will be available to the public on the web and will contain at least the following information for the entire portfolio as well as

each utility's portfolio: (1) energy savings (annual, cumulative, and lifecycle kWh and therms), peak demand savings²², levelized costs, cost per kW saved, total cost to billpayers, total savings to billpayers, net benefits to billpayers and environmental benefits (tons of CO2 and other pollutants avoided). Following each program cycle, a summary of the *ex post* measured achievements from the entire portfolio will also be published.

4. The utilities shall incorporate the correction in the E3 calculator to the erroneous demand reduction estimated for lighting currently contained in DEER that is discussed in Section 8.3 of D.05-09-043. (D.05-09-043, OP 11.)

5. As discussed in D.05-09-043, the utilities are required to use the August 2005 updates to *ex ante* expected useful life (EUL) assumptions posted to DEER when reporting actual installations during program implementation, and when submitting calculations of savings, portfolio cost-effectiveness and performance basis during the 2006-2008 program cycle. Staff shall ensure that inputs to the E3 calculator are appropriately adjusted, so that these calculations will reflect the *ex ante* EUL values referenced above. (D.05-09-043, OP 12.)

XI. Process and Procedural Issues

1. The Commission, the assigned Commissioner, the assigned Administrative Law Judge, or the Energy Division may utilize both formal and informal procedural vehicles as needed to (1) revise the Rules and / or any of its referenced documents, in whole or in part, at any time, upon request by interested parties or on its own initiative, and (2) resolve disputes among or complaints from various market participants, as circumstances warrant. In addition, nothing in these Rules preclude the Commission from planning and developing future energy efficiency programs, or delegating that responsibility to the assigned Commissioner, the assigned Administrative Law Judge or to Energy Division in the future.

2. The Assigned Administrative Law Judge or Commission staff may hold workshops or other forums, as needed, for interested parties, customers and market actors to provide input and feedback on energy efficiency-related issues.

²² By D.06-06-063, the definition of peak megawatt load reduction contained in the 2005 Database for Energy Efficient Resources (DEER) shall be used for the purpose of verifying energy efficiency program and portfolio performance.

3. Any program proposal for energy efficiency funding must describe a dispute resolution process to be used in dealing with complaints from end-use gas or electric consumers participating or attempting to participate in the program. In programs where the Program Administrators hold contracts with third parties, those contracts will also be required to include dispute resolution provisions.

APPENDIX A: Reference Documents

1. <u>Energy Action Plan</u>

http://www.cpuc.ca.gov/PUBLISHED/REPORT/51604.htm

1.a Energy Action Plan Update, February 2008:

http://www.cpuc.ca.gov/NR/rdonlyres/58ADCD6A-7FE6-4B32-8C70-7C85CB31EBE7/0/2008_EAP_UPDATE.PDF

2. <u>CPUC Decision 05-01-055</u> "Interim Opinion on the Administrative Structure for Energy Efficiency: Threshold Issues"</u>

http://www.cpuc.ca.gov/PUBLISHED/FINAL_DECISION/43628.htm

3. <u>CPUC Decision 04-09-060 "Interim Opinion: Energy Savings Goals for Program Year 2006 and</u> <u>Beyond." See attached tables for the savings goals adopted in that decision, by IOU service</u> <u>territory.</u>

http://www.cpuc.ca.gov/PUBLISHED/FINAL_DECISION/40212.htm

4. <u>Standard Practice Manual. Economic Analysis of Demand-Side Management Programs.</u> <u>October 2001.</u>

<u>ftp://ftp.cpuc.ca.gov/puc/energy/electric/energy+efficiency/em+and+v/std+practice+</u> <u>manual.doc</u>

• SPM 2001 Correction Memo. From D.07-09-043, Attachment 9, page 7 of 7 linked below for the "SPM Correction Memo of October 7, 1988"

http://www.cpuc.ca.gov/NR/rdonlyres/3D41FF54-9809-4651-8898-78F93F84999B/0/CorrectionMemoSPM1071988.pdf

• SPM 2007 Clarification Memo. From D.07-09-043, attached to this reference list.

http://www.cpuc.ca.gov/NR/rdonlyres/A7C97EB0-48FA-4F05-9F3D-4934512FEDEA/0/2007SPMClarificationMemo.doc

• NTG Numerical Examples from D.07-09-043

http://www.cpuc.ca.gov/NR/rdonlyres/101F0713-7277-43A8-883D-8EF2712EFA8A/0/NumericalExamplesNTGAdjtoTRCD0709043.pdf

Appendices

- 5. Database for Energy Efficient Resources (DEER) http://eega.cpuc.ca.gov/deer/
- 6. <u>Methodology and Forecast of Long Term Avoided Costs for the Evaluation of California Energy</u> <u>Efficiency Programs</u>

http://www.ethree.com/CPUC/E3_Avoided_Costs_Final.pdf

• E3 Calculators (Updated to comply with D.07-09-043, 10-7-07)

http://www.ethree.com/cpuc_cee_tools.html

7. <u>CPUC Energy Efficiency Program Reporting Requirements Manual</u> <u>under the heading</u> <u>"Reporting Rules"</u>.

ftp://ftp.cpuc.ca.gov/PUC/energy/electric/energy+efficiency/programs/rrm4.pdf

8. CPUC Energy Efficiency Program EM&V Protocols

<u>ftp://ftp.cpuc.ca.gov/PUC/energy/electric/energy+efficiency/em+and+v/evaluatorspro</u> <u>tocols_final_adoptedviaruling_06-19-2006.doc</u>

Energy Efficiency Programs Approved Savings Goals 2006 through 2013 (D.04-09-060)

SCE				
Year	Energy Savings Annual Goal (GWH/Yr)	Cumulative Energy Savings (GWH)**	Demand Reductions (MW/Yr)	Cumulative Demand Reductions (MW)**
2006	922	2574.9	207	541
2007	1046	3621.3	219	760
2008	1167	4788.5	246	1006
2009	1189	5977.2	249	1255
2010	1176	7153.4	247	1502
2011	1164	8317.1	245	1747
2012	1151	9468.5	241	1988
2013	1139	10607.6	240	2228

(1) Total Savings = all savings from energy efficiency programs funded by public goods charge and procureme funding. This total includes savings from EE programs already in the CEC forecast. For incremental savings alte levels included in the CEC forecast, see D.04-09-060 Attachment 9.

(2) GWh savings converted to MW by multiplying by .21, average of utility GWh to peak savings for 2004/5 applications. This is an estimate of average peak savings not coincident peak = GWH savings in peak period / hours in period.

Year	Gas Savings Annual Goal (MMTh/Yr)	Cumulative Gas Savings (MMTh)**	Energy Savings Annual Goal (GWH/Yr)	Cumulative Energy Savings (GWH)**	Demand Reductions (MW/Yr)	Cumulative Demand Reductions (MW)**
2006	12.6	32.1	829	2316.5	180	503
2007	14.9	47.0	944	3260.5	205	708
2008	17.4	64.4	1053	4313.5	228	936
2009	20.3	84.8	1067	5380.8	232	1168
2010	21.1	105.9	1015	6396.3	220	1388
2011	22	127.8	1086	7482.8	236	1624
2012	23	150.9	1173	8656.2	254	1878
2013	25.1	176.0	1277	9933.2	278	2156

PG&E

(1) Total Annual Energy Savings = all savings from energy efficiency programs funded by public goods charge and procurement funding. This total includes savings from baseline EE program funding of \$100 MM/yr accounted for in the CEC sales forecast. For incremental savings above the levels included in the CEC forecast, see D.04-09-060 Attachment 9.

(2) GWh savings converted to MW by multiplying by .217, which is ratio of GWh to peak savings for 2004/5 applications. This is an estimate of average peak savings not coincident peak = GWh savings in peak period / 560 hours in period.

Energy Efficiency Programs Approved Savings <u>Goals</u> 2004 through 2013 (D.04-09-060)

SoCalGas

Year	Gas Savings Annual Goal (MMTh/Yr)	Cumulative Gas Savings (MMTh)**
2004	9.6	9.6
2005	9.6	19.3
2006	14.7	34.0
2007	19.3	53.3
2008	23.3	76.5
2009	27.2	103.7
2010	28.3	132.0
2011	29.9	161.9
2012	32.3	194.2
2013	35.8	230.1

Total Savings = all savings from energy efficiency programs funded by public goods charges and procurement funding.

This total includes natural gas savings from energy efficiency programs already included in the CEC forecast.

SDG&E

Year	Gas Savings Annual Goal (MMTh/Yr)	Cumulative Gas Savings (MMTh) [≭]	Energy Savings Annual Goal (GWH/Yr)	Cumulative Energy Savings (GWH) [≛]	Demand Reductions (MW/Yr)	Cumulative Demand Reductions (MW) [≭]
2004	1.8	1.8	268.4	268.4		50.4
2005	1.8	3.6	268.4	536.8		100.7
2006	2.7	6.3	280.5	817.3	54.6	155.3
2007	3.1	9.5	285.1	1102.4	54.2	209.5
2008	3.7	13.1	284.4	1386.8	54	263.5
2009	4.1	17.3	282.3	1669.1	53.6	317.1
2010	4.5	21.8	273.6	1942.7	52	369.1
2011	4.9	26.7	262.5	2205.2	49.9	419
2012	5.3	32.0	221.7	2426.9	42.1	461.1
2013	5.7	37.6	214.9	2641.8	40.8	501.9

Total Savings = all savings from EE programs funded by public goods charge and procurement funding. This total includes savings from EE programs already in the CEC forecast. For incremental savings above the levels included in the CEC forecast, see D.04-09-060, Attachment 9)

MW Savings derived by multiplying GWh Savings by 0.19, average value SDG&E GWh to peak savings for 2004/5 applications. This is an estimate of average peak savings during all the peak hours: = GWh savings in peak period/560 hours in period.

		2006-2013	(D.04-09-0	60)	
	Total Annual Electricity Savings (GWh/yr)	Total Cumulative Savings (GWh/yr)	Total Peak Savings (MW)	Total Annual Natural Gas Savings (MMTh/yr)	Total Cumulative Natural Gas Savings (MMTh/yr)
2004	1,838	1,838	379	21	21
2005	1,838	3,677	757	21	42
2006	2,032	5,709	1,199	30	72
2007	2,275	7,984	1,677	37	110
2008	2,505	10,489	2,205	44	154
2009	2,538	13,027	2,740	52	206
2010	2,465	15,492	3,259	54	260
2011	2,513	18,005	3,789	57	316
2012	2,547	20,552	4,328	61	377
2013	2,631	23,183	4,885	67	444

Total Electricity and Natural Gas Program Savings <u>Goals</u> (all IOUs) 2006-2013 (D.04-09-060)

Total annual energy savings = all savings from EE programs funded by public goods charges and Procurement funding. This total includes savings from baseline EE program funding of \$100 MM/yr accounted for in the CEC sales forecast. For incremental program savings above the levels included in the CEC forecast, see Attachment 9 of D.04-09-060.

Average peak MW estimated by multiplying GWh from utility by the ratio they used in 2004/5 filings ranging from 0.19 to 0.21. This is an estimate of average peak savings, not coincident peak savings = GWh savings in peak period/560 hours in period.

D. 05-09-043

TABLE 8: ADOPTED FUND SHIFTING RULES, as modified by D.06-12-013 and D.07-10-032

Category	Shifts Among Budget Categories, Within	Shifts Among Programs, Within	Shifts Among Categories
	Program	Category	
Resource / Nonresource Programs (includes multiple program categories – see definitions below)	Yes, no formal Commission review/approval triggered.	 Yes, no formal Commission review/approval triggered. However, 15 day PRG notification and comment required if shifts exceed 25% on an annual basis or 50% on a cumulative basis. Adding a new program outside the competitive bid process triggers Advice letter process. Advice letter required if allocation to third-party implementers is expected to fall below 20%. 	 Yes, up to 25% on an annual basis or 50% on a cumulative basis. Advice letter required for larger shifts. Adding a new program outside the competitive bid process triggers Advice letter process. Advice letter required if allocation to third-party implementers is expected to fall below 20%.
C&S / ET / Statewide M&O	Yes, same as above	Advice letter required for shifts that would reduce any of these programs by more than 1% of budgeted levels.	Advice letter required to shift funds OUT of any program more than 1% of budgeted levels.
EM&V	Yes, within utility portion. Fund shifting between the utility and ED portions only with Assigned Commissioner or ALJ approval, in consultation with Joint Staff.	Not Applicable – Single Program	Assigned ALJ or Commissioner ruling required to shift funds OUT of EM&V by any amount.

For purpose of these fund-shifting rules, the Resource/Non-Resource program categories are as follows:

- Resource / Non-Resource Program categories for SCE, SDG&E, and SoCalGas are: (1) Residential; (2) Nonresidential; (3) Crosscutting (except C&S, ET, SW Marketing and Outreach, EM&V).
- Resource / Non-Resource Program categories for **PG&E** are: (1) Mass Market (residential/small commercial cross-cutting); (2) Residential targeted market sectors within Targeted Markets and (3) Non-Residential targeted market sectors within Targeted Markets.

Utility program administrators may carryover/carryback funding during the 2006-2008 program cycle without triggering a review/approval process. Authorization for utilizing 2006 funding in 2005 for specific purposes is described in D.05-09-043. Per D.06-12-013 (OP 2), utility program administrators may file an advice letter to seek authorization to shift existing, unspent uncommitted energy efficiency funds from previous program cycles to the 2006-2008 portfolio budgets to fund new energy efficiency programs or incremental energy efficiency activities as part of existing authorized programs. Utilities should consult with the PRG prior to submitting this type of advice letter. Per D.07-10-032, carryover/carryback funding is permitted during the 2006-2008 budget cycle so long as the 2009-2011 portfolio has been approved. CPUC approval is not necessary for up to 15% of the "current" program cycle. See Rules II.12 and II.13.

Changes to incentive levels or modifications to program design (such as changes to customer eligibility requirements) will not trigger Energy Division or formal Commission review, except as indicated below. We expect that the results of EM&V studies, statewide coordination efforts and ongoing consultation with advisory groups will enable utility program administrators to identify the best practices and program designs for portfolio implementation.

- If the proposed incentive level change impacts as statewide offering, e.g., is included in the deemed and calculated measure list presented in the statewide PAG meeting on August 2-3, 2005, and is less than 50% of the original incentive level on a cumulative basis over the three-year program cycle, the utility administrator will need to inform and solicit comment from the joint PRGs prior to the change taking place.
- If the proposed incentive level change impacts a statewide program offering and is more than 50% of the original incentive level on a cumulative basis, the utility administrator will follow the advice letter process described in these rules.
- The program administrator will notify the PRG of all incentive level changes that take place.

For all significant shifts in funding or modifications to program design, the utilities should seek informal review with their PRG members as part of the ongoing exchange of information during program implementation. Where an advice letter is required under these rules, absent a protest or written data request by Energy Division for additional information by the end of the 20-day protest period, the request will become effective on the twentieth day after filing. If Energy Division staff issues a data request before the end of the protest period, the response time requirements and other procedures applicable to our normal advice letter procedures, as updated by D.05-01-032, will take effect. All advice letters required for fund shifting shall be served on the service list in A.05-06-004 and R.01-08-028, or its successor rulemaking, unless otherwise specified by the assigned ALJ. The assigned ALJ, in consultation with the Assigned Commissioner, may provide further clarification on implementing these fundshifting rules, or consider modifications to these rules during the 2006-2008 program cycle, as appropriate.

EE Policy Manual Version 4.0 Appendices Figure 1: <u>Adopted Incentive Mechanism Earnings/Penalty Curve</u>



R.06-04-010 DGX/avs

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APPENDIX B: GLOSSARY COMMON ENERGY EFFICIENCY TERMS AND DEFINITIONS

Adopted Program Budget

The program budget as it is adopted by the Commission. Inclusive of costs (+/-) recovered from other sources.

Advanced Technologies

Measures or processes which exceed the efficiency or thermodynamic performance of standard energy using equipment or processes.

Affiliate

Any person, corporation, utility, partnership, or other entity 5% or more of whose outstanding securities are owned, controlled, or held with power to vote, directly or indirectly either by an administrator or any of its subsidiaries, or by that administrator's controlling corporation and/or any of its subsidiaries as well as any company in which the administrator, its controlling corporation, or any of the administrator's affiliates exert substantial control over the operation of the company and/or indirectly have substantial financial interests in the company exercised through means other than ownership. For purposes of these Rules, "substantial control" includes, but is not limited to, the possession, directly and indirectly and whether acting alone or in conjunction with others, of the authority to direct or cause the direction of the management of policies of a company. A direct or indirect voting interest of five percent (5%) or more by the administrator, its subsidiaries, or its affiliates in an entity's company creates a presumption of control.

Avoided Costs

Avoided costs refers to the incremental costs avoided by the investor-owned utility when it purchases power from qualifying facilities, implements demand-side management, such as energy efficiency or demand-response programs, or other wise defers or avoids generation from existing/new utility supply-side investments or energy purchases in the market. Avoided costs also encompass the deferral or avoidance of transmission and distribution-related costs. (D.08-01-006, Footnote 2)

Baseline Data

The initial base metric for comparing the net result of programmatic changes versus what would have happened in the absence of the program or activity.

Coincident Peak Demand

The metered or estimated demand of a device, circuit, or building that occurs at exactly the same time as the system peak for a given year and weather condition.

Community Choice Aggregators

Organizations created by local governments pursuant to Assembly Bill 117 for the purpose of procuring power and administering energy efficiency programs on behalf of local citizens.

Competitive solicitation

The process whereby parties are requested to submit bids offering innovative approaches to energy savings or improved program performance.

Conservation

Reduction of a customer's energy use achieved by relying on changes to the customer's behavior which may result in a lower level of end use service.

Conservation Measures

Activities and/or behaviors aimed at reducing energy consumption.

Conservation Programs

Programs which are intended to influence customer behavior as a means to reduce energy use.

Cost Effectiveness

An indicator of the relative performance or economic attractiveness of any energy efficiency investment or practice when compared to the costs of energy produced and delivered in the absence of such an investment.

Cream Skimming

<u>Cream skimming results in the pursuit of a limited set of the most cost-effective</u> <u>measures, leaving behind other cost-effective opportunities.</u> <u>Cream skimming becomes</u> <u>a problem when lost opportunities are created in the process.</u>

Cross Subsidization

Benefits enjoyed by one group, such as a customer class, which are funded by another group.

Customer

Any person or entity that pays an electric and/or gas bill to an IOU and that is the ultimate consumer of goods and services including energy efficiency products, services, or practices.

Cumulative Savings

As clarified in D.07-10-032, cumulative savings represent the savings in that year from all previous measure installations (and reflecting any persistence decay that has occurred since the measures were installed) plus the first-year savings of the measures installed in that program year.

Dual Test

The requirement that an energy efficiency activity pass both the TRC and the PAC costeffectiveness test.

E3 Calculator

The E3 calculator is a model developed by Energy Environmental Economics (or "E3" for use by the utilities to map Commission-adopted avoided costs to energy efficiency programs for cost-effectiveness calculations.

Effective Useful Life (EUL)

An estimate of the median number of years that the measures installed under the program are still in place and operable.

Electricity Savings

Reduced electricity use (or savings) produced by either energy efficiency investments which maintain the same level of end use service or conservation actions which usually reduce energy use by reducing the quantity or quality of the baseline energy services demanded.

Emerging Technologies

New energy efficiency technologies, systems, or practices that have significant energy savings potential but have not yet achieved sufficient market share (for a variety of reasons) to be considered self sustaining or commercially viable. Emerging technologies include early prototypes of hardware, software, design tools or energy services that if implemented will result in energy savings.

Emissions Reductions

The Commission requires annual reporting of reduced emissions of carbon dioxide (CO2), sulfur oxides (SOx), nitrous oxides (NOx), and particulate matter (PM10) as a result of energy efficiency savings. The utilities use the E3 calculator to compute the
annual electric and natural gas emissions reductions, which are the units implemented in the year times the annual emission reduction for a particular measure. The E3 calculator calculates values of CO2 in tons per kWh or therms; NOx and PM10 are in pounds per kWh or therms.

The following equations are from the "E3 Calculator Tech Memo" found at the following web link: http://www.ethree.com/CPUC/E3%20Calculator%20TechMemo%203c.doc

Emissions Reductions

Electric Reductions: CO2 tons per year (Emission[E][CO2])

$Emission[E][CO2]_y =$	$\sum_{M,Q}^{y^{*4}} \left(IN_{M,Q} * kWh \right)$	$A_M * NTG_M * ER[CO2]_M $
Q=	1+(y-1)*4	

Where

у	=	year of consideration. 2006 = 1. "Total Annual" used for years 2008 through the end
		of the implementation period.
Q	=	Quarter of the year. Jan-Mar $2006 = 1$.
IN _{M,Q}	=	# of incremental of measures implemented in quarter Q.
NTG _M	=	Net-to-Gross ratio for measure M.
ER[CO2] _M	=	Emission rate of CO2 in tons per kWh of measure <i>M</i> . (The emissions rate for each
		the hourly heat rate for the IOU.).
kWh A _M	=	Annual kWh reduction for measure M.

NOX and PM-10 equations are the same. Just replace [CO2] with the appropriate indicator. Note that CO2 emission rate is in tons per kWh. NOX and PM-10 are in pounds per kWh.

Gas Reductions: CO2 tons per year (Emission[G][CO2])

Emission[G][CO2	$]_{y} = Q_{z}$	$\sum_{i=1+(y-1)*4}^{y*4} (IN_{M,Q} *Th_A_M *NTG_M *ER[CO2]_{GCT})$
Where		
у		_year of consideration. 2006 = 1. "Total Annual" used for years 2008 through the end of the implementation period.
Q	=	Quarter of the year. Jan-Mar $2006 = 1$.
<u>IN_{M,Q}</u>	=	# of incremental of measures implemented in quarter Q.
<u>NTG_M</u>	=	<u>Net-to-Gross ratio for measure <i>M</i>.</u>
ER[CO2] _{GCT}	=	Emission rate of CO2 in tons per therm, based on the gas combustion type (GCT) specified on the input sheet for the measure.

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Th_A_M = Annual gas reduction (in therms) for measure M.

NOX and PM-10 equations are the same. Just replace [CO2] with the appropriate indicator. Note that CO2 emission rate is in tons per Therm. NOX and PM-10 are in pounds per Therm.

Energy Efficiency Groupware Application 2006 (EEGA2006)

The utilities post monthly and quarterly status reports to the EEGA2006 webpage, which is accessible to the public: <u>http://eega2006.cpuc.ca.gov.</u>

End Use

1) The purpose for which energy is used (e.g. heating, cooling, lighting).

2) <u>A class of energy use that an energy efficiency program is concentrating efforts</u>

upon. Typically categorized by equipment purpose, equipment energy use intensity, and/or building type.

Energy Efficiency

Activities or programs that stimulate customers to reduce customer energy use by making investments in more efficient equipment or controls that reduce energy use while maintaining a comparable level of service as perceived by the customer.

Energy Efficiency Measure

An energy using appliance, equipment, control system, or practice whose installation or implementation results in reduced energy use (purchased from the distribution utility) while maintaining a comparable or higher level of energy service as perceived by the customer. In all cases energy efficiency measures decrease the amount of energy used to provide a specific service or to accomplish a specific amount of work (e.g., kWh per cubic foot of a refrigerator held at a specific temperature, therms per gallon of hot water at a specific temperature, etc). For the purpose of these Rules, solar water heating and stand-alone solar-powered water circulators are eligible energy efficiency measures. (Per D.07-11-004, OP 1.)

Energy Efficiency Programs

Programs that reduce customer energy use by promoting energy efficiency investments or the adoption of conservation practices or changes in operation which maintain or increase the level of energy services provided to the customer.

Energy Efficiency Savings

The level of reduced energy use (or savings) resulting from the installation of an energy efficiency measure or the adoption of an energy efficiency practice, subject to the condition that the level of service after the investment is made is comparable to the baseline level of service. The level of service may be expressed in such ways as the

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volume of a refrigerator, temperature levels, production output of a manufacturing facility, or lighting level per square foot.

Evaluation, Measurement and Verification (EM&V)

Activities which evaluate, monitor, measure and verify performance or other aspects of energy efficiency programs or their market environment.

Evaluation Project Budget

The project level evaluation budget as it is defined by the program administrators or Joint Staff for internal program budgeting and management purposes. Inclusive of direct and allocated overhead and costs (+/-) recovered from other sources.

Financial Incentive

Financial support (e.g., rebates, low interest loans, free technical advice) provided to customers as an attempt to motivate the customers to install energy efficient measures or undertake energy efficiency projects. (See Rebate)

Free Drivers

<u>A free driver is a non-participant who adopted a particular efficiency measure or practice as a result of a utility program. (From April 2006 EM&V Protocols)</u>

Free riders (Free Ridership)

Program participants who would have installed the program measure or equipment in the absence of the program.

Fuel Substitution

<u>Programs which are intended to substitute energy using equipment of one energy</u> <u>source with a competing energy source (e.g. switch from electric resistance heating to</u> <u>gas furnaces).</u>

Funding Cycle

Period of time for which funding of energy efficiency programs have been approved by the Commission.

Gas Savings

Reduced natural gas usage (or savings) produced by either energy efficiency investments which maintain the same level of end use service or conservation actions which can reduce energy use by reducing the quantity or quality of the baseline services provided.

Hard to Reach, Non Residential

Those customers who do not have easy access to program information or generally do not participate in energy efficiency programs due to a language, business size, geographic, or lease (split incentive) barrier. These barriers are defined as:

Language – Primary language spoken is other than English, and/or Business Size – Less than ten employees and/or classified as Very Small, and/or

Geographic – Businesses in areas other than the San Francisco Bay Area, San Diego area, Los Angeles Basin or Sacramento, and/or

Lease – Investments in improvements to the building benefit the business only during the lease period; landlords benefit longer.

Hard to Reach, Residential

Those customers who do not have easy access to program information or generally do not participate in energy efficiency programs due to a language, income, housing type, geographic, or home ownership (split incentives) barrier. These barriers are defined as:

Language – Primary language spoken is other than English, and/or Income – Those customers who fall into the moderate income level (income levels less than 400% of the federal poverty guidelines), and/or Housing Type – Multi-family and Mobile Home Tenants, and/or Geographic – Businesses in areas other than the San Francisco Bay Area, San Diego area, Los Angeles Basin or Sacramento, and/or Home Ownership – Renters.

Incremental Measure Cost

The additional cost of purchasing and installing a more efficient measure. Calculated from the price differential between energy-efficient equipment and standard or baseline measures. The inclusion of the word "gross" in the definition reflects incremental measure costs, which have not been adjusted for free riders. Net incremental measure costs means that the term has been adjusted for free riders; i.e., the net-to-gross ratio has been applied.

Information & Education

Information and education programs can provide a wide range of activities designed to inform or educate a customer or customer group. Generally these range from in-depth, one-on-one, on-site or centrally located classroom style instruction in topics related to energy efficiency, to programs that target information to specific types of customers, to general information provided to a wide range of customers, to short inexpensive public service announcements on FCC approved communication frequencies. Programs intended to provide customers with information regarding generic (not customer-

specific) conservation and energy efficiency opportunities. For these programs, the information may be unsolicited by the customer.

Innovation Incubator

A low-cost, stand-alone program designed to grow innovative energy saving programs and processes for the larger portfolio over the long term. The incubator funds new program ideas that meet reasonable scientific scrutiny for potentially cost-effective energy savings and peak reduction.

Institutional Barriers

<u>A type of market barrier</u>: In this case, the internal organizational hurdles that inhibit the evaluation and or choice to take energy efficiency actions.

Least Cost/Best Fit

The procurement of cost-effective supply and demand-side resources that, regardless of ownership, meet capacity and energy deliverability requirements. Energy efficiency resources are constructed from the bottoms up approach that aggregates the demand and energy savings from various energy-saving measures and activities into applicable end-use categories such as space cooling, space heating, lighting, and refrigeration, in order to provide near- and long-term peaking, intermediate, and baseload requirements.

Levelized Cost

An estimate of the annualized cost of installing an energy efficiency measures divided by the annual energy savings. Typically calculated by multiplying the incremental cost of the measure by capital recovery factor (function of discount rate and expected useful life of the measure) and then dividing by annual energy savings.

Load Management

<u>Programs which reduce or shift electric peak demand away from periods of high cost</u> <u>electricity to non-peak or lower cost time periods, with a neutral effect on or negligible</u> <u>increase in electric use.</u>

Load Serving Entities

Entities that provide electric and/or gas commodity to customers.

Lost Opportunities

<u>Energy efficiency measures that offer long-lived, cost-effective savings that are fleeting</u> <u>in nature</u>. A lost opportunity occurs when a customer does not install an energy

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efficiency measure that is cost-effective at the time, but whose installation is unlikely to be cost-effective if the customer attempts to install the same measure later.

Market Effect

A market effect is a change in the structure or functioning of a market or the behavior of participants in a market that result from one or more program efforts. Typically these efforts are designed to increase in the adoption of energy-efficient products, services or practices and are causally related to market interventions. (From EM&V Protocols, April 2006).

Market Transformation

Decision (D.) 98-04-063, Appendix A, defines market transformation as "[1]onglasting, sustainable changes in the structure or functioning of a market achieved by reducing barriers to the adoption of energy efficiency measures to the point where further publicly-funded intervention is no longer appropriate in that specific market."

Marketing and Outreach

<u>Communications activities designed to identify, reach and motivate potential customers</u> to take actions to either learn more about or invest in energy efficiency opportunities.

Measures

<u>1) Specific customer actions which reduce or otherwise modify energy end use patterns.</u>

2) A product whose installation and operation at a customer's premises results in a reduction in the customer's on-site energy use, compared to what would have happened otherwise.

Minimum Performance Standard (MPS)

As part of the Shareholder Incentive Mechanism, the minimum performance standard is the minimum level of savings that utilities must achieve relative to their savings goal before accruing earnings and is expressed as a percentage of the Commission-adopted savings goals per utility. The utility MPS is based on the whole energy efficiency portfolio and the minimum goal of each individual savings metric. (See Rule VIII.)

Net to Gross Ratio

A ratio or percentage of net program impacts divided by gross or total impacts. Net to gross ratios are used to estimate and describe the free-ridership that may be occurring within energy efficiency programs.

Non-price Factors

Those factors included in cost effectiveness tests, other than commodity prices and transportation and distribution costs, e.g., environmental factors.

Operating Program Budget

The program budget as it is defined by the program administrators for internal program budgeting and management purposes. Inclusive of costs (+/-) recovered from other sources.

Participant Test

The Participant Test is the measure of the quantifiable benefits and costs to the customer due to participation in a program. Since many customers do not base their decision to participate in a program entirely on quantifiable variables, this test cannot be a complete measure of the benefits and costs of a program to a customer. (See SPM link under Attachment A.)

Partnership

<u>Coordinated efforts of a utility and a local government or other entity to use the</u> <u>strengths of both parties to achieve energy savings goals.</u>

Peak Demand (per OP 1 of D.06-06-063)

The average grid level impact for a measure between 2 p.m. and 5 p.m. during the three consecutive weekday period containing the weekday temperature with the hottest temperature of the year.

Peak Demand-General (kW)

 The maximum level of metered demand during a specified period, such as a billing month, or during a specified peak demand period.
Extremely high energy use, usually with reference to a particular time period.

Peak Savings- Coincident (kW)

The estimated peak (e.g. highest) demand savings (MW or kW) from a program for a specific time, date, and location coincident with the forecasted system peak for a given area and a given set of weather conditions. This estimate must also include consideration of the likelihood that the equipment is actually on at the time of coincident peak. Usage of this definition: Resource planning- for making adjustments to forecasts of peak usage for understanding reserve margins and reliability purposes.

Peak Savings- Daily Average (kW)

The average peak demand savings (kWh impacts/ # of hours in the peak rate period) for a given utility during their peak season. Example for SCE-Peak period is for summer

weekdays from 12-6 PM. So - daily average savings would be the number of kWh saved/ # of kWhs saved for all weekday peak periods (= kWh/5 days/week * 12 weeks/ summer* 6 hours/day = kW average. Usage: Cost effectiveness analysis, primarily for valuing energy savings that occur during the peak period using "peak" average avoided costs.

Peak Savings - Non coincident (kW)

Estimated highest level of peak savings(kW or MW) for a given program during the peak time period for a given utility on the hottest day of a "normal" weather year. Thus if a group of measures saved 1MW at 2Pm, 1.7 MW at 3PM, 1.6 MW at 4PM, 1.0 MW at 5Pm and 1.2 MW at 6 pm, the peak non coincident savings would be 1.7 MW. This savings estimate does not take into account how many of the affected devices or equipment will be operating during the peak time period. Usage: Cost effectiveness analysis and procurement.

Peer Review Group (PRG)

A subset of the Program Advisory Group consisting of non-financially interested members who will review utility submittals to the Commission, assess overall portfolio plans, plans for bidding out pieces of the portfolio, and the bid evaluation criteria for selecting third-party programs.

Performance Basis

The metrics by which a program or a group of programs is measured and evaluated for the purpose of assessing the program(s) success at displacing or deferring more costly supply-side resources and or increasing more energy efficient design and practices.

Performance Earnings Basis (PEB)

A metric used in the shareholder incentive mechanism consisting of total portfolio net benefits (TRC) weighted 2/3rd and total Program Administrator Cost (PAC) portfolio net benefits weighted 1/3rd. (See Rule VIII.)

Performance Uncertainties

A market barrier: refers to new technologies or systems whose efficiency or system performance levels are uncertain due to lack of experience.

Portfolio

All IOU and non-IOU energy efficiency programs funded by ratepayers that are implemented during a program year or cycle. May also refer to a group of programs sponsored, managed, and contracted for by a particular IOU.

Portfolio Reporting

Regularly scheduled reporting by the portfolio administrators directly to the CPUC. Metrics reported are: portfolio budgets and expenditures, measures installed, services rendered, and other program activity deemed relevant to Energy Division's responsibility to support the Commission's responsibilities of quality assurance, policy oversight, and EM&V.

Pre-commercialization

A phase in the life of a product before it is readily available on the market.

Program

A collection of defined activities and measures that

- <u>are carried out by the administrator and/or their subcontractors and</u> <u>implementers</u>,
- <u>target a specific market segment, customer class, a defined end use, or a defined</u> set of market actors (e.g. designers, architects, homeowners),
- <u>are designed to achieve specific efficiency related changes in behavior,</u> <u>investment practices or maintenance practice in the energy market,</u>
- and are guided by a specific budget and implementation plan.

Program Activities

Any action taken by the program administrator or program implementer in the course of implementing the program.

Program Administrator

An entity tasked with the functions of portfolio management of energy efficiency programs and program choice.

Program Administrator Cost (PAC) Test

Under portfolio evaluation of cost effectiveness, the PAC test contains the program benefits of the TRC test, but costs are defined differently to include the costs incurred by the program administrator but not the costs incurred by the participating customer. (See the SPM link under Attachment A.)

Program Advisory Group (PAG)

Advisory groups for each utility service area composed of energy efficiency experts representing customer groups, academic organizations, environmental organizations, agency staff and trade allies in the energy market. For 2007 and beyond, the Public Advisory Group (PAG) is eliminated while the Peer Review Group (PRG) is retained. Per Decision 07-10-032, the advisory function formerly performed by the PAG will be subsumed in the statewide strategic planning activity.

Program Cycle

The period of time over which a program is funded and implemented.

Program Implementation Plan

A detailed description of a program that includes program theory, planned program processes, expected program activities, program budget, projected energy savings and demand reduction and other program plan details as required by the Commission, assigned ALJ, or Energy Division.

Program Implementers

An entity or person that puts a program or part of a program into practice based on contacts or agreements with the portfolio manager.

Program Strategy

The set of activities deployed by the program in order to achieve the program's objectives.

Program Year(s)

The calendar year(s) during which the program operates.

Ratepayer

Those customers who pay for gas or electric service under regulated rates and conditions of service.

Rebate

A financial incentive paid to the customer in order to obtain a specific act, typically the installation of energy efficiency equipment.

Report Month

The month for which a particular monthly report is providing data and information. For example, the report month for a report covering the month of July 2006, but prepared and delivered later than July 2006, would be July 2006.

Resource Value

An estimate of the net value of reliable energy (e.g., kWh, therms) and capacity (e.g., kW, Mcfd) reductions resulting from an energy efficiency program. This includes the

net present value of all of the costs associated with a program and all of the estimated benefits (both energy and capacity). The calculation of resource value and associated benefits should be consistent with the avoided costs adopted in the most recent Commission proceeding or otherwise provided for by the Commission.

Service Area

The geographical area served by a utility.

Short Term/Long Term

Planning terms referring to the timing or expected timing of program activities, program impacts, or program funding. Short term indicates program activities, program impacts, or program funding that occurs during the current program cycle. Long term indicates program activities, program impacts, or program funding that occurs beyond the current program cycle.

Source-BTU Consumption

Conversion of retail energy forms (kWh, therms) into the BTU required to generate and deliver the energy to the site. This conversion is used to compare the relative impacts of switching between fuel sources at the source or BTU level for the three-prong test required for fuel-substitution programs.

Spillover

Reductions in energy consumption and/or demand in a utility's service area caused by the presence of the DSM program, beyond program related gross or net savings of participants. These effects could result from: (a) additional energy efficiency actions that program participants take outside the program as a result of having participated; (b) changes in the array of energy-using equipment that manufacturers, dealers and contractors offer all customers as a result of program availability; and (c) changes in the energy use of non-participants as a result of utility programs, whether direct (*e.g.*, utility program advertising) or indirect (*e.g.*, stocking practices such as (b) above or changes in consumer buying habits)." **Participant spillover** is described by (a), and **nonparticipant spillover**, by (b) and (c). **Some parties refer to non-participant spillover as** "free-drivers." (From EM&V Protocols, April 2006)

Standard Practice Manual (SPM)

The California Standard Practice Manual: Economic Analysis of Demand-side Programs and Projects is jointly issued by the California Public Utilities Commission and the California Energy Commission. It defines the standard cost effectiveness tests and their components used for energy efficiency programs.

Statewide

<u>Energy efficiency programs or activities that are essentially similar in design and</u> <u>available in all Commission regulated utility service areas in California.</u>

Third Party/Non-IOU

Non-regulated implementers of ratepayer funded energy efficiency activities.

Total Resource Cost Test (TRC)

<u>The TRC test measures the net resource benefits from the perspective of all ratepayers</u> by combining the net benefits of the program to participants and non-participants. The benefits are the avoided costs of the supply-side resources avoided or deferred. The <u>TRC costs encompass the cost of the measures/equipment installed and the costs</u> incurred by the program administrator. (See SPM link under Attachment A.)

Zero Net Energy

Zero Net Energy is defined as the implementation of a combination of building energy efficiency design features and on-site clean distributed generation that result in no net purchases from the electricity or gas grid, at the level of a single "project" seeking development entitlements and building code permits. Definition of zero net energy at this scale enables a wider range of technologies to be considered and deployed, including district heating and cooling systems and/or small-scale renewable energy projects that serve more than one home or business. (D.07-10-032, Footnote 42.)

(END OF APPENDIX B)