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June 17, 2013

HAND DELIVERY

Ms. Ann Cole, Clerk
Florida Public Service Commission
2540 Shumard Oak Boulevard
Tallahassee, FL 32399-0850

130167-EG

Re: New Filing - Petition of Associated Gas Distributors of Florida for Approval of Natural Gas Energy Conservation Programs for Commercial Users.

Dear Ms. Cole:

Enclosed for filing, please find the original and seven copies of the Petition of Associated Gas Distributors of Florida for Approval of Natural Gas Energy Conservation Programs for Commercial Users. Also enclosed are portions of Appendix D to the Petition on DVD, which are the member companies' G-RIM and Participants test results.

As always, please do not hesitate to contact me if you have any questions or concerns. Thank you for your assistance with this filing.

Sincerely,



Beth Keating
Gunster, Yoakley & Stewart, P.A.
215 South Monroe St., Suite 601
Tallahassee, FL 32301
(850) 521-1706

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03385 JUN 17 12

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

Petition of Associated Gas Distributors of Florida)
for Approval of Natural Gas Energy Conservation) Docket No.: 130167-EG
Programs for Commercial Users.)
) Filed: June 17, 2013

**PETITION FOR APPROVAL OF NATURAL GAS ENERGY CONSERVATION
PROGRAMS FOR COMMERCIAL CUSTOMERS**

In accordance with Rules 25-17.009 and 28-106.201, Florida Administrative Code, the Associated Gas Distributors of Florida ("AGDF" or "Petitioner"), by and through its undersigned counsel, hereby petitions the Florida Public Service Commission ("Commission") on behalf of its members for approval of energy conservation programs for commercial users, and in support of this Petition states:

1. The exact name and address of the principal office of the Petitioner is as follows:

Associated Gas Distributors of Florida
P.O. Box 11026
Tallahassee, Florida 32302

2. Notices and communications with respect to this petition and docket should be addressed to the following:

Beth Keating
Lila Jaber
Gunster, Yoakley & Stewart, P.A.
215 South Monroe St., Suite 601
Tallahassee, FL 32301
(850) 521-1706

G. David Rogers, Executive Director
Associated Gas Distributors of Florida
P.O. Box 11026
Tallahassee, Florida 32302

3. AGDF is a trade association representing the following investor-owned natural gas utilities, all of which are subject to the jurisdiction of the Florida Public Service Commission

DOCUMENT NUMBER-DATE

03385 JUN 17 2013

FPSC-COMMISSION CLERK

AGDF Commercial Conservation Program Petition

("FPSC") under Chapter 366, Florida Statutes. The members represented by AGDF are Florida City Gas ("City Gas"), Florida Public Utilities Company ("FPUC"), including Florida Public Utilities Company – Indiantown Division and Central Florida Gas Division ("FPUC-Indiantown" and "FPUC-CFG," respectively), Peoples Gas System ("Peoples Gas"), Sebring Gas System ("Sebring") and St. Joe Natural Gas Company ("St. Joe") (herein generally referred to as the "LDCs").

4. AGDF was originally incorporated in Florida in 1985 as a Not-For-Profit with the stated purpose of representing the collective interests of its members before the Federal Energy Regulatory Commission (FERC). Since then, AGDF has expanded its role and become the primary advocate for the gas industry's energy conservation and efficiency programs before the Commission. In recent years, the AGDF has worked to develop a series of conservation programs, including a residential program and a conservation demonstration and development program, which have seen great success upon implementation by the member companies.¹ Furthermore, AGDF has led the industry's efforts in consumer education activities throughout the state and assists with the coordination of members' efforts in this regard.

5. This petition is being filed by AGDF on behalf of all of its members, each of whom would otherwise have standing in their own right to bring a similar petition. Furthermore, the relief requested herein does not require the participation of the individual members of the FNGA, and is consistent with and germane to the AGDF's organizational purpose. Standing for AGDF to file this petition is therefore appropriate pursuant to Rosenzweig v. Department of Transportation, 979 So. 2d 1050 (Fla. 1st DCA 2008), and Farm Worker Rights Organization,

¹ See, Orders Nos. PSC-10-0113-PAA-EG, issued in Docket No. 090122-EG, and PSC-10-0551-PAA-EG, issued in Docket No. 100186-EG.

AGDF Commercial Conservation Program Petition

Inc. v. Dept. of Health and Rehabilitative Services, 417 So.2d 753, (Fla. 1st DCA 1982).²

Moreover, this petition replaces multiple, separate petitions, which should facilitate the review process and contribute to administrative efficiencies.

6. The purpose of this petition is to seek approval for the AGDF members to include new conservation programs for commercial end users, which are somewhat similar to the residential conservation programs approved by the Commission in Docket No. 100186-EG. As AGDF has noted in the past, having common programs and incentives statewide for the LDCs enables AGDF to implement statewide advertising and promotional efforts, such as collaborative marketing campaigns, and other consumer education and outreach activities conducted on behalf of the LDCs. It has been AGDF's experience that conservation programs benefit from a consistent, unified marketing campaign. AGDF therefore expects that a similar such advertising campaign for the proposed commercial programs will achieve success akin to what has been seen thus far on the residential side.

7. Herein, AGDF provides the required information on the proposed commercial conservation programs which also includes data regarding their cost-effectiveness. AGDF further submits that the proposed commercial rebate programs meet the policies and rules of the Commission and advance the stated objectives set forth in Rule 25-17.001, Florida Administrative Code. Specifically, consistent with the criteria set forth in Order No. 22176, these programs: 1) advance the policy objectives set forth in Rule 25-17.001, Florida

² See also, Hunt v. Washington State Apple Adver. Comm'n, 432 U.S. 333 (1977)(setting forth a three prong test for associational standing); and Florida Home Builders Association vs. Department of Labor and Security, 412 So.2d 351 (Fla. 1982)(determining that a trade association had standing to initiate a rule challenge).

Administrative Code, and the Florida Energy Efficiency and Conservation Act (“FEECA”)³; 2) can be directly monitored and yield measurable results; and 3) are cost-effective.⁴

8. As the Commission is well-aware, natural gas is a clean, abundant, and domestic source of energy for this State. Not only does the use of natural gas save money for residential and commercial customers, it can also produce significant environmental benefits, consistent with the key considerations set forth in FEECA.⁵ The programs proposed herein facilitate the policy goals of FEECA by making an option available to commercial customers that will enable them to replace or purchase new appliances and equipment that are more energy efficient.

I. BACKGROUND

9. Each of the member LDCs currently administers Commission-approved conservation programs and participates in the Energy Conservation Cost Recovery process, as provided in Commission Rule 25-17.015, Florida Administrative Code. All of the LDCs currently offer conservation programs for residential customers, while certain LDCs also offer non-residential programs for businesses and industrial customers.

10. The goal of the conservation programs proposed herein is to increase the direct end-use of efficient natural gas appliances and equipment in Florida buildings, consistent with FEECA’s stated goal of pursuing a “. . . reduction in, and control of, the growth rates of electric consumption and of weather-sensitive peak demand”⁶ In addition, gas conservation programs play a key role in meeting FEECA’s objective of “. . . increasing the overall

³ Sections 366.80-366.85 and 403.519, Florida Statutes, (“Florida Energy Efficiency and Conservation Act.”)

⁴ Order No. 22176, issued in Docket No. 890737-PU.

⁵ See, Section 366.82(2) and (3), Florida Statutes.

⁶ Section 366.81, Florida Statutes.

AGDF Commercial Conservation Program Petition

efficiency and cost-effectiveness of . . . natural gas production and use."⁷ More specifically, the direct use of natural gas in residences and businesses contributes to achieving FEECA conservation objectives in three significant ways: i) natural gas appliances and equipment displace electricity consumption and demand at the site of end-use; ii) given the energy lost in the generation and transmission of electricity and the significant use of natural gas for electricity generation in Florida, increasing the direct end-use of gas by consumers can ultimately reduce the total quantities of natural gas used in Florida; and iii) increasing the installation of higher efficiency gas appliances conserves natural gas resources. The importance of natural gas conservation programs is bolstered by a 2008 study conducted for the American Gas Foundation by Black and Veatch Engineering, which quantified the national impact of the direct use of natural gas on energy consumption.⁸ Black and Veatch found that if, by the year 2030, six-percent (6%) of U.S. residential and commercial energy requirements shifted from electricity to natural gas, the result would be energy savings of 1.25 to 2.00 quadrillion Btus – an amount equal to Florida's requirements for two years.⁹ According to the Energy Information Administration's Natural Gas Consumption by End Use data, Residential and Commercial natural gas consumption combined to account for 6.2% (72,809 MMcf) of total statewide natural gas consumption, whereas the national average of combined Residential and Commercial (7,888,995 MMcf) consumption accounts for 33% of total national consumption. Consequently, the opportunity to achieve substantive energy savings by increasing the direct use of gas by

⁷ Id.

⁸ Direct Use of Natural Gas: Implications for Power Generation, Energy Efficiency, and Carbon Emissions, Black and Veatch (Am. Gas Foundation 2008)(permission granted).

⁹ As a notable aside, the 2012 Commission Annual Report notes that use of natural gas to produce electricity has increased dramatically from 19.3 percent in 1995 to 57.7 percent in 2011, while the Commission's 2013 Facts and Figures of the Florida Utility Industry report indicates that by 2021, Florida's reliance on natural gas for electric generation will decrease only slightly to 56.7%, further reflecting Florida's reliance upon natural gas.

AGDF Commercial Conservation Program Petition

Florida consumers may, on a relative basis, produce more significant savings in Florida compared to projected savings associated with similar programs based on nationwide usage numbers.

11. At the peak of the 2007-2009 economic downturn, Florida's unemployment rate soared to 11.3%, according to the U.S. Bureau of Labor Statistics. Fortunately, as of April 2013, Florida's unemployment rate had declined to 7.2%, the lowest since September 2008, and certain industry segments are seeing significant gains in jobs, including the construction and utilities industries.¹⁰ As Florida rebounds from recession, low energy costs for commercial businesses can further drive economic recovery in Florida by reducing operating costs for Florida's businesses. With the price of natural gas holding at historic lows (\$4.12 MMBtu-5/31/13), businesses that utilize natural gas are well-positioned to reduce operating costs for existing facilities. Moreover, as the economy strengthens, new construction incentives will encourage expanding businesses to consider installing high efficiency equipment and appliances in newly constructed buildings.

12. Consistent with the gas industry's efforts in recent years, AGDF and its member LDCs intend to make a concerted effort to reorient its consumer education and marketing programs for commercial customers towards the existing appliance conversion market, as well as customer retention. The conversion of commercial businesses to gas represents a significant opportunity to meet FEECA goals, reduce carbon emissions, and optimize the use of the embedded investment in the gas mains to the benefit of ratepayers. The gas retention programs will also mitigate electric load growth and support the general conservation of natural gas resources by

¹⁰ May 17, 2013 Employment Figures release by the Florida Department of Economic Opportunity.

AGDF Commercial Conservation Program Petition

encouraging existing gas consumers to replace older, less efficient gas appliances with new high-efficiency gas appliances, such as tankless water heaters.

13. An added consideration is the fact that gas conservation programs make a substantive contribution towards achieving statewide carbon reduction. The displacement of electric appliances with gas appliances and efficiency upgrades to older existing gas appliances reduce both source-based electric generation carbon emissions and site-based gas appliance emissions. As noted in a 2009 Report by the Gas Technology Institute (“GTI”), buildings consume nearly 40 percent of the primary energy resources and 74 percent of the electricity generated each year in the United States. As such, homes and commercial businesses have been growing contributors to CO₂ emissions. This 15-year trend, projected by GTI to continue for the next two decades, is largely driven by growing consumption of electricity, including generation losses. By comparison, GTI noted that the aggregate CO₂ emissions from natural gas consumption in U.S. buildings was holding at 1990 levels and is projected to remain relatively flat through 2030.¹¹ Mindful of GTI’s findings in this regard and the benefits to customers, as well as Florida as a whole, each incentive proposed within this Petition includes information regarding the resulting reduction of carbon emissions associated with each appliance included under the programs.

II. COMMERCIAL CONSERVATION PROGRAMS

14. The commercial rebate programs for which AGDF seeks approval would entail cash allowances (rebates) for a series of commercial appliances based on size, market, type, and

¹¹ Validation of Direct Natural Gas Use to Reduce CO₂ Emissions, Neil Leslie (GTI 2009).

AGDF Commercial Conservation Program Petition

purpose.¹² Below is a chart outlining each specific request:

<u>SIZE/MARKET</u>	<u>APPLIANCE TYPE</u>	<u>PURPOSE</u>
<u>Large Commercial Non-Food Service</u>	Tank Water heater	New Construction, Replacement, & Retention
<u>Large Commercial Non-Food Service</u>	Tankless Water heater	New Construction, Replacement, & Retention
<u>Small Commercial Food Service</u>	Tank Water heater	New Construction, Replacement, & Retention
<u>Small Commercial Food Service</u>	Tankless Water heater	New Construction, Replacement, & Retention
<u>Small Commercial Food Service</u>	Gas Fryer	New Construction, Replacement, & Retention
<u>Small Commercial Food Service</u>	Gas Range/Oven	New Construction, Replacement, & Retention
<u>Large Commercial Food Service</u>	Tank Water heater	New Construction, Replacement, & Retention
<u>Large Commercial Food Service</u>	Tankless Water heater	New Construction, Replacement, & Retention
<u>Large Commercial Food Service</u>	Gas Fryer	New Construction, Replacement, & Retention
<u>Large Commercial Food Service</u>	Gas Range/Oven	New Construction, Replacement, & Retention
<u>Large Commercial Hospitality</u>	Tank Water heater	New Construction, Replacement, & Retention
<u>Large Commercial Hospitality</u>	Tankless Water heater	New Construction, Replacement, & Retention
<u>Large Commercial</u>	Gas Fryer	New Construction,

¹² It is also important to note that this petition does not seek to amend or modify any existing Commercial program currently being offered by any of the AGDF members.

AGDF Commercial Conservation Program Petition

<u>SIZE/ MARKET</u>	<u>APPLIANCE TYPE</u>	<u>PURPOSE</u>
<u>Hospitality</u>		Replacement, & Retention
<u>Large Commercial Hospitality</u>	Gas Range/Oven	New Construction, Replacement, & Retention
<u>Large Commercial Hospitality</u>	Dryers	New Construction, Replacement, & Retention
<u>Large Commercial Cleaning Service</u>	Tankless Water heater	New Construction, Replacement, & Retention
<u>Large Commercial Cleaning Service</u>	Tank Water heater	New Construction, Replacement, & Retention
<u>Large Commercial Cleaning Service</u>	Dryers	New Construction, Replacement, & Retention

15. The proposed cash allowances by appliance type for each of the five Commercial Building Types are displayed in the tables in Appendix A of this petition. As shown, the cash allowances will either be uniform, such that all AGDF LDCs will offer the same rebate amount, or they will be LDC-specific allowances, wherein each utility's rebate amount will vary. With regard to the slight variation of rebate dollar amounts between AGDF LDCs, the variations are due to the differences in Gas Rate Impact Measure and Participant Test Scores.¹³ Also, some LDCs do not plan to offer rebates in every category based on their market, which AGDF has used, consistent with Rule 25-17.009, Florida Administrative Code, to analyze the costs and benefits of the proposed commercial program rebates.

16. These programs for commercial users are the culmination of a multi-year effort that began in 2009, when the AGDF first approached the Florida Solar Energy Center (FSEC) to create a comprehensive commercial cost effectiveness model that would be able to calculate

¹³ AGDF notes that only the Indiantown Division of FPUC has rebate amounts that differ.

whether programs targeting specific appliances would pass the Participants Test (PT) and Gas Rate Impact Measure test (G-RIM). AGDF approached FSEC for this task largely due to the fact that FSEC has a wealth of information, including a voluminous database, regarding energy performance and energy consumption statistics for a wide variety of building types. FSEC is a respected source of expertise regarding the Florida Building Code, as well as a leading educator in the training of Florida Energy Raters. Moreover, AGDF perceived that the FSEC could be expected to apply its wealth of expertise in a non-partisan manner. Ultimately, FSEC was able to successfully develop a model, which was then used to assess the cost-effectiveness of the proposed commercial appliance rebates proposed in this petition.

III. OVERVIEW OF THE COST EFFECTIVENESS MODEL FUNCTIONALITY

17. As more specifically set forth in the April 22, 2009 Final Report (“Report”) of the FSEC regarding the cost model, which is attached as Appendix B to this Petition, the model calculates the G-RIM and PT test scores for selected natural gas equipment over comparable electric equipment based on a 20-year analysis period.¹⁴ Using inputs specific to each appliance, building type, and LDC, the model provides information as to whether or not an appliance-specific program provides benefits to the end-use customer and/or the utility company by comparing the natural gas appliance will have lower life-cycle costs than a comparable electric appliance.

18. The appliances considered within the model (Tank Water Heater, Tankless Water Heaters, Gas Fryers, Ovens/Ranges, Dryers, Pool Heaters & Desiccant) can be used in many

¹⁴ Developing G-RIM and Participants Tests for Specific Commercial Programs for the Associated Gas Distributors of Florida, FSEC-CR-1834-09, (Richard Raustad – April 22, 2009)(Florida Solar Energy Center/University of Central Florida 2009)

AGDF Commercial Conservation Program Petition

types of commercial buildings. The commercial buildings addressed by the model are generic and represent a broad spectrum of small and large buildings, buildings with and without cooking appliances, and general cleaning services. Thus, the model can be used on a wide variety of building types.

19. As the Report itself details, a weighted average electricity rate for both energy (kWh) and demand (kW) was calculated based upon the GSD rates of four major electric IOUs. The cost of electricity was then applied towards the savings calculated when a customer changes the appliance fuel source from electric to natural gas.

20. Since the FSEC model is geared towards calculating the economics for multiple building types, the rate used for a specific program analysis is based on the total natural gas usage as determined by the type of equipment selected for a particular building type. Natural gas utilities determine cost using a range of annual fuel use categories. Consequently, for a given economic assessment under the model, the total building natural gas usage is used to determine the gas utility cost for that particular building.

21. Once the base energy use is determined for a particular application, the associated natural gas usage may be calculated based on appliance efficiency levels. Assumptions for equipment energy use were collected from a variety of reputable sources providing representative data of energy use given the appliance type and the building type selected for study. Electric demand for each appliance was based on the rated electric capacity for each appliance. When considering appliance electric demand, the model allows an appliance demand diversity factor to be used to more accurately represent the “average” demand of appliances as they cycle throughout the day.

AGDF Commercial Conservation Program Petition

22. The model was also structured to allow equipment, installation, maintenance, and other associated costs to be entered based on the specific building classification. Since the model considers the incentive a utility may pay to a customer to exchange a single electric appliance for a comparable natural gas appliance, inputs are provided to identify the number of appliances used for a specific application.

23. As explained in greater detail in the attached Report (Appendix B), only equipment specific to a given building classification can be chosen for the analysis. Although this analysis will typically use the customer-weighted average electric rate derived from Florida's four largest electric utility companies, an input selection allows alternative electric rates to be used. Based on the various inputs, the analysis results are presented in the form of the G-RIM and Participants Test scores along with the resulting reduction in carbon emissions. Detailed economic analysis for each equipment type can be printed from this same location. In addition, the analysis assumes that these equipment types are the only types of gas equipment installed in the building. If other gas equipment is present, a custom input allows the user to enter the fraction of total equipment gas usage for each specific appliance.

24. The financial data used in the model includes the general inflation rate, fuel and non-fuel escalation rates, and any inflation rates associated with customer taxes. These inflation rates were initially calculated in accordance with rules established by the Florida Building Commission pursuant to Rule 9B-13.0071 (now 61G20-5.0071, Florida Administrative Code) – Cost Effectiveness of Amendments to Energy Code. Operating and maintenance costs, paid by the utility customer, are also taken into account. In addition, utility company administration costs, as well as operating and maintenance costs, are incorporated for each appliance type, and

investment costs for main supply lines, gas meter, and meter installation costs are likewise taken into account.

IV. AGDF WORKGROUP COST DEVELOPMENT EFFORTS

25. Once the FSEC model was developed, AGDF established a workgroup, which was tasked with coordinating the development of the programs and gathering from the member LDCs a wide range of inputs to the model - from simplistic data inputs, such as utility rate schedules, to more complex data inputs that would require the development of methodologies to calculate. From May 2011 through May 2012, the AGDF Workgroup convened on numerous occasions, both in person and via conference call, to developing the cost inputs required by cost effectiveness model. A detailed report that explains the approach and methodologies used to determine these cost inputs can be found in Appendix C of this petition.

26. Through the efforts of the workgroup, energy conservation program costs were calculated for each local distribution company (LDC). An allocation methodology was applied using conservation expense forecast data accepted in Docket No. 110004-GU. The methodology took into account variables such as projected program participation rates, advertising expenses, and labor expenses by appliance type for each of three program types (i.e., new construction, retrofit, and retention). Specifically, the process was as follows:

A. Program participants were estimated by establishing a baseline participation rate by program type, as a percentage of total commercial customers. The baseline participation rates were obtained from FPUC's historical participation rates of residential rebate programs for New Construction, Retrofit, and Retention.

AGDF Commercial Conservation Program Petition

B. Baseline participation rates were then applied to each LDC's Commercial Customer totals to project estimated rates for the Commercial Conservation Program.

C. Advertising and Common expenses were determined by establishing a baseline advertising cost ratio of total advertising dollars to total rebates processed, based on FPUCs historical residential advertising cost per rebate. Data from each of the LDCs' 2011 Schedule CT-2 and 2012 Schedule C-3 were used in this process.

D. This Ratio was then applied to the estimated number of commercial program participants to determine the advertising cost portion of the total Energy Conservation Program Costs. This advertising baseline rate was then adjusted to reflect each LDC's total historical advertising expenditures relative to total customers (based on Docket No. 120004-GU Schedule CT-2).

E. Labor expenses associated with administering the commercial conservation program were established by developing a baseline ratio of labor costs to rebates processed, based on historical ECCR residential labor expenses per rebate. Data from each LDC's 2011 Schedule CT-2 and 2012 Schedule C-3 were used in this process.

F. This Ratio was then applied to the estimated number of commercial program participants to determine the labor costs portion of the total Energy Conservation Program Costs.

G. Once all Labor, Advertising, and Common Costs were calculated, a total Energy Conservation Program Cost was developed by dividing these costs across the entire rate base for each utility.

27. Costs associated with piping and fuel lines apply to both new construction and replacement program types. The AGDF workgroup identified typical costs for each building type based on previous construction projects. These costs were reviewed by independent contractors and deemed fair and reasonable. Costs were also itemized for piping, connection

charge, gas flue vent installation, and connectors for certain appliances. In addition, administrative costs, as well as operating and maintenance (O&M) costs, for each LDC were included in the analysis of the programs. Likewise, each LDC's discount rates and depreciation rates were addressed, as set forth in Appendix C.

28. Appendix D is a composite document containing each AGDF members' G-RIM and Participants Tests results for the applicable appliances for each of the Commercial Rebate programs. As reflected therein, both the G-RIM and Participants Tests results for the proposed allowances by appliance type exceed 1.0 (results above 1.0 are deemed to generate cost benefits) for each program type and for each LDC.¹⁵ While there is some variation in the results among the member LDCs, this variation is due largely to the fact that the LDCs each have different rate structures and costs, as well as different projection rates for each of the proposed energy conservation rebate programs. When these differences are taken into account, the test results tend to reflect overarching consistencies in the results for each program. For instance, overall, the LDCs reflected strong results for programs involving technologies such as tankless water heaters, but much weaker results for pool water heaters, a technology ultimately excluded from this Petition. In sum, the test results clearly demonstrate that there are positive cost benefits associated with the Commercial Appliance Rebate programs for each LDC, which coincide with the significant policy benefits associated with implementation of these programs statewide.

V.

CONCLUSION

29. The gas conservation programs proposed by AGDF in this petition meet the


¹⁵ AGDF notes that this is indicative of the overall conservative approach taken in developing these programs. In several instances, the rebate could have been increased without risk of failing either the G-RIM test or the Participants test, but the Workgroup chose to maintain a more conservative approach in order to ensure cost-effectiveness for the full range of programs to be implemented by the AGDF member LDCs.

AGDF Commercial Conservation Program Petition

Commission's historic tests for evaluating such programs and further the policy objectives of FEECA. Commission approval of these programs will enable AGDF's member LDCs to implement these programs consistent with state policy. Moreover, Commission approval will allow AGDF to facilitate participation in these programs through a homogeneous statewide marketing plan, which will further enhance the overall effectiveness of the programs.

WHEREFORE, the Associated Gas Distributors of Florida respectfully requests that the Commission enter its order granting this Petition and approve the proposed Commercial Appliance Rebate conservation programs as described herein.

RESPECTFULLY SUBMITTED this 17th day of June, 2013.

By: 

Beth Keating
Lila Jaber
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215 South Monroe St., Suite 601
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(850) 521-1706

*Attorneys for Associated Gas Distributors of
Florida*

Appendix A:

Tables: Rebate Amounts Per LDC

Appendix B:

FSEC Report: **FSEC-CR-1834-09 Developing G-RIM and Participants Tests for Specific Commercial Programs for the Associated Gas Distributors of Florida**

FSEC Report: **FSEC-CR-1918-12 Updating G-RIM and Participants Test Model for the Associated Gas Distributors of Florida**

Appendix C:

Cost Methodology and Workbook Modifications Report

Appendix D:

Individual LDC G-RIM & Participants Test Cost-Effectiveness Results tests

APPENDIX A: REBATE DOLLAR AMOUNTS

Small Commercial FOOD SERVICE				
<u>New Construction</u> Rebate Summary				
	<u>TANK WH</u>	<u>Tankless WH</u>	<u>RANGE/OVEN</u>	<u>Fryer</u>
	Rebate \$\$	Rebate \$\$	Rebate \$\$	Rebate \$\$
FCG	\$1,000.00	\$2,000.00	\$1,000.00	\$3,000.00
FPU	\$1,000.00	\$2,000.00	\$1,000.00	\$3,000.00
Peoples	\$1,000.00	\$2,000.00	\$1,000.00	\$3,000.00
INDTWN	\$1,000.00	\$1,500.00	\$1,000.00	\$1,000.00
St. Joe	\$1,000.00	\$2,000.00	\$1,000.00	\$3,000.00
CPK	\$1,000.00	\$2,000.00	\$1,000.00	\$3,000.00
Sebring	\$1,000.00	\$2,000.00	\$1,000.00	\$3,000.00

Small Commercial FOOD SERVICE				
<u>Retrofit</u> Rebate Summary				
	<u>TANK WH</u>	<u>Tankless WH</u>	<u>RANGE/OVEN</u>	<u>Fryer</u>
	Rebate \$\$	Rebate \$\$	Rebate \$\$	Rebate \$\$
FCG	\$1,500.00	\$2,500.00	\$1,500.00	\$3,000.00
FPU	\$1,500.00	\$2,500.00	\$1,500.00	\$3,000.00
Peoples	\$1,500.00	\$2,500.00	\$1,500.00	\$3,000.00
INDTWN	\$1,000.00	\$1,500.00	\$1,000.00	\$1,000.00
St. Joe	\$1,500.00	\$2,500.00	\$1,500.00	\$3,000.00
CPK	\$1,500.00	\$2,500.00	\$1,500.00	\$3,000.00
Sebring	\$1,500.00	\$2,500.00	\$1,500.00	\$3,000.00

Small Commercial FOOD SERVICE				
<u>Retention</u> Rebate Summary				
	<u>TANK WH</u>	<u>Tankless WH</u>	<u>RANGE/OVEN</u>	<u>Fryer</u>
	Rebate \$\$	Rebate \$\$	Rebate \$\$	Rebate \$\$
FCG	\$1,000.00	\$2,000.00	\$1,000.00	\$3,000.00
FPU	\$1,000.00	\$2,000.00	\$1,000.00	\$3,000.00
Peoples	\$1,000.00	\$2,000.00	\$1,000.00	\$3,000.00
INDTWN	\$1,000.00	\$1,500.00	\$1,000.00	\$1,000.00
St. Joe	\$1,000.00	\$2,000.00	\$1,000.00	\$3,000.00
CPK	\$1,000.00	\$2,000.00	\$1,000.00	\$3,000.00
Sebring	\$1,000.00	\$2,000.00	\$1,000.00	\$3,000.00

APPENDIX A: REBATE DOLLAR AMOUNTS

Large Commercial FOOD SERVICE				
<u>New Construction</u> Rebate Summary				
	<u>TANK WH</u>	<u>Tankless WH</u>	<u>RANGE/OVEN</u>	<u>Fryer</u>
	Rebate \$\$	Rebate \$\$	Rebate \$\$	Rebate \$\$
FCG	\$1,500.00	\$2,000.00	\$1,500.00	\$3,000.00
FPU	\$1,500.00	\$2,000.00	\$1,500.00	\$3,000.00
Peoples	\$1,500.00	\$2,000.00	\$1,500.00	\$3,000.00
INDTWN	\$1,000.00	\$1,500.00	\$1,000.00	\$1,000.00
St. Joe	\$1,500.00	\$2,000.00	\$1,500.00	\$3,000.00
CPK	\$1,500.00	\$2,000.00	\$1,500.00	\$3,000.00
Sebring	\$1,500.00	\$2,000.00	\$1,500.00	\$3,000.00

Large Commercial FOOD SERVICE				
<u>Retrofit</u> Rebate Summary				
	<u>TANK WH</u>	<u>Tankless WH</u>	<u>RANGE/OVEN</u>	<u>Fryer</u>
	Rebate \$\$	Rebate \$\$	Rebate \$\$	Rebate \$\$
FCG	\$2,000.00	\$2,500.00	\$1,500.00	\$3,000.00
FPU	\$2,000.00	\$2,500.00	\$1,500.00	\$3,000.00
Peoples	\$2,000.00	\$2,500.00	\$1,500.00	\$3,000.00
INDTWN	\$1,000.00	\$1,500.00	\$1,000.00	\$1,000.00
St. Joe	\$2,000.00	\$2,500.00	\$1,500.00	\$3,000.00
CPK	\$2,000.00	\$2,500.00	\$1,500.00	\$3,000.00
Sebring	\$2,000.00	\$2,500.00	\$1,500.00	\$3,000.00

Large Commercial FOOD SERVICE				
<u>Retention</u> Rebate Summary				
	<u>TANK WH</u>	<u>Tankless WH</u>	<u>RANGE/OVEN</u>	<u>Fryer</u>
	Rebate \$\$	Rebate \$\$	Rebate \$\$	Rebate \$\$
FCG	\$1,500.00	\$2,000.00	\$1,500.00	\$3,000.00
FPU	\$1,500.00	\$2,000.00	\$1,500.00	\$3,000.00
Peoples	\$1,500.00	\$2,000.00	\$1,500.00	\$3,000.00
INDTWN	\$1,000.00	\$1,500.00	\$1,000.00	\$1,000.00
St. Joe	\$1,500.00	\$2,000.00	\$1,500.00	\$3,000.00
CPK	\$1,500.00	\$2,000.00	\$1,500.00	\$3,000.00
Sebring	\$1,500.00	\$2,000.00	\$1,500.00	\$3,000.00

APPENDIX A: REBATE DOLLAR AMOUNTS

Large Commercial Hospitality New Construction Rebate Summary					
	<u>TANK WH</u>	<u>TANKLESS WH</u>	<u>RANGE/OVEN</u>	<u>DRYER</u>	<u>FRYER</u>
	Rebate \$\$	Rebate \$\$	Rebate \$\$	Rebate \$\$	Rebate \$\$
FCG	\$1,500.00	\$2,000.00	\$1,500.00	\$1,500.00	\$3,000.00
FPU	\$1,500.00	\$2,000.00	\$1,500.00	\$1,500.00	\$3,000.00
Peoples	\$1,500.00	\$2,000.00	\$1,500.00	\$1,500.00	\$3,000.00
INDTWN	\$1,000.00	\$1,500.00	\$1,000.00	\$500.00	\$1,000.00
St. Joe	\$1,500.00	\$2,000.00	\$1,500.00	\$1,500.00	\$3,000.00
CPK	\$1,500.00	\$2,000.00	\$1,500.00	\$1,500.00	\$3,000.00
Sebring	\$1,500.00	\$2,000.00	\$1,500.00	\$1,500.00	\$3,000.00

Large Commercial Hospitality Retrofit Rebate Summary					
	<u>TANK WH</u>	<u>TANKLESS WH</u>	<u>RANGE/OVEN</u>	<u>DRYER</u>	<u>FRYER</u>
	Rebate \$\$	Rebate \$\$	Rebate \$\$	Rebate \$\$	Rebate \$\$
FCG	\$2,000.00	\$2,500.00	\$1,500.00	\$1,500.00	\$3,000.00
FPU	\$2,000.00	\$2,500.00	\$1,500.00	\$1,500.00	\$3,000.00
Peoples	\$2,000.00	\$2,500.00	\$1,500.00	\$1,500.00	\$3,000.00
INDTWN	\$1,000.00	\$1,500.00	\$1,000.00	\$500.00	\$1,000.00
St. Joe	\$2,000.00	\$2,500.00	\$1,500.00	\$1,500.00	\$3,000.00
CPK	\$2,000.00	\$2,500.00	\$1,500.00	\$1,500.00	\$3,000.00
Sebring	\$2,000.00	\$2,500.00	\$1,500.00	\$1,500.00	\$3,000.00

Large Commercial Hospitality Retention Rebate Summary					
	<u>TANK WH</u>	<u>TANKLESS WH</u>	<u>RANGE/OVEN</u>	<u>DRYER</u>	<u>FRYER</u>
	Rebate \$\$	Rebate \$\$	Rebate \$\$	Rebate \$\$	Rebate \$\$
FCG	\$1,500.00	\$2,000.00	\$1,500.00	\$1,500.00	\$3,000.00
FPU	\$1,500.00	\$2,000.00	\$1,500.00	\$1,500.00	\$3,000.00
Peoples	\$1,500.00	\$2,000.00	\$1,500.00	\$1,500.00	\$3,000.00
INDTWN	\$1,000.00	\$1,500.00	\$1,000.00	\$500.00	\$1,000.00
St. Joe	\$1,500.00	\$2,000.00	\$1,500.00	\$1,500.00	\$3,000.00
CPK	\$1,500.00	\$2,000.00	\$1,500.00	\$1,500.00	\$3,000.00
Sebring	\$1,500.00	\$2,000.00	\$1,500.00	\$1,500.00	\$3,000.00

APPENDIX A: REBATE DOLLAR AMOUNTS

Large Commercial Cleaning Service New Construction Rebate Summary			
	<u>TANK WH</u>	<u>TANKLESS WH</u>	<u>DRYER</u>
	Rebate \$\$	Rebate \$\$	Rebate \$\$
FCG	\$1,500.00	\$2,000.00	\$1,500.00
FPU	\$1,500.00	\$2,000.00	\$1,500.00
Peoples	\$1,500.00	\$2,000.00	\$1,500.00
INDTWN	\$1,000.00	\$1,250.00	\$500.00
St. Joe	\$1,500.00	\$2,000.00	\$1,500.00
CPK	\$1,500.00	\$2,000.00	\$1,500.00
Sebring	\$1,500.00	\$2,000.00	\$1,500.00

Large Commercial Cleaning Service Retrofit Rebate Summary			
	<u>TANK WH</u>	<u>TANKLESS WH</u>	<u>DRYER</u>
	Rebate \$\$	Rebate \$\$	Rebate \$\$
FCG	\$2,000.00	\$2,500.00	\$1,500.00
FPU	\$2,000.00	\$2,500.00	\$1,500.00
Peoples	\$2,000.00	\$2,500.00	\$1,500.00
INDTWN	\$1,000.00	\$1,250.00	\$500.00
St. Joe	\$2,000.00	\$2,500.00	\$1,500.00
CPK	\$2,000.00	\$2,500.00	\$1,500.00
Sebring	\$2,000.00	\$2,500.00	\$1,500.00

Large Commercial Cleaning Service Retention Rebate Summary			
	<u>TANK WH</u>	<u>TANKLESS WH</u>	<u>DRYER</u>
	Rebate \$\$	Rebate \$\$	Rebate \$\$
FCG	\$1,500.00	\$2,000.00	\$1,500.00
FPU	\$1,500.00	\$2,000.00	\$1,500.00
Peoples	\$1,500.00	\$2,000.00	\$1,500.00
INDTWN	\$1,000.00	\$1,250.00	\$500.00
St. Joe	\$1,500.00	\$2,000.00	\$1,500.00
CPK	\$1,500.00	\$2,000.00	\$1,500.00
Sebring	\$1,500.00	\$2,000.00	\$1,500.00

APPENDIX A: REBATE DOLLAR AMOUNTS

Large Commercial Non Food Service		
<u>New Construction</u> Rebate Summary		
	<u>TANK WH</u>	<u>TANKLESS WH</u>
	Rebate \$\$	Rebate \$\$
FCG	\$1,500.00	\$2,000.00
FPU	\$1,500.00	\$2,000.00
Peoples	\$1,500.00	\$2,000.00
INDTWN	\$400.00	\$450.00
St. Joe	\$1,500.00	\$2,000.00
CPK	\$1,500.00	\$2,000.00
Sebring	\$1,500.00	\$2,000.00

Large Commercial Non Food Service		
<u>Retrofit</u> Rebate Summary		
	<u>TANK WH</u>	<u>TANKLESS WH</u>
	Rebate \$\$	Rebate \$\$
FCG	\$2,000.00	\$2,500.00
FPU	\$2,000.00	\$2,500.00
Peoples	\$2,000.00	\$2,500.00
INDTWN	\$400.00	\$450.00
St. Joe	\$2,000.00	\$2,500.00
CPK	\$2,000.00	\$2,500.00
Sebring	\$2,000.00	\$2,500.00

Large Commercial Non Food Service		
<u>Retention</u> Rebate Summary		
	<u>TANK WH</u>	<u>TANKLESS WH</u>
	Rebate \$\$	Rebate \$\$
FCG	\$1,500.00	\$2,000.00
FPU	\$1,500.00	\$2,000.00
Peoples	\$1,500.00	\$2,000.00
INDTWN	\$400.00	\$450.00
St. Joe	\$1,500.00	\$2,000.00
CPK	\$1,500.00	\$2,000.00
Sebring	\$1,500.00	\$2,000.00



FLORIDA SOLAR ENERGY CENTER[®]

Creating Energy Independence

**Developing G-RIM and Participants
Tests for Specific Commercial
Programs for the Associated Gas
Distributors of Florida**

FSEC-CR-1834-09

Final Report

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Table of Contents

Abstract	1
Introduction	1
Commercial Appliance Incentive Programs	2
Commercial Building Types.....	2
Electric Utility Cost	3
Natural Gas Utility Cost	3
Equipment Energy Use Data	4
Water Heater.....	4
Deep Fryers and Oven/Ranges	5
Pool Heater	7
Desiccant Dehumidifier	7
Clothes Drying.....	7
Appliance, Installation, and Maintenance Costs.....	8
Economic Assessment Tool Inputs.....	8
Cost Data Worksheet.....	8
Assumptions Worksheet.....	9
Equipment Summary Worksheet.....	13
Economic Analysis.....	19
APPENDIX A – Cost Effectiveness Manual for Natural Gas Utility Demand Side Management Programs.....	28

Abstract

The Florida Solar Energy Center created an economic assessment tool targeted towards seven common commercial appliances. This assessment tool calculates the gas rate impact measure and participants test score for selecting natural gas equipment over comparable electric equipment based on a 20-year analysis period. This type of analysis provides an indication of whether or not the specific appliance program favors the end use customer and/or the utility company as economic beneficiaries based on whether the natural gas appliance will have lower life-cycle costs than a comparable electric appliance. In most cases, given the current assumptions, natural gas appliances are able to achieve participant test scores and gas rate impact measures greater than 1 which indicates a favorable outcome.

Introduction

Section 366.81, Florida Statutes, authorizes the Florida Public Service Commission (FPSC) to regulate electric and natural gas energy conservation programs. A regulated utility must develop plans and implement energy conservation programs according to the rules established by the FPSC. In 1996, the FPSC adopted Rule 25-17.009, Florida Administrative Code, which establishes the methodology for cost-effectiveness assessment of natural gas programs.

Rule 25-17.009 requires that each gas utility that seeks to recover costs for an existing, new, or modified demand side management program shall perform a cost-effectiveness assessment by means of the Participants Test and the Gas Rate Impact Measure (G-RIM) Test in the format set forth in Form PSC/CMP/18, entitled the "Florida Public Service Commission Cost Effectiveness Manual for Natural Gas Utility Demand Side Management Programs." As long as the programs offered pass the Participants and G-RIM Tests with a score of one or greater, it is deemed cost effective and beneficial for a utility company to offer to its customers.

The Florida Solar Energy Center (FSEC) has developed a method for calculating the cost-effectiveness of commercial natural gas conservation programs covering several typical appliance types. Since these appliance types are used in a wide variety of building, several generic building types were integrated into the analysis. Typical electric and natural gas appliance cost, installation and maintenance cost, associated energy use and fuel pricing, and inflation rate inputs allow the determination of life-cycle costs for these appliances over a 20-year period.

The intent of the assessment was to develop a detailed worksheet that, when given the associated costs and energy use for appliances used in "typical" buildings, would calculate the resulting scores for both the Participants Test and the Gas Rate Impact Measure. This analysis uses a benefit-to-cost ratio approach which, when completed, provides a measure of economic viability for a particular appliance. The analysis tool is based on a similar worksheet for residential appliance programs and was modified to target commercial applications. To that end, the worksheet developed for this project allows for the input of first-cost, operating and maintenance costs, and typical energy use according to the equipment and building type selected for analysis. In addition, the worksheet allows selection of multiple appliances in each building (i.e., one or

more of the appropriate appliance types may be selected for a particular building). The remainder of this report details the assumptions and operating methodology used within the economic analysis tool.

Commercial Appliance Incentive Programs

The Florida Solar Energy Center identified the calculations needed to perform G-RIM and Participant Tests for five Commercial Appliance Incentive programs. While there are five types of appliances to be considered, a total of seven programs may be evaluated using the economic assessment tool as defined in Table 1. Each commercial appliance may be analyzed individually or in combination, as applicable, to determine if a natural gas or electric fuel source would provide a lower life-cycle cost for the appliance(s).

Table 1. Commercial Appliance Incentive Programs

Program	Appliance	Equipment Type
1	Domestic Hot Water	Tank Water Heater
2		Tankless Water Heater
3	Commercial Cooking	Deep Fryer
4		Oven/Range
5	Pool Heating	Water Heater
6	Dehumidification	Desiccant Dehumidifier
7	Drying	Clothes Dryer

Commercial Building Types

The appliance equipment described in Table 1 can be used in many types of commercial buildings. Several typical building types were identified as possible candidates for the equipment selected for study. These building types are generic in type and represent small and large buildings, buildings with and without cooking appliances, and general cleaning services. For building types not included in these generic categories, the large commercial hospitality building type may be used along with the specific equipment used in that building. This allows this assessment tool to be used on virtually any building type. Table 2 describes the building types selected for study along with the types of appliances found in these buildings.

Table 2. Commercial Building Equipment Assumptions

Building Type	Equipment Assumptions				
	Water Heating	Cooking	Pool	Dehumidifier	Clothes Drying
Small Commercial Non-Food Service	X			X	
Large Commercial Non-Food Service	X			X	
Small Commercial Food Service	X	X		X	
Large Commercial Food Service	X	X		X	
Large Commercial Hospitality	X	X	X	X	X
Small Commercial Cleaning Service	X			X	X

Electric Utility Cost

A key aspect of economic analysis is selecting the utility rates used for calculations. The electric rate structures for Florida's four largest electric utility companies were used to calculate a customer-weighted average cost of electricity. Since electric utility rate structures change based on the amount of electricity used, the rate category closest to the commercial building types selected for study is used for this analysis. The General Service Demand category was chosen as the representative electric utility rate. From the four utility rate structures, a single customer-weighted average electricity rate for both energy (kWh) and demand (kW) was calculated. The cost of electricity will be considered to be the same throughout the day, meaning that no time-of-day variations in energy charges will be applied. The cost of electricity is applied towards the savings calculated when a customer changes the appliance fuel source from electric to natural gas. Table 3 describes the electric utility rates used for this analysis.

Table 3. Utility Rates for Commercial General Service Demand (GSD-1)

Category	Utility Company				Customer Weighted
	FPL	Progress	Tampa Elec.	Gulf Power	
Customer Charge	\$ 33.05	\$ 10.62	\$ 42.00	\$ 35.00	\$ 29.57
Base Rate	\$ 0.01930	\$ 0.03654	\$ 0.02113	\$ 0.02458	\$ 0.02339
Fuel Charge	\$ 0.05834	\$ 0.06623	\$ 0.06766	\$ 0.05758	\$ 0.06059
Total Energy Rate	\$ 0.07764	\$ 0.10277	\$ 0.08879	\$ 0.08216	\$ 0.08398
Demand Charge	\$ 7.52	\$ 3.71	\$ 7.25	\$ 5.42	\$ 6.53
Customers	93289	29790	12572	15522	151173

Natural Gas Utility Cost

Natural gas rates are based on the annual fuel use. Since this analysis is geared towards calculating the economics for multiple building types, the rate used for a specific analysis is based on the total natural gas use as determined by the type of equipment selected for a particular building type. Natural gas utilities determine cost using a range of annual fuel use categories. For a given economic assessment, the total building natural gas usage will be used to determine the gas utility cost for that particular building. For this analysis, annual fuel use is typically in the range of 6000-59999 therms as is highlighted in Table 4. This table is merely an example for a single company and the cost of natural gas is formally entered on the Cost Data worksheet for each specific utility company.

Table 4. Customer Natural Gas Rates for Florida City Gas as of January 2009

Annual Fuel Use (therms)		Customer Charge	Fuel Rate	Energy Charge
Min	Max			
0	99	\$ 8.00	\$ 0.56231	\$ 0.09304
100	219	\$ 9.50	\$ 0.52248	\$ 0.09304
220	599	\$ 11.00	\$ 0.49531	\$ 0.04875
600	1199	\$ 12.00	\$ 0.43663	\$ 0.03115
1200	5999	\$ 15.00	\$ 0.31715	\$ 0.02499
6000	24999	\$ 30.00	\$ 0.27467	\$ 0.02452
25000	59999	\$ 80.00	\$ 0.27618	\$ 0.02394

Equipment Energy Use Data

Determining an accurate representation of annual energy use is the basis of this economic assessment tool. Once the base energy use is determined for a particular application, the associated natural gas usage may be calculated based on appliance efficiency levels.

Assumptions for equipment energy use were collected from a variety of sources and provide a *representative magnitude* of energy use given the appliance type and the building type selected for study. The following assumptions are made to identify the annual energy use for each appliance type described in Table 1. Electric demand for each appliance is based on the rated electric capacity for each appliance. When considering appliance electric demand, this economic analysis tool allows an appliance demand diversity factor to be used to more accurately represent the “average” demand of appliances as they cycle throughout the day.

Water Heater

Water heater energy use was derived from a previous report describing the energy use of Florida buildings¹ and information obtained from a Food Service Technology Center report on water heating systems in restaurants². The annual energy use reported in the Florida buildings report are estimated based on the ASHRAE Handbook – HVAC Applications Chapter 49³. In small office buildings, for example, the annual energy use for a standard electric water heater is reported as 2,600 kWh. For each building type, total building water heater energy use is the product of the number of hot water heaters and the unit energy use.

Table 5. Water Heater Energy Use for Typical Commercial Buildings

Building Type	Number of Units	Electric			Gas	
		Energy Use (kWh)	Total Energy Use (kWh)	Demand (kW)	Energy Use (therms)	Total Energy Use (therms)
Small Commercial Non-Food Service	1	2,600	2,600	10	134	134
Large Commercial Non-Food Service	3	4,576	14,268	15	236	708
Small Commercial Food Service	3	20,230	60,690	15	1,042	3,126
Large Commercial Food Service	3	20,230	60,690	15	1,042	3,126
Large Commercial Hospitality	3	30,295	90,885	20	1,560	4,680
Small Commercial Cleaning Services	2	22,037	44,074	15	1,135	2,270

¹ “Reducing Energy Use in Florida Buildings”, R. Raustad, M. Basarkar, R. Vieira, FSEC-CR-1763-08.

² “Energy Efficiency Potential of Gas-Fired Water Heating Systems in a Quick Service Restaurant”, A. Karas, D. Fisher, FSTC Report 5011.07.19, Food Service Technology Center, October 2009.

³ American Society of Heating, Refrigeration and Air Conditioning Engineers, 2003. ASHRAE Handbook, HVAC Applications, Atlanta, GA.

Also note that the total water heater energy use for a particular building should not change based on the number of water heaters installed in the building. The unit water heating energy will be adjusted based on the number of water heaters, but the total water heater energy use for a particular building type remains fixed for a given analysis. The total water heater energy may, however, be changed as other more accurate information becomes available.

For this analysis, the energy use for a gas tank water heater or a gas or electric tankless water heater is then based on the ratio of efficiencies for these water heaters. Conversion of the base “energy” to either electric or natural gas usage is a simple matter of using conversion factors. Efficiency levels were assumed to be 0.89 and 0.92 for electric tank and tankless water heaters and 0.59 and 0.79 for gas tank and tankless water heaters, respectively. Table 5 describes the per unit standard tank water heater assumptions made for this analysis based on building type and fuel source. Efficiency levels may also be modified as necessary.

Following the previously described conversion methodology, the energy use for an electric tankless water heater used in a small office building would be 2,600 kWh multiplied by 0.89/0.92 or 2,515 kWh. The calculation of gas water heater energy use simply uses a conversion factor to change from the base energy use to the required amount of natural gas needed to supply that same amount of energy (i.e., 3414 Btu/KWh divided by 100,000 Btu/therm). The different efficiencies of these appliances must be accounted for in this conversion process. Natural gas usage is estimated at 134 and 100 therms for gas tank and tankless water heaters, respectively.

The energy use for water heating for other building classifications were estimated based on combinations of annual energy use for other building types described in the previously mentioned report. The FSTC report was reviewed to ensure that these energy use assumptions agreed with other independent sources. The electric demand for water heaters is estimated based on the ratings of typical water heater equipment. For example, the electric demand for tank and tankless water heaters used in this analysis is estimated to be 10 kW and 25 kW, respectively. Multiple water heaters are used to meet the increased demand for other building types. These initial assumptions may be changed to represent other equipment as necessary. The analysis tool allows a diversity factor to be used to more accurately represent the “average” demand of appliances as they cycle throughout the day.

Deep Fryers and Oven/Ranges

Deep fryers and oven/ranges are used in a variety of applications and the end use energy is primarily based on the amount of food processed each day. The energy use of gas and electric cooking equipment, and peak demand for electric cooking equipment, was determined through the use of a life-cycle and energy cost calculator provided by the Food Service Technology Center⁴. The Food Service Technology Center (FSTC) is a scientific testing facility for benchmarking the energy performance of equipment used in commercial kitchens. The FSTC website provides a [tool](http://www.fishnick.com/saveenergy/tools/calculators/) to calculate energy use based on the amount of food cooked each day.

⁴ Food Service Technology Center, San Ramon, CA, 2008 Fisher-Nickel, Inc.
<http://www.fishnick.com/saveenergy/tools/calculators/>

This calculator was used to provide an estimate of energy use and peak demand for fryers and conventional ovens using both natural gas and electricity as the fuel source. The FSTC program defaults were used to identify typical energy use for these commercial cooking appliances. Simulation inputs are shown in Table 6. Using these default inputs, the amount of food prepared each day is the only remaining input required to calculate the annual energy use.

Table 6. Simulation Inputs for Fryers and Ovens/Ranges

Input	Electric		Gas	
	Fryer	Oven/Range	Fryer	Oven/Range
Preheat Energy	2.0 kWh	2.3 kWh	14,000 Btu	15,000 Btu
Idle Energy Rate	1 kW	5 kW	12,000 Btu/h	23,000 Btu/hr
Efficiency	78%	50%	42%	37%
Capacity	68 lb/hr	90 lb/hr	61 lb/hr	100 lb/hr
Duration	16 hrs/day	12 hrs/day	16 hrs/day	12 hrs/day
	365 days/yr			
# of Preheats/day	1			

Table 7 shows daily energy use (using the FSTC calculator) as a function of the amount of daily food preparation, which varied from 10 to 600 pounds per day. For electric equipment the associated peak demand is also calculated.

Table 7. Fuel Use Statistics for Fryers (left) and Ovens/Ranges (right)

lb/day	Electric		Gas	Electric		Gas
	kWh/yr	kW	Therms/yr	kWh/yr	kW	Therms/yr
10	7,207	1.2	783	22,615	5.2	1,057
50	10,118	1.7	953	23,941	5.5	1,122
100	13,757	2.4	1,165	25,599	5.8	1,204
150	17,396	3.0	1,376	27,257	6.2	1,285
200	21,035	3.8	1,588	28,915	6.6	1,367
250	24,674	4.2	1,800	30,573	7.0	1,448
300	28,313	4.8	2,012	32,231	7.4	1,529
350	31,952	5.5	2,223	33,889	7.7	1,611
400	35,591	6.1	2,435	35,547	8.1	1,692
450	39,230	6.7	2,647	37,204	8.5	1,773
500	42,869	7.3	2,859	38,862	8.9	1,855
550	46,508	8.0	3,070	40,520	9.3	1,936
600	50,147	8.6	3,282	42,178	9.6	2,017

A regression analysis was performed on these data to develop a relationship between energy use and electric demand based on the amount of food prepared each day. In this analysis, the amount of food prepared each day for fryers/ovens were assumed to be 300/100, 100/200, and 200/100 pounds per day for buildings classified as Small Commercial Food Service, Large Commercial

Food Service, and Large Commercial Hospitality, respectively. These inputs, or the underlying regression analysis, may be changed as necessary to perform other economic assessments.

Pool Heater

An FSEC solar collector sizing guide describing Florida pool heating economics shows that a typical central Florida covered pool measuring 30' x 15' requires 87 MBTU/year (25,489 kWh/year) of heating energy. When a pool cover is not used, the required heating energy increases by a factor of 2.1. Inputs to this economic assessment tool include the COP of the electric heat pump, area of the pool, and whether or not the pool is covered. Although this tool includes calculations for pool heater equipment demand, the demand diversity for the electric heat pump unit will be set to 0 in this analysis since pool heaters would not typically be operated during on-peak periods. If electric demand is to be considered for a particular analysis, the electric demand is currently assumed to be equal to 0.02% of the annual energy use. The electric demand is automatically calculated based on pool surface area, heat pump COP, and whether or not the pool is covered. These inputs may be changed as necessary to perform other economic assessments.

Desiccant Dehumidifier

A report⁵ prepared by CDH Energy Corp. describes energy use of NovelAire electric and gas-fired desiccant units for two different commercial building applications. A 16,000 ft² retail store and a 2,100 ft² office building. From this report it was determined that the annual energy use of a desiccant dehumidifier used in a Tampa, FL small office application is 1,256 kWh and 139 therms for an electric and natural gas-fired unit, respectively. The demand estimate for the electric unit is 1.3 kW. For the large office application, annual energy use was estimated at 14,867 kWh and 2,118 therms for an electric and natural gas-fired unit, respectively, and would require 8 of the smaller units used for the small office application. The demand estimate for the large office building, considering the required 8 units as documented in this report, is 10.4 kW. These units would typically be operated during on-peak periods and the entire demand for the electric units will be included in the analysis (i.e., demand diversity = 100%). These inputs may be changed as necessary to perform other economic assessments.

Clothes Drying

Estimating annual energy use for commercial clothes drying establishments is a difficult task since the type of drying equipment and the annual energy use vary widely among establishments. The equipment energy use for commercial drying equipment would be far better estimated by the natural gas industry by simply reviewing annual energy requirements for select businesses and averaging these results. The equipment cost estimates for commercial drying equipment would also be more accurately represented when provided by an industry which sells or rents this type of equipment in large quantities.

⁵ "Evaluation of the NovelAire Desiccant Unit in Commercial Applications", CDH Energy Corp., Final Report, March 2009.

A typical assumption for residential clothes drying is 3.3 kWh for electric and 0.22 therms + 0.21 kWh (turning the drum) for natural gas per load of clothes (assuming a 45 minute drying cycle). Adjusting for the electricity consumed by a natural gas dryer, this analysis uses a net electrical energy use of 3.1 kWh for electric dryers. For this analysis it was assumed that a small commercial cleaning service would operate 10 dryers, dry 12 loads per day per dryer, operate 365 days per year and consume 13,578 kWh and 964 therms annually for *each* electric and gas appliance, respectively. The electric demand is assumed to be 5 kW per dryer for electric clothes dryers. These inputs may be changed as necessary to perform other economic assessments.

Appliance, Installation, and Maintenance Costs

For this analysis, the end user of the tool is responsible for determining the associated equipment cost for each appliance type. Inputs have been defined to allow the equipment, installation, maintenance, and other associated costs to be entered based on the specific building classification. An entry is provided to allow input for avoided electrical cost for breaker and wire size reductions when natural gas appliances are used in new construction. These costs are automatically zeroed for retrofit and retention analysis (e.g., G32 on Equipment Summary worksheet). Care should be used when modifying the costs in these cells so as not to change the cell formula. Since this analysis considers the incentive a utility may pay to a customer to exchange a single electric appliance for a comparable natural gas appliance, inputs are provided to identify the number of appliances used for a specific application. In this way, multiple incentives applicable to a specific appliance program may be included in the analysis as appropriate. These data are entered on the Equipment Summary worksheet.

Economic Assessment Tool Inputs

Inputs to the economic assessment tool are made up of two distinct worksheets. An assumptions page and an equipment summary page. The assumptions for the analysis include an assortment of inputs used to define the analysis. Any input field which may be modified is highlighted with a light blue background within these worksheets, although other input assumptions may be made as necessary. The input requirements for each of these worksheets are described here.

Cost Data Worksheet

The costs associated with specific utility company meter equipment and fuel charges are organized on this worksheet. Figures 1-3 show an example of the type of information contained here. Costs may be specific to an individual utility company, a specific natural gas rate class, or based on the type of program (e.g., new construction, retrofit, retention) or equipment classification (e.g., water heater, cooling equipment, etc.). The costs entered on this worksheet are automatically updated on the Assumptions worksheet as necessary. On the assumptions worksheet, cells highlighted in orange represent data that are automatically updated from the cost data worksheet.

Service Line:	Florida City Gas											FPUC	
	GS-1	GS-100	GS-220	GS-600	GS-1200	GS-6,000	GS-25,000	GS-60,000	GS-120,000	GS-250,000	GS-1,250,000+	GS-1	GS-2
(Max Usage per Class)	100	220	500	1200	6000	25000	60000	120000	250000	1250000	1E+12	600	1E+12
Feeder or Supply Main	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000
Project Main	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000
Pipe and Piping (Service Line)	\$395	\$1,256	\$1,481	\$2,075	\$2,363	\$3,131	\$3,876	\$11,425	\$14,851	\$17,515	\$24,386	\$325	\$325
Meter:													
Meter Cost	\$50	\$50	\$209	\$209	\$614	\$614	\$699	\$1,121	\$1,400	\$1,700	\$5,816	\$523	\$523
Meter Set	\$25	\$25	\$71	\$71	\$472	\$472	\$949	\$996	\$996	\$2,138	\$18,100	\$77	\$77
Regulator:													
Regulator Cost	\$15	\$15	\$15	\$15	\$90	\$90	\$1,393	\$1,393	\$1,393	\$2,766	\$8,154	\$198	\$198
Regulator Install	\$12	\$12	\$12	\$12	\$260	\$260	\$260	\$260	\$260	\$260	\$260	\$75	\$75
TOTAL	\$1,057	\$1,360	\$1,788	\$2,382	\$3,619	\$4,627	\$7,169	\$15,185	\$18,880	\$24,379	\$66,716	\$1,788	\$1,788

Rate Schedule:	Florida City Gas											FPUC	
	GS-1	GS-100	GS-220	GS-600	GS-1200	GS-6,000	GS-25,000	GS-60,000	GS-120,000	GS-250,000	GS-1,250,000+	GS-1	GS-2
Customer Charge	\$9	\$10	\$11	\$12	\$15	\$30	\$60	\$150	\$250	\$300	\$500	\$20	\$33
ECCR	\$0.09304	\$0.09304	\$0.04875	\$0.03115	\$0.02499	\$0.02452	\$0.02394	\$0.01795	\$0.01643	\$0.01643	\$0.01643	\$0.39136	\$0.39136
Distribution Charge	\$0.56213	\$0.52248	\$0.49513	\$0.43653	\$0.31715	\$0.27487	\$0.27618	\$0.27477	\$0.16094	\$0.17191	\$0.12225	\$0.31715	\$0.31715
PGA Recovery Factor	\$0.60160	\$0.60160	\$0.60160	\$0.60160	\$0.60160	\$0.60160	\$0.60160	\$0.60160	\$0.60160	\$0.60160	\$0.60160	\$0.02506	\$0.02506

Figure 1. Utility Specific Equipment and Rate Cost Data

Administrative Costs:	FL City Gas	FPUC	Peoples	Indiantown	St Joe	Chesapeake	Sebring
New Customer Admin Cost	\$1.61	\$2.61	\$3.61	\$4.61	\$5.61	\$6.61	\$7.61
Gas Facility O&M Cost	\$21.66	\$22.66	\$23.66	\$24.66	\$25.66	\$26.66	\$27.66

Financial Data:	FL City Gas	FPUC	Peoples	Indiantown	St Joe	Chesapeake	Sebring
Discount Rate	5.720%	8.740%	8.500%	8.500%	8.500%	6.830%	6.830%
Depreciation Rates:							
Service Lines	3.300%	3.300%	3.300%	3.300%	3.300%	3.300%	3.300%
Development Main	3.300%	3.300%	3.300%	3.300%	3.300%	3.300%	3.300%
Meter	3.800%	3.800%	3.800%	3.800%	3.800%	3.800%	3.800%
Supply Mains	3.300%	3.300%	3.300%	3.300%	3.300%	3.300%	3.300%

Figure 2. Utility Specific Administrative and Financial Cost Data

Annual EC Program Cost:	Florida City Gas			FPUC			Peoples Gas		
	New Const.	Retrofit	Retention	New Const.	Retrofit	Retention	New Const.	Retrofit	Retention
Water Heating Tank	\$36.96	\$36.96	\$36.96	\$36.96	\$36.96	\$36.96	\$36.96	\$36.96	\$36.96
Water heating Tankless	\$36.96	\$36.96	\$36.96	\$36.96	\$36.96	\$36.96	\$36.96	\$36.96	\$36.96
Cooking Deep Fryer	\$36.96	\$36.96	\$36.96	\$36.96	\$36.96	\$36.96	\$36.96	\$36.96	\$36.96
Cooking Oven/Range	\$36.96	\$36.96	\$36.96	\$36.96	\$36.96	\$36.96	\$36.96	\$36.96	\$36.96
Pool Heating	\$36.96	\$36.96	\$36.96	\$36.96	\$36.96	\$36.96	\$36.96	\$36.96	\$36.96
Desiccant Dehumidifier	\$36.96	\$36.96	\$36.96	\$36.96	\$36.96	\$36.96	\$36.96	\$36.96	\$36.96
Clothes Drying	\$36.96	\$36.96	\$36.96	\$36.96	\$36.96	\$36.96	\$36.96	\$36.96	\$36.96

Figure 3. Utility and Program Type Specific Cost Data

Assumptions Worksheet

At the top of the assumptions page are the inputs used to define the equipment types selected for a particular building type and the electric rate structure. The specific building type is first selected based on the generic types of buildings selected for this analysis (Table 2). Specific equipment types are then chosen at the left using the check boxes provided. Only equipment specific to a given building classification can be chosen for the analysis. The specific gas utility and the type of conservation program is also selected from pull-down menus.

Although this analysis will typically use the customer-weighted average electric rate derived from Florida's four largest utility companies, an input selection allows alternative electric rates to be used. Based on these inputs, the analysis results are presented in the form of the G-RIM and Participants test scores along with the resulting reduction in carbon emissions. Green highlighted cells automatically present the test scores that exceed 1 (or 0 for the Carbon

Reduction column). Detailed economic analysis for each equipment type can be printed from this same location. In addition, the analysis assumes that these equipment types are the only types of gas equipment installed in the building. If other gas equipment is present, a custom input allows the user to enter the fraction of total equipment gas usage for this specific appliance (i.e., enter the fraction of appliance gas usage to total building gas usage).

The following example economic analysis result is shown for inputs representing the customer-weighted average electric utility rate for Florida's four largest electric utility companies, a Large Commercial Hospitality building classification, the gas utility selected as Florida City Gas, and a New Construction program type. Note that these choices are selected from pull-down menus at the top right of this figure. All allowed equipment selection options are chosen for this building type by choosing the associated check boxes at the left. Customer allowances (or incentives) are not included in this example and are set to 0. When customer incentives are considered, the Participants Test score increases and the G-RIM test score decreases. In this analysis tool, the customer incentive is entered at the right of this summary table (not shown) and automatically "pulled" to this table as required based on selected building type.

** Entries in Blue may be modified **

Gas Utility: Florida City Gas	Electric Rate	Building Type Selection	Gas Utility	Program Type
SUMMARY RESULTS - Participants and RIM tests		Weighted Average	Florida City Gas	New Construction

Equipment Selection Option	Print Summary Report	Allowance (per Unit)	Participants Test	G-RIM Test	Carbon Reduction (tons CO ₂ /yr)	Fraction of Equipment Gas Usage To Total Gas Usage
<input checked="" type="checkbox"/>	Water Heating - Tank (3)	\$0	1.605	1.484	41.853	
<input checked="" type="checkbox"/>	Water Heating - Tankless	\$0	0.000	0.000	0.000	
<input checked="" type="checkbox"/>	Cooking - Deep Fryer (2)	\$0	1.120	1.481	14.325	
<input checked="" type="checkbox"/>	Cooking - Oven/Range (1)	\$0	1.762	1.461	12.382	
<input checked="" type="checkbox"/>	Pool Heating (1)	\$0	0.639	1.483	4.090	
<input checked="" type="checkbox"/>	Desiccant Dehumidifier (8)	\$0	0.871	1.474	0.085	
<input checked="" type="checkbox"/>	Clothes Drying (10)	\$0	1.134	1.488	49.310	

Figure 4. General Inputs and Analysis Results

The financial data (economic indicators of inflation rates), program administration costs incurred by the utility, investment costs for gas mains and meter, and electric and natural gas utility costs are also entered on the Assumptions worksheet. Exceptions are for cells highlighted in orange where data is pulled from the Cost Data worksheet as necessary. These data can be changed, but will be overwritten the next time the Building Type, Gas Utility Co, or Program Type is changed at the top of this worksheet or anytime the building gas usage changes for any reason.

The financial data include the general inflation rate, fuel and non-fuel escalation rates, and any inflation rates associated with customer taxes. These inflation rates were initially calculated in accordance with rules established by the Florida Building Commission pursuant to rule 9B-13.0071 – Cost Effectiveness of Amendments to Energy Code.

*** Entries in Orange highlighted cells are taken from the Cost Data sheet as necessary and may NOT be modified on this worksheet ***

FINANCIAL DATA					
Discount Rate					
General Inflation Rate		3.19%			
Customer Tax Rate					
Gas		2.50%			
Electric		2.56%			
Fuel and O&M Escalators			Non-Fuel Gas Rate Escalators		Non-Fuel Elec. Rate Escalators
O&M expense		3.19%	Cust. Charge - Gas		0.00%
Electric Fuel Rate		7.12%	Gas Base Rate		8.77%
Gas Fuel Rate		8.77%			
					Cust. Charge - Elec
					0.00%
					Electric Base Rate
					7.12%
					Electric Demand Charge
					0.00%

Figure 5. Financial Inputs

Administration cost inputs as shown in Figure 6 include any costs incurred by the gas utility while implementing a particular conservation program. Operating and maintenance costs, paid by the utility customer, are also entered here. Utility company administration costs and operating and maintenance costs are identified for each appliance type and used by each specific appliance economic worksheet as appropriate. The costs shown in cells with orange highlights are formally entered on the Cost Data worksheet and automatically written to this worksheet using Microsoft Visual Basic programming language. For this reason, additional rows or columns should not be added to this spreadsheet without modifying these visual basic write statements (i.e., Visual Basic in Excel).

ADMIN COSTS		
New Customer Administrative Cost		
Gas Facility O&M Costs per Customer		
Annual EC Program Administrative Costs - Per Commercial Customer		
New Construction		
Water Heating - Tank		
Water Heating - Tankless		
Cooking - Deep Fryer		
Cooking - Over/Range		
Pool Heating		
Desiccant Dehumidifier		
Clothes Drying		
Annual O & M costs per appliance	Gas	Electric
Water Heating - Tank	\$36.00	\$36.00
Water Heating - Tankless	\$36.00	\$36.00
Cooking - Deep Fryer	\$72.00	\$72.00
Cooking - Over/Range	\$72.00	\$72.00
Pool Heating	\$36.00	\$36.00
Desiccant Dehumidifier	\$72.00	\$72.00
Clothes Drying	\$36.00	\$36.00

Figure 6. Administrative Cost Inputs

Utility investment costs for main supply lines, gas meter, and meter installation cost are entered on the Cost Data worksheet and written here for a particular analysis (Figure 4). The depreciation rates used for tax purposes are organized in a similar manner and written here for use in the economic calculations. The costs shown in cells with orange highlights are formally entered on the Cost Data worksheet.

INVESTMENT COSTS		
Feeder or Supply Main		
Project Main		
2" Plastic Main		
Cost Per Building	\$1000	
Meter		
Meter	\$50	
Regulator		
Meter Install		
Total	\$1,636	
Service Lines		
Depreciation Rates		
Service Lines Plastic	3.20%	
Development Main		
Meter		
Supply Mains		

Figure 7. Investment Costs Inputs

The gas utility cost information follows as shown in Figure 8. This information is formally entered on the Cost Data worksheet and written to this location based on the building's total gas usage. The natural gas costs located on the Cost Data worksheet may be changed to represent the costs of different utilities. Connections charges are not included in this analysis.

REVENUE ITEMS

Gas Rates	Total Building Energy (therms) ^r	24,877
Customer Charge		Per Month
ECCB		Per Therm
Distribution Charge		Per Therm
PGA Recovery Factor		Per Therm

Figure 8. Gas Utility Revenue Items Inputs

The average electric rates used for the analysis are located next in the list of inputs as shown in Figure 9. The four largest utilities in the State of Florida are included in this worksheet. These rates are numerically averaged based on the number of customers for each utility company. The specific utility rates, the numerical average, or the customer-weighted average may be used in the analysis as previously described. The rates actually used in the economic calculations are shown at the right of the table.

General Service Demand (GSD)	COMMERCIAL ELECTRIC RATES						User Selection (cell E7)
	PPL	Progress Energy	Tampa Elec Co	Gulf Power	Average	Weighted Average	
Cust. Charge	\$33.06	\$10.42	\$42.00	\$35.00	\$30.17	\$29.57	for calculations \$29.67
Energy Charge	\$0.01880	\$0.01618	\$0.01370	\$0.01398			
Fuel Charge	\$0.05834	\$0.06623	\$0.06766	\$0.05758	\$0.06245	\$0.06069	\$0.06069
Capacity	--	\$0.01547	\$0.00429	\$0.00262			
Environmental	\$0.00084	\$0.00307	\$0.00228	\$0.00720			
Energy Conservation	\$0.00186	\$0.00182	\$0.00086	\$0.00080			
Total	\$0.0776	\$0.1028	\$0.0868	\$0.0822	\$0.08784	\$0.08398	\$0.08398
FLGross Receipts Tax (%)	2.56%	2.56%	2.56%	2.56%	2.56%	2.56%	2.56%
Demand Charge	\$7.62	\$3.71	\$7.25	\$6.42	\$5.98	\$6.53	\$6.53
From 2008 FERC Form 1 - 2007 Q4 # of customers (Approx)	93289	29790	12572	15522	Total Customers 161173		

Electric rates as of January 2009

Figure 9. Electric Utility Rate Structure Inputs

An equipment and installation cost summary, installation cost detail for each equipment type, and a detailed breakdown of energy use by equipment type is provided at the bottom of the Assumptions worksheet as shown in the following figures. These tables identify the analysis inputs in one strategic location. The data in these tables are also used in the appliance worksheets (e.g., Water Heating) to calculate the economic data required for the analysis. Note that these data do not require adjustment and are the results of other inputs and assumptions provided elsewhere in the workbook. The data presented in the following tables include the appliance multiplier as specified on the Equipment Summary worksheet (e.g., cells A27 – A29). Also note that the appliance type has the number of units appended to the name category. For water heaters, only the selected appliance type (e.g., Tank or Tankless) shows the number of units since only one tank type is applicable to a specific analysis.

	EQUIPMENT and INSTALLATION COST			
	(data pulled from detailed cost tables on Equipment Summary tab at J25.1107 or J25.1107)		Gas	Electric
Water Heating - Tank (3)				
Equipment	\$2,268	\$1,677		
Installation	\$4,034	\$2,834		
Service Life Replacement	\$2,834	\$2,834		
Water Heating - Tankless				
Equipment			\$2,688	\$2,265
Installation			\$4,034	\$2,834
Service Life Replacement			\$2,834	\$2,834
Cooking - Deep Fryer (2)				
Equipment	\$8,892	\$9,264		
Installation	\$950	\$350		
Service Life Replacement	\$350	\$350		
Cooking - Oven/Range (1)				
Equipment			\$5,617	\$5,203
Installation			\$650	\$350
Service Life Replacement			\$350	\$350
Pool Heating (1)				
Equipment	\$3,250	\$2,840		
Installation	\$600	\$250		
Service Life Replacement	\$250	\$250		
Desiccant Dehumidifier (8)				
Equipment			\$28,712	\$35,040
Installation			\$4,000	\$2,000
Service Life Replacement			\$2,000	\$2,000
Clothes Drying (10)				
Equipment	\$26,200	\$24,200		
Installation	\$6,500	\$2,500		
Service Life Replacement	\$2,500	\$2,500		

Note: Service Life Replacement Installation does not include equipment cost.

Figure 10. Equipment and Installation Cost Summary

Full data from installation costs based on building type - DO NOT CHANGE CELL FORMULAS

Large Commercial Hospitality - Installation Cost Detail (Excluding Equipment cost)					Electrical Installation Savings
	Piping	Venting	Installation	Total	
Water Heating - Tank (3)	\$750	\$450	\$2,834	\$4,034	\$75
Water Heating - Tankless	\$750	\$450	\$2,834	\$4,034	\$105
Cooking - Deep Fryer (2)	\$300	\$300	\$350	\$950	\$70
Cooking - Oven/Range (1)	\$150	\$150	\$350	\$650	\$35
Pool Heating (1)	\$350	\$0	\$250	\$600	\$75
Desiccant Dehumidifier (8)	\$2,000	\$0	\$2,000	\$4,000	\$200
Clothes Drying (10)	\$2,500	\$1,500	\$2,500	\$6,500	\$350

Figure 11. Piping and Equipment Installation Costs Summary

Assembled data based on Equipment Selection Option (A/B/E) and Building Type (F)

Therm and KWH Usage - Large Commercial Hospitality							Single Equipment Gas Use Multiplier	Electrical Breaker and Wiring Savings
# of Units		Gas		Electric				
		% of Total	Therms	KWH	KW Demand	Diversity		
3	Water Heating - Tank (3)	16.8%	4,681	90,885	60	25%	1	75
2	Cooking - Deep Fryer (2)	12.8%	3,176	42,070	7	100%	1	70
1	Cooking - Oven/Range (1)	4.8%	1,204	25,588	6	100%	1	36
1	Pool Heating (1)	16.3%	4,062	33,985	7	0%	1	75
8	Desiccant Dehumidifier (8)	6.5%	2,118	14,067	10	100%	1	200
10	Clothes Drying (10)	38.7%	9,636	135,780	60	30%	1	350
	TOTAL	100.0%	24877	343366				

Figure 12. Equipment Energy Use Summary

Equipment Summary Worksheet

The equipment summary worksheet allows input for energy use, equipment and installation cost, appliance life expectancy, and any offsetting cost for electrical equipment. Equipment efficiency inputs are also provided here. Since the equipment used and other costs associated with a particular application may change based on building type, the inputs associated with a particular appliance are repeated for each building type. This allows an analysis to vary equipment costs based on a change in energy use as well as the size of the equipment, or for applications where multiple installations of a single appliance are required for a specific building.

The first table simply acts as a reminder of the underlying building and equipment assumptions made when developing this economic analysis tool.

Table 1. Building Classification and Equipment Summary					
Building Type	Water Heating	Cooking	Pool	Desiccant Dehumidifier	Clothes Drying
Small Commercial Non Food Service	X			X	
Large Commercial Non Food Service	X			X	
Small Commercial Food Service	X	X		X	
Large Commercial Food Service	X	X		X	
Large Commercial Hospitality	X	X	X	X	X
Small Commercial Cleaning Services	X			X	X

Figure 13. Building Type and Associated Appliance Assumptions

The following table identifies the life expectancy of each appliance type. The value selected for life expectancy is used in the appliance worksheets to identify the year that future replacement costs are applied. These inputs may be changed according to the specific appliance selected for study.

Enter appliance life expectancy

Average Appliance Life in Years		
Appliance Type	Gas	Electric
Water Heating - Tank	12	12
Water Heating - Tankless	15	15
Cooking - Deep Fryer	10	10
Cooking - Over/Range	13	13
Pool Heating	10	10
Desiccant Dehumidifier	12	12
Clothes Drying	10	10

Figure 14. Equipment Life Expectancy Inputs

The next set of tables identify the energy use, electric demand, electric demand diversity factor, water heater efficiency levels, and costs associated with each appliance, in this case for the Small Commercial Non-Food Service building. Each building type contains two sets of tables, the first table pertains to energy use, and the second table pertains to the associated appliance costs.

The majority of information in these tables are entered as the *unit cost* for a single appliance whether it be for equipment demand, equipment cost, installation costs, or avoided electrical costs. The number of units for any given application is entered at the left of the tables. The number of units input is used as a multiplier for the costs shown in each table. For this reason, care should be used when entering the energy use (kWh) for each equipment type such that the total building energy use (i.e., kWh multiplied by the number of units) provide a realistic value. The formula for cooking equipment is based on a regression analysis of detailed data and should not be altered without access to other more accurate information (e.g., Equipment Assumptions cell D51). Refer to and understand the formula for these inputs prior to modifying these cells.

For each building type, the inputs are organized into two distinct tables. As with the Assumptions worksheet, each input that requires user attention is highlighted with a light blue background. The other non-highlighted cells are automatically calculated based on fixed assumptions, although these cells may also be changed as necessary. Note that the energy use inputs may include a correction for the number of appliances. Altering these inputs should use the same syntax shown in the corresponding cell (e.g. total energy divided by number of units). A backup copy of the spreadsheet should be maintained in the case where non-highlighted cells are modified.

** Entries in Blue may be modified **

# of Units		Gas		Electric			Assumes EF =	
		Therms	KWH	KW Demand	Demand Diversity	Gas:	Electric:	
1	Water Heating - Tank	134	2,600	10	25%	0.59	0.89	
1	Water Heating - Tankless	100	2,515	25	15%	0.79	0.92	
1	Desiccant Dehumidifier	139	1,256	1.3	100%			

Installed Cost Detail (excl equip)						Equipment Cost:	
	Piping	Venting	Installation	Total	Electrical Cost	Natural Gas	Electric
Water Heating - Tank	\$250	\$150	\$945	\$1,345	35	\$756	\$559
Water Heating - Tankless	\$250	\$150	\$945	\$1,345	35	\$896	\$755
Desiccant Dehumidifier	\$250	\$0	\$250	\$500	25	\$3,589	\$4,380

Figure 15. Energy and Cost inputs for Small Commercial Non-Food Service Building Type

In the first table, or group of data in Figure 15, the base energy use for the appliance is identified. Inputs highlighted in blue are identified as likely to change based on specific analysis assumptions. For this building type, only water heaters and desiccant dehumidifiers may be considered in the analysis.

The water heater base energy use (2600 kWh) is entered for the Water Heating – Tank. This input represents the annual energy use for the Small Commercial Non-Food Service building type. Multipliers entered in column A will account for the incremental cost of operating more than one appliance. For example, if this building had 2 water heaters, the value displayed in the kWh column is automatically changed to 1,300 to represent a total building hot water energy use of 2,600 kWh (i.e., the amount of hot water usage does not change simply because two water heaters are purchased). Other associated inputs are also entered on a per unit basis. The associated electrical energy for the electric tankless water heater and the natural gas usage for the gas-fired water heaters are automatically calculated. For other equipment, in this case the desiccant dehumidifier, the electric and natural gas usage is manually entered (via light blue highlighted inputs). For other building types, these inputs may be manually entered or calculated based on regression analysis (e.g., cooking equipment) or other formula to allow automation of inputs.

The electric demand, demand diversity, and water heater efficiencies are also located here. The demand diversity factor allows the user to enter the cyclic fraction of the kW Demand that applies towards electric cost. For example, if the appliance is rated at 10 kW and the appliance is determined to provide a 25% duty cycle throughout the day, a diversity factor of 25% is used. This means that the electric demand associated with that appliance, as pertaining to energy costs, is 25% of the rated electric demand. If utility demand charges do not apply, set the appliance kW Demand or Demand Diversity factor to 0. An exception to the demand diversity exists with the cooking equipment. The regression analysis previously described automatically calculates the demand diversity for cooking equipment based on the FSTC’s life-cycle and energy cost

calculator and enters this information into the kW Demand category. For this reason, a Diversity Override input is provided. In most cases, an override of 100% is used since the kW Demand data already includes the impact of cycling for commercial cooking equipment.

The second table, or group of data, identifies the costs associated with each appliance. Gas piping and venting costs, avoided electrical installation costs (i.e., breaker and wiring size differences), and equipment cost are entered here. These costs are entered on a per unit basis. If more than one piece of equipment is to be included in the analysis, the number of units input to the left of these tables accounts for multiple installations (and therefore multiple customer incentives). In most cases, unit costs may be modified. The exception to this rule is the installation cost for water heaters. These costs are derived from an average of several contractor estimates received for gas-to-gas installations to replace existing water heaters (cell B118). Since these replacement costs only account for the connection of the water heater to existing infrastructure, the average costs of these estimates is assumed to be the installation cost for both electric and natural gas water heaters. These costs may be changed as necessary as other more accurate data becomes available.

The basic use for inputs in this area of the analysis tool are:

1. The energy use and cost data for specific appliances
2. The energy use and cost data for appliances by building type (i.e., changes in costs based on changes in appliance load for specific building types)
3. An input for multiple appliances to more accurately account for customer incentives
4. Input for net electrical equipment costs (e.g., the difference in cost due to a change [reduction] in breaker or wire size)
5. A location from which data is accessed when selecting a building type in cell F7 on the assumptions page. These data are written to the associated summary tables.
6. Specialized controls for specific appliances (e.g., pool cover used, demand diversity overrides, regression analysis for specific appliances, etc.)

The following figures show the tables (or sets of data) for each building type selected for study. As previously mentioned, the inputs shown with blue highlights are likely to change based on specific analysis assumptions.

** Entries in Blue may be modified **

# of Units		Gas		Electric			
		Therms	KWH	kW Demand	Demand Diversity		
1	Water Heating - Tank	134	2,600	10	25%	Assumes EF = Gas: 0.83 Electric: 0.83	
1	Water Heating - Tankless	100	2,515	25	15%	Assumes EF = Gas: 0.78 Electric: 0.82	
1	Desiccant Dehumidifier	139	1,256	13	100%		
Installed Cost Detail (excl d		Piping	Venting	Installation	Total	Electrical Cost	Equipment Cost:
							Natural Gas Electric
		\$250	\$150	\$945	\$1,345	35	\$756 \$553
		\$250	\$150	\$945	\$1,345	35	\$896 \$755
		\$250	\$0	\$250	\$500	25	\$3,589 \$4,380
3	Water Heating - Tank	236	4,676	15	25%	Assumes EF = Gas: 0.83 Electric: 0.83	
3	Water Heating - Tankless	176	4,427	25	10%	Assumes EF = Gas: 0.78 Electric: 0.82	
0	Desiccant Dehumidifier	265	1,898	13	100%		
Installed Cost Detail (excl d		Piping	Venting	Installation	Total	Electrical Cost	Equipment Cost:
							Natural Gas Electric
		\$250	\$150	\$945	\$1,345	35	\$756 \$553
		\$250	\$150	\$945	\$1,345	35	\$836 \$755
		\$300	\$0	\$350	\$650	25	\$3,589 \$4,380
3	Water Heating - Tank	1,042	20,230	15	35%	Assumes EF = Gas: 0.83 Electric: 0.83	
3	Water Heating - Tankless	778	19,570	25	15%	Assumes EF = Gas: 0.78 Electric: 0.82	
2	Cooking - Deep Fryer	1,376	17,336	3.03	100%	150	100%
1	Cooking - Oven/Range	1,204	25,539	5.64	100%	100	100%
1	Desiccant Dehumidifier	139	1,256	13	100%		
Installed Cost Detail (excl d		Piping	Venting	Installation	Total	Electrical Cost	Equipment Cost:
							Natural Gas Electric
		\$250	\$150	\$945	\$1,345	35	\$756 \$553
		\$250	\$150	\$945	\$1,345	35	\$896 \$755
		\$150	\$150	\$450	\$750	35	\$4,446 \$4,632
		\$150	\$150	\$450	\$750	35	\$2,009 \$2,139
		\$250	\$0	\$250	\$500	25	\$3,589 \$4,380

Figure 16. Equipment Energy Inputs by Building Type

Large Commercial Food Service		Gas		Electric							
		Therms	KWH	kW Demand	Diversity			Assumes EF =	Gas	Electric	
3	Water Heating - Tank	1,042	20,230	15	35%			0.59	0.63		
3	Water Heating - Tankless	778	19,570	25	15%			0.79	0.92		
2	Cooking - Deep Fryer	1,165	13,757	2.39	100%	100	100%				
1	Cooking - Oven/Range	1,367	28,315	5.84	100%	200	100%				
8	Desiccant Dehumidifier	265	1,858	1.3	100%						
Installed Cost Detail (excl)		Piping	Venting	Installation	Total	Electrical Cost		Equipment Cost:			
	Water Heating - Tank	\$250	\$150	\$345	\$1,345			Natural Gas	Electric		
	Water Heating - Tankless	\$250	\$150	\$345	\$1,345	35		\$756	\$589		
	Cooking - Deep Fryer	\$150	\$150	\$450	\$750	35		\$896	\$755		
	Cooking - Oven/Range	\$150	\$150	\$450	\$750	35		\$4,446	\$4,632		
	Desiccant Dehumidifier	\$250	\$0	\$250	\$500	25		\$5,617	\$5,203		
								\$3,589	\$4,380		
Large Commercial Hospital		Gas		Electric							
		Therms	KWH	kW Demand	Diversity			Assumes EF =	Gas	Electric	
3	Water Heating - Tank	1,560	30,235	20	25%			0.59	0.63		
3	Water Heating - Tankless	1,165	23,307	25	15%			0.79	0.92		
2	Cooking - Deep Fryer	1,588	21,035	3.66	100%	200	100%				
1	Cooking - Oven/Range	1,204	25,539	5.84	100%	100	100%				
1	Pool Heating	4,062	33,965	6.8	0%	1000	← Pool Area			Heat Pump COP = 3.5	
8	Desiccant Dehumidifier	265	1,858	1.3	100%						
10	Clothes Drying	364	13,578	5	30%	12	← Req. Loads				
Installed Cost Detail (excl)		Piping	Venting	Installation	Total	Electrical Cost		Equipment Cost:			
	Water Heating - Tank	\$250	\$150	\$345	\$1,345			Natural Gas	Electric		
	Water Heating - Tankless	\$250	\$150	\$345	\$1,345	25		\$756	\$589		
	Cooking - Deep Fryer	\$150	\$150	\$450	\$750	35		\$896	\$755		
	Cooking - Oven/Range	\$150	\$150	\$450	\$750	35		\$4,446	\$4,632		
	Pool Heating	\$350	\$0	\$350	\$300	75		\$5,617	\$5,203		
	Desiccant Dehumidifier	\$250	\$0	\$250	\$500	25		\$3,250	\$2,840		
	Clothes Drying	\$250	\$150	\$250	\$650	35		\$3,589	\$4,380		
								\$2,620	\$2,420		
Small Commercial Cleanroom		Gas		Electric							
		Therms	KWH	kW Demand	Diversity			Assumes EF =	Gas	Electric	
2	Water Heating - Tank	1,135	22,037	15	20%			0.59	0.63		
2	Water Heating - Tankless	848	21,318	25	15%			0.79	0.92		
1	Desiccant Dehumidifier	139	1,256	1.3	100%						
10	Clothes Drying	364	13,578	5	35%	12	← Req. Loads				
Installed Cost Detail (excl)		Piping	Venting	Installation	Total	Electrical Cost		Equipment Cost:			
	Water Heating - Tank	\$250	\$150	\$345	\$1,345			Natural Gas	Electric		
	Water Heating - Tankless	\$250	\$150	\$345	\$1,345	35		\$756	\$589		
	Desiccant Dehumidifier	\$250	\$0	\$250	\$500	25		\$896	\$755		
	Clothes Drying	\$250	\$180	\$250	\$680	35		\$3,589	\$4,380		
								\$1,016	\$865		

Figure 17. Equipment Energy Inputs by Building Type (cont.)

Economic Analysis

A complete economic analysis is provided for each appliance type selected for a particular analysis. As previously described, only select appliance types are allowed for a particular building type as defined in Table 2. These worksheets are designed to be self-standing, require no additional input, and are used for data verification and reporting purposes as required.

Each worksheet is automatically enabled based on the Equipment Selection Option check box in cell A10-A16 on the Assumptions worksheet. Only selected appliances display the associated appliance worksheet. These worksheets are organized into 5 discrete sections. The sections associated with a specific appliance are:

- a summary of the model inputs
- the itemized calculations (tables) for the Participants Test
- a summary of the Participants Test and resulting score
- the itemized calculations (tables) for the Gas Rate Impact Measure Test
- a summary of the Gas Rate Impact Measure Test and resulting score

The first section identifies the model inputs as defined on the Assumptions and Equipment Summary worksheets. Inputs highlighted in yellow are specific to the type of appliance described on the worksheet. The input data referenced here are “pulled” from the Assumptions or Equipment Summary worksheet as necessary. For example, gas and electric equipment and installation costs are specific to the input data for the specific appliance type (e.g., water heating - tank) described for the building type selected for study. This yellow highlighted input data is found on the Equipment Summary worksheet. Non-highlighted inputs are found on either the Assumptions worksheet or the Equipment Summary worksheet as appropriate.

An example water heating economic analysis is shown on the following seven pages. It includes the economic calculations and associated results for both the Participants test and Gas Rate Impact Measure test as directed in the Florida Public Service Commission’s Cost Effectiveness Manual for Natural Gas Utility Demand Side Management Programs document (provided as Appendix A in this report). These tables, while configured for water heating, are representative of the format for all of the appliances. The following results are also meant to provide an example output. These results will vary based on the specific assumptions made for a particular analysis.

Note that the electric utility customer charge shown in the first section (line item under part VIII – Customer Chg) is not included in the life-cycle cost analysis and is assumed to be a base cost for all customers (i.e., all customers are already connected to the electric grid and are therefore charged a monthly customer charge). This analysis also assumes that the base electric rate category will not change when a customer changes the fuel source for one or more appliances (i.e., the customer remains on the general service demand electric utility rate structure). Also note that the associated utility customer charge for gas customers (line item under part III –

Customer Chg) is pro-rated in the life-cycle cost analysis based on the ratio of appliance gas usage to total building gas usage for each appliance considered in the analysis (Ref. Table 4 – Gas Customer Charge).

**Associated Gas Distributors of Florida - Energy Conservation Filing 2009
Commercial New Construction Program**

Other Equipment Included in Analysis: Cooking - Deep Fryer (2), Cooking - Oven/Range (1), Pool Heating (1), Desiccant Dehumidifier (8), Clothes Drying (10)

Gas:	Water Heating - Tank (3)	
CO2:	23.4 tonnes CO2/year	
Allowance:	\$0	
Gas Utility:	Florida City Gas	
I.	Installed Cost Data	
	Equipment	\$2,268
	Installation	\$4,034
	Total Customer Cost	<u>\$6,302</u>
	Replacement Installation	\$2,834
	Total Replacement (incl Equip)	<u>\$5,102</u>
	Utility Rebate	\$0
II.	Operating Data	
	Therms Consumed	4,681
	Total Building Therms	24,877
	O&M (excluding energy)	\$58
III.	Rates and Charges	
	ECCR	\$0.0245
	Distribution Charge	\$0.2749
	Commodity Charge	\$0.6016
	Taxes & Fees	2.50%
	Customer Chg	\$30.00
	Average Life (years)	12
	Appliance Therms /Total Therms	18.8%
	EC Program Adm. Cost	\$36.96
IV.	New Customer Installation Costs	
	Supply Main	\$1,000
	Development Main	\$1,000
	Service	\$3,131
	Meter	\$1,696
	Total	<u>\$6,827</u>
V.	New Customer Admin. Cost \$/month	\$1.61

Elec:	Water Heating - Tank (3)	
CO2:	65.25 tonnes CO2/year	
Rate:	Weighted Average	
Bldg:	Large Commercial Hospitality	
VI.	Electric Cost Data	
	Equipment	\$1,677
	Installation	\$2,834
	Breaker and Wiring Savings	\$75
	Total Customer Cost	<u>\$4,586</u>
VII.	Energy Conserved Data	
	Monthly Demand kW	15
	Annual kWh	90,885
	O&M (excluding energy)	\$36
VIII.	Electric Rates and Charges	
	Electric Rate per kW	\$6.53
	Electric Rate per kWh	\$0.0840
	Electric Fuel rate	\$0.0606
	Electric Base rate	\$0.0234
	Electric Taxes & Fees	2.56%
	Customer Chg	\$29.57
	Average Life in Yrs	12

Associated Gas Distributors of Florida - Energy Conservation Filing 2009

Commercial New Construction Program

Water Heating - Tank (3)

Other Equipment Included in Analysis: Cooking - Deep Fryer (2), Cooking - Oven/Range (1), Pool Heating (1), Desiccant Dehumidifier (8), Clothes Drying (10)

Year	Cost Per KWH	Annual KWH	Cost Per kW	Monthly Demand kW	Tax Rate	Electric Cost
A	B	C	D	E	F	(B*C+12*D*E) *(1+F)
2010	\$0.0840	90,885	\$6.53	15.00	2.6%	\$9,034
2011	\$0.0900	90,885	\$6.53	15.00	2.6%	\$9,592
2012	\$0.0964	90,885	\$6.53	15.00	2.6%	\$10,189
2013	\$0.1032	90,885	\$6.53	15.00	2.6%	\$10,828
2014	\$0.1106	90,885	\$6.53	15.00	2.6%	\$11,513
2015	\$0.1185	90,885	\$6.53	15.00	2.6%	\$12,247
2016	\$0.1269	90,885	\$6.53	15.00	2.6%	\$13,034
2017	\$0.1359	90,885	\$6.53	15.00	2.6%	\$13,876
2018	\$0.1456	90,885	\$6.53	15.00	2.6%	\$14,778
2019	\$0.1560	90,885	\$6.53	15.00	2.6%	\$15,744
2020	\$0.1671	90,885	\$6.53	15.00	2.6%	\$16,779
2021	\$0.1790	90,885	\$6.53	15.00	2.6%	\$17,888
2022	\$0.1917	90,885	\$6.53	15.00	2.6%	\$19,076
2023	\$0.2054	90,885	\$6.53	15.00	2.6%	\$20,348
2024	\$0.2200	90,885	\$6.53	15.00	2.6%	\$21,711
2025	\$0.2356	90,885	\$6.53	15.00	2.6%	\$23,171
2026	\$0.2524	90,885	\$6.53	15.00	2.6%	\$24,735
2027	\$0.2704	90,885	\$6.53	15.00	2.6%	\$26,410
2028	\$0.2896	90,885	\$6.53	15.00	2.6%	\$28,205
2029	\$0.3103	90,885	\$6.53	15.00	2.6%	\$30,127

Year	Cost Per Therm	Annual Therms	Tax Rate	Gas Cost
A	B	C	D	B*C *(1+D)
2010	\$0.6016	4,681	2.5%	\$2,886
2011	\$0.6544	4,681	2.5%	\$3,139
2012	\$0.7117	4,681	2.5%	\$3,415
2013	\$0.7742	4,681	2.5%	\$3,714
2014	\$0.8421	4,681	2.5%	\$4,040
2015	\$0.9159	4,681	2.5%	\$4,394
2016	\$0.9962	4,681	2.5%	\$4,779
2017	\$1.0836	4,681	2.5%	\$5,199
2018	\$1.1786	4,681	2.5%	\$5,655
2019	\$1.2820	4,681	2.5%	\$6,150
2020	\$1.3944	4,681	2.5%	\$6,690
2021	\$1.5167	4,681	2.5%	\$7,277
2022	\$1.6497	4,681	2.5%	\$7,915
2023	\$1.7944	4,681	2.5%	\$8,609
2024	\$1.9518	4,681	2.5%	\$9,364
2025	\$2.1230	4,681	2.5%	\$10,185
2026	\$2.3092	4,681	2.5%	\$11,078
2027	\$2.5117	4,681	2.5%	\$12,050
2028	\$2.7319	4,681	2.5%	\$13,107
2029	\$2.9715	4,681	2.5%	\$14,256

Year	Rate Per Therm	Annual Therms	Tax Rate	Gas Cost
A	B	C	D	B*C *(1+D)
2010	\$0.2994	4,681	2.5%	\$1,436
2011	\$0.3257	4,681	2.5%	\$1,562
2012	\$0.3542	4,681	2.5%	\$1,699
2013	\$0.3853	4,681	2.5%	\$1,848
2014	\$0.4191	4,681	2.5%	\$2,011
2015	\$0.4558	4,681	2.5%	\$2,187
2016	\$0.4958	4,681	2.5%	\$2,379
2017	\$0.5393	4,681	2.5%	\$2,587
2018	\$0.5866	4,681	2.5%	\$2,814
2019	\$0.6380	4,681	2.5%	\$3,061
2020	\$0.6940	4,681	2.5%	\$3,329
2021	\$0.7548	4,681	2.5%	\$3,621
2022	\$0.8210	4,681	2.5%	\$3,939
2023	\$0.8930	4,681	2.5%	\$4,284
2024	\$0.9714	4,681	2.5%	\$4,660
2025	\$1.0565	4,681	2.5%	\$5,069
2026	\$1.1492	4,681	2.5%	\$5,513
2027	\$1.2500	4,681	2.5%	\$5,997
2028	\$1.3596	4,681	2.5%	\$6,523
2029	\$1.4789	4,681	2.5%	\$7,095

Year	Monthly Customer Charge	Annual Customer Charge	Ratio - Appliance to Total	Tax Rate	Pro-Rated Customer Charge
A	B	C	D	E	C*D*(1+E)
2010	\$30.00	\$360.00	18.81%	2.5%	\$69
2011	\$30.00	\$360.00	18.81%	2.5%	\$69
2012	\$30.00	\$360.00	18.81%	2.5%	\$69
2013	\$30.00	\$360.00	18.81%	2.5%	\$69
2014	\$30.00	\$360.00	18.81%	2.5%	\$69
2015	\$30.00	\$360.00	18.81%	2.5%	\$69
2016	\$30.00	\$360.00	18.81%	2.5%	\$69
2017	\$30.00	\$360.00	18.81%	2.5%	\$69
2018	\$30.00	\$360.00	18.81%	2.5%	\$69
2019	\$30.00	\$360.00	18.81%	2.5%	\$69
2020	\$30.00	\$360.00	18.81%	2.5%	\$69
2021	\$30.00	\$360.00	18.81%	2.5%	\$69
2022	\$30.00	\$360.00	18.81%	2.5%	\$69
2023	\$30.00	\$360.00	18.81%	2.5%	\$69
2024	\$30.00	\$360.00	18.81%	2.5%	\$69
2025	\$30.00	\$360.00	18.81%	2.5%	\$69
2026	\$30.00	\$360.00	18.81%	2.5%	\$69
2027	\$30.00	\$360.00	18.81%	2.5%	\$69
2028	\$30.00	\$360.00	18.81%	2.5%	\$69
2029	\$30.00	\$360.00	18.81%	2.5%	\$69

Participants Test - Results

Appliance Type:
Water Heating - Tank (3)
Utility Rate - Weighted Average
Building Type - Large Commercial Hospitality
Other Equipment Included in Analysis: Cooking - Deep Fryer (2), Cooking - Oven/Range (1), Pool Heating (1), Desiccant Dehumidifier (8), Clothes Drying (10)

Year	Benefits				Costs							
	Avoided Electric KWH/KW Cost	Gas Rebate	Avoided Electric Appliance O&M	TOTAL BENEFITS	Gas Equipment Cost	Electric Equipment & Installation Cost	Gas Installation Cost	Gas Appliance O & M	Gas Supply Cost	Gas Energy Charge	Gas Customer Charge	TOTAL COSTS
	Table 1								Table 2		Table 3	Table 4
	3	4	5	3 thru 5	7	8	9	10	11	12	13	7 thru 13
2010	\$9,034	\$0	\$36	\$9,070	\$2,268	(\$4,586)	\$4,034	\$58	\$2,886	\$1,436	\$69	\$6,166
2011	\$9,592	\$0	\$37	\$9,629	\$0	\$0	\$0	\$59	\$3,139	\$1,562	\$69	\$4,831
2012	\$10,189	\$0	\$38	\$10,227	\$0	\$0	\$0	\$61	\$3,415	\$1,699	\$69	\$5,245
2013	\$10,828	\$0	\$40	\$10,868	\$0	\$0	\$0	\$63	\$3,714	\$1,848	\$69	\$5,695
2014	\$11,513	\$0	\$41	\$11,554	\$0	\$0	\$0	\$65	\$4,040	\$2,011	\$69	\$6,185
2015	\$12,247	\$0	\$42	\$12,290	\$0	\$0	\$0	\$67	\$4,394	\$2,187	\$69	\$6,718
2016	\$13,034	\$0	\$43	\$13,077	\$0	\$0	\$0	\$70	\$4,779	\$2,379	\$69	\$7,297
2017	\$13,876	\$0	\$45	\$13,921	\$0	\$0	\$0	\$72	\$5,199	\$2,587	\$69	\$7,927
2018	\$14,778	\$0	\$46	\$14,824	\$0	\$0	\$0	\$74	\$5,655	\$2,814	\$69	\$8,612
2019	\$15,744	\$0	\$48	\$15,792	\$0	\$0	\$0	\$76	\$6,150	\$3,061	\$69	\$9,357
2020	\$16,779	\$0	\$49	\$16,829	\$0	\$0	\$0	\$79	\$6,690	\$3,329	\$69	\$10,168
2021	\$17,888	\$0	\$51	\$17,939	\$0	\$0	\$0	\$81	\$7,277	\$3,621	\$69	\$11,049
2022	\$19,076	\$0	\$52	\$19,128	\$3,306	(\$6,575)	\$4,130	\$84	\$7,915	\$3,939	\$69	\$12,869
2023	\$20,348	\$0	\$54	\$20,402	\$0	\$0	\$0	\$87	\$8,609	\$4,284	\$69	\$13,049
2024	\$21,711	\$0	\$56	\$21,767	\$0	\$0	\$0	\$89	\$9,364	\$4,660	\$69	\$14,183
2025	\$23,171	\$0	\$58	\$23,229	\$0	\$0	\$0	\$92	\$10,185	\$5,069	\$69	\$15,416
2026	\$24,735	\$0	\$59	\$24,795	\$0	\$0	\$0	\$95	\$11,078	\$5,513	\$69	\$16,756
2027	\$26,410	\$0	\$61	\$26,472	\$0	\$0	\$0	\$98	\$12,050	\$5,997	\$69	\$18,214
2028	\$28,205	\$0	\$63	\$28,268	\$0	\$0	\$0	\$101	\$13,107	\$6,523	\$69	\$19,800
2029	\$30,127	\$0	\$65	\$30,193	\$0	\$0	\$0	\$105	\$14,256	\$7,095	\$69	\$21,525

Present Value
of Benefits \$247,451

Present Value
of Costs \$153,751

Benefit/Cost Ratio	1.61
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Associated Gas Distributors of Florida - Energy Conservation Filing 2009
Commercial New Construction Program

Appliance Type

Water Heating - Tank (3)

Utility Rate - Weighted Average**Building Type - Large Commercial Hospitality**

Other Equipment Included in Analysis: Cooking - Deep Fryer (2), Cooking - Oven/Range (1), Pool Heating (1), Desiccant Dehumidifier (8), Clothes Drying (1)

Fuel Rate Escalator	8.77%	Depreciation Rate - Supply Main	3.30%
Gas Energy Charge Escalator	8.77%	Depreciation Rate - Development Main	3.30%
Gas Customer Charge Escalator	0.00%	Depreciation Rate - Service Line	3.30%
O&M/Inflation Escalator	3.19%	Depreciation Rate - Meter	3.80%

Table 1

Revenue - Energy Charge			
1	2	3	2*3
Year	Therms	Base Rate	Total Charge
2010	4,681	\$0.2994	\$1,401
2011	4,681	\$0.3257	\$1,524
2012	4,681	\$0.3542	\$1,658
2013	4,681	\$0.3853	\$1,803
2014	4,681	\$0.4191	\$1,961
2015	4,681	\$0.4558	\$2,133
2016	4,681	\$0.4958	\$2,321
2017	4,681	\$0.5393	\$2,524
2018	4,681	\$0.5866	\$2,745
2019	4,681	\$0.6380	\$2,986
2020	4,681	\$0.6940	\$3,248
2021	4,681	\$0.7548	\$3,533
2022	4,681	\$0.8210	\$3,843
2023	4,681	\$0.8930	\$4,180
2024	4,681	\$0.9714	\$4,546
2025	4,681	\$1.0565	\$4,945
2026	4,681	\$1.1492	\$5,379
2027	4,681	\$1.2500	\$5,851
2028	4,681	\$1.3596	\$6,364
2029	4,681	\$1.4789	\$6,922

Table 1a

Revenue - Cost of Gas			
1	2	3	2*3
Year	Therms	Fuel Rate	Total Charge
2010	4,681	\$0.6016	\$2,816
2011	4,681	\$0.6544	\$3,063
2012	4,681	\$0.7117	\$3,331
2013	4,681	\$0.7742	\$3,624
2014	4,681	\$0.8421	\$3,941
2015	4,681	\$0.9159	\$4,287
2016	4,681	\$0.9962	\$4,663
2017	4,681	\$1.0836	\$5,072
2018	4,681	\$1.1786	\$5,517
2019	4,681	\$1.2820	\$6,000
2020	4,681	\$1.3944	\$6,527
2021	4,681	\$1.5167	\$7,099
2022	4,681	\$1.6497	\$7,722
2023	4,681	\$1.7944	\$8,399
2024	4,681	\$1.9518	\$9,135
2025	4,681	\$2.1230	\$9,937
2026	4,681	\$2.3092	\$10,808
2027	4,681	\$2.5117	\$11,756
2028	4,681	\$2.7319	\$12,787
2029	4,681	\$2.9715	\$13,908

**Associated Gas Distributors of Florida - Energy Conservation Filing 2009
Commercial New Construction Program**

Appliance Type**Water Heating - Tank (3)**

Other Equipment Included in Analysis: Cooking - Deep Fryer (2), Cooking - Oven/Range (1), Pool Heating (1), Desiccant Dehumidifier (8), Clothes Drying (10)
Table 2

Revenue - Customer Charge				
1	2	3	4	3*4
Year	Monthly Customer Charge	Annual Customer Charge	Ratio Therms To Total Consumed	Prorated Annual Customer Charge
2010	\$30.00	\$360.00	18.81%	\$68
2011	\$30.00	\$360.00	18.81%	\$68
2012	\$30.00	\$360.00	18.81%	\$68
2013	\$30.00	\$360.00	18.81%	\$68
2014	\$30.00	\$360.00	18.81%	\$68
2015	\$30.00	\$360.00	18.81%	\$68
2016	\$30.00	\$360.00	18.81%	\$68
2017	\$30.00	\$360.00	18.81%	\$68
2018	\$30.00	\$360.00	18.81%	\$68
2019	\$30.00	\$360.00	18.81%	\$68
2020	\$30.00	\$360.00	18.81%	\$68
2021	\$30.00	\$360.00	18.81%	\$68
2022	\$30.00	\$360.00	18.81%	\$68
2023	\$30.00	\$360.00	18.81%	\$68
2024	\$30.00	\$360.00	18.81%	\$68
2025	\$30.00	\$360.00	18.81%	\$68
2026	\$30.00	\$360.00	18.81%	\$68
2027	\$30.00	\$360.00	18.81%	\$68
2028	\$30.00	\$360.00	18.81%	\$68
2029	\$30.00	\$360.00	18.81%	\$68

Utility Rate - Weighted Average**Building Type - Large Commercial Hospitality**

Table 3

Gas Costs			
1	2	3	2*3
Year	Therms	Gas Supply Rate	Gas Supply Cost
2010	4,681	\$0.6016	\$2,816
2011	4,681	\$0.6544	\$3,063
2012	4,681	\$0.7117	\$3,331
2013	4,681	\$0.7742	\$3,624
2014	4,681	\$0.8421	\$3,941
2015	4,681	\$0.9159	\$4,287
2016	4,681	\$0.9962	\$4,663
2017	4,681	\$1.0836	\$5,072
2018	4,681	\$1.1786	\$5,517
2019	4,681	\$1.2820	\$6,000
2020	4,681	\$1.3944	\$6,527
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2022	4,681	\$1.6497	\$7,722
2023	4,681	\$1.7944	\$8,399
2024	4,681	\$1.9518	\$9,135
2025	4,681	\$2.1230	\$9,937
2026	4,681	\$2.3092	\$10,808
2027	4,681	\$2.5117	\$11,756
2028	4,681	\$2.7319	\$12,787
2029	4,681	\$2.9715	\$13,908

**Associated Gas Distributors of Florida - Energy Conservation Filing 2009
Commercial New Construction Program**

Appliance Type Water Heating - Tank (3)	Utility Rate - Weighted Average Building Type - Large Commercial Hospitality
---	--

Other Equipment Included in Analysis: Cooking - Deep Fryer (2), Cooking - Oven/Range (1), Pool Heating (1), Desiccant Dehumidifier (8), Clothes Drying (1)

Table 4

Investment Carrying Costs								
1	2	3	4	5	6	7	8	6*7*8
Year	Supply Main	Development Main	Service Line	Meter	Total Investment	Cost of Debt	Ratio of Therms Consumed To Total	Investment Carrying Cost
2010	\$1,000	\$1,000	\$3,131	\$1,696	\$6,827	5.72%	18.81%	\$73
2011	\$967	\$967	\$3,028	\$1,632	\$6,594	5.72%	18.81%	\$71
2012	\$935	\$935	\$2,928	\$1,570	\$6,368	5.72%	18.81%	\$69
2013	\$904	\$904	\$2,831	\$1,510	\$6,149	5.72%	18.81%	\$66
2014	\$874	\$874	\$2,738	\$1,453	\$5,939	5.72%	18.81%	\$64
2015	\$845	\$845	\$2,648	\$1,398	\$5,736	5.72%	18.81%	\$62
2016	\$817	\$817	\$2,561	\$1,345	\$5,540	5.72%	18.81%	\$60
2017	\$790	\$790	\$2,476	\$1,294	\$5,350	5.72%	18.81%	\$58
2018	\$764	\$764	\$2,394	\$1,245	\$5,167	5.72%	18.81%	\$56
2019	\$739	\$739	\$2,315	\$1,198	\$4,991	5.72%	18.81%	\$54
2020	\$715	\$715	\$2,239	\$1,152	\$4,821	5.72%	18.81%	\$52
2021	\$691	\$691	\$2,165	\$1,108	\$4,655	5.72%	18.81%	\$50
2022	\$668	\$668	\$2,094	\$1,066	\$4,496	5.72%	18.81%	\$48
2023	\$646	\$646	\$2,025	\$1,025	\$4,342	5.72%	18.81%	\$47
2024	\$625	\$625	\$1,958	\$986	\$4,194	5.72%	18.81%	\$45
2025	\$604	\$604	\$1,893	\$949	\$4,050	5.72%	18.81%	\$44
2026	\$584	\$584	\$1,831	\$913	\$3,912	5.72%	18.81%	\$42
2027	\$565	\$565	\$1,771	\$878	\$3,779	5.72%	18.81%	\$41
2028	\$546	\$546	\$1,713	\$845	\$3,650	5.72%	18.81%	\$39
2029	\$528	\$528	\$1,656	\$813	\$3,525	5.72%	18.81%	\$38

Table 5

Incremental Customer Costs							
1	2	3	4	5=3*4	6	8=6*4	5+8
Year	Monthly Adm. Cost	Annual Adm. Cost	Ratio Therms To Total Consumed	Annual Ratio Adm. Cost	Annual O&M Cost	Annual Ratio O&M Cost	Total Incremental Adm. & O&M Cost
2010	\$1.61	\$19	18.81%	\$3.57	\$21.66	\$4	\$8
2011	\$1.66	\$20	18.81%	\$3.76	\$22.35	\$4	\$8
2012	\$1.71	\$21	18.81%	\$3.95	\$23.06	\$4	\$8
2013	\$1.77	\$21	18.81%	\$3.95	\$23.80	\$4	\$8
2014	\$1.83	\$22	18.81%	\$4.14	\$24.56	\$5	\$9
2015	\$1.88	\$23	18.81%	\$4.33	\$25.34	\$5	\$9
2016	\$1.94	\$23	18.81%	\$4.33	\$26.15	\$5	\$9
2017	\$2.01	\$24	18.81%	\$4.52	\$26.98	\$5	\$10
2018	\$2.07	\$25	18.81%	\$4.70	\$27.85	\$5	\$10
2019	\$2.14	\$26	18.81%	\$4.89	\$28.73	\$5	\$10
2020	\$2.20	\$26	18.81%	\$4.89	\$29.65	\$6	\$10
2021	\$2.27	\$27	18.81%	\$5.08	\$30.60	\$6	\$11
2022	\$2.35	\$28	18.81%	\$5.27	\$31.57	\$6	\$11
2023	\$2.42	\$29	18.81%	\$5.46	\$32.58	\$6	\$12
2024	\$2.50	\$30	18.81%	\$5.64	\$33.62	\$6	\$12
2025	\$2.58	\$31	18.81%	\$5.83	\$34.69	\$7	\$12
2026	\$2.66	\$32	18.81%	\$6.02	\$35.80	\$7	\$13
2027	\$2.75	\$33	18.81%	\$6.21	\$36.94	\$7	\$13
2028	\$2.83	\$34	18.81%	\$6.40	\$38.12	\$7	\$14
2029	\$2.92	\$35	18.81%	\$6.59	\$39.33	\$7	\$14

**APPENDIX A – Cost Effectiveness Manual for Natural Gas Utility
Demand Side Management Programs**

FLORIDA PUBLIC SERVICE COMMISSION
COST EFFECTIVENESS MANUAL FOR
NATURAL GAS UTILITY
DEMAND SIDE MANAGEMENT PROGRAMS

FLORIDA PUBLIC SERVICE COMMISSION
2540 SHUMARD OAK BOULEVARD
TALLAHASSEE, FLORIDA 32399-0850

(PSC/ECR/018-G)

DSM MANUAL INTRODUCTION

The “Florida Energy Efficiency and Conservation Act,” Sections 366.80-.85 and 403.519, Florida Statutes, requires the Florida Public Service Commission to review natural gas utility conservation programs for cost-effectiveness. This manual describes the minimum data requirements for the cost-effectiveness analyses the Commission uses to evaluate utility conservation programs. This manual is incorporated by reference in Rule 25-17.009, Florida Administrative Code.

There are two tests for both load building and load reduction conservation programs: The Participants Test and the Gas Rate Impact Measures (RIM) Test. The Participants Test measures the impact of the program on participating customers. The Gas RIM Test is an indirect measure of the program impact on customer rates. Rates will go down more than they otherwise would have if the change in utility revenues minus the change in utility costs is positive. Rates will go up more than they otherwise would have if the change in utility revenues minus the change in utility costs is negative. In evaluating conservation programs, the Commission will review the results of both tests to determine cost-effectiveness.

This manual comprises five cost benefit (C.B.) Forms: C.B. FORM 1 is a list of general assumptions. These general assumptions must be applied to all programs in order to determine cost-effectiveness. C.B. FORM 2 is a list of costs and benefits for a load-building Participants Test. C.B. FORM 3 (pages 1 and 2) is a list of costs and benefits for a load-building RIM Test. C.B. Form 4 is a list of costs and benefits for a load reduction Participants Test. C.B. Form 5 is a list of costs and benefits for a load reduction RIM Test.

The delineation of the various ways of expressing test results is not meant to discourage the continued development of additional variations for expressing cost-effectiveness.

**PARTICIPANTS TEST
(Load Building Scenario)**

BENEFITS

1. **Electric Bill Savings: (Avoided KWHs) X (\$ Per KWH)**
2. **Incentive Payment: Total Incentive \$ Received.**

COSTS

1. **Incremental Participant Costs:**
 - A. **Equipment Costs: (Gas Appliance Cost) - (Electric Baseline Appliance Cost)**
 - B. **Installation Costs: Customer Main Extension Costs (CIAC), Customer Piping and Venting Cost)**
 - C. **Incremental O&M Costs**
2. **Gas Bill Increases:**
 - A. **(Incremental Therm Usage) X (Cost of Gas)**
 - B. **(Incremental Therm Usage) X (Energy Charge)**
 - C. **Customer Charge (For New Gas Customers Only.)**

**GAS RIM TEST
(Load Building Scenario)**

BENEFITS

1. Revenue Increases:

- A. (Incremental Therm Usage) X (Gas, Pipeline Transportation Charges are included in the cost of gas)**
- B. (Incremental Therm Usage) X (Energy Charge)**
- C. (Projected # of New Participants to the System) X (Customer Charge)**

COSTS

1. Increased Gas (Commodity) Costs:

- A. Gas (Pipeline Transportation Charges are included in the cost of gas)**

2. Non-Fuel Energy (Supply/Capacity) Costs:

- A. Mains**
- B. Measurement and Regulator Station Equipment**
- C. Depreciation Expense on Capital Items**
- D. Taxes Other than Income Taxes**

3. Customer Charge-Related Costs

- A. Service Lines**
 - B. Meters**
 - C. House Regulator Valves**
 - D. Piping & Venting**
-

E. Incremental O&M:

- a. Costs in this category include meter reading expenses, records and collection expenses, sales expenses, administrative and general expenses, and maintenance of other equipment.**
- b. Depreciation Expense on Capital Items.**
- c. Taxes other than income taxes.**

5. Incentive Payments: Utility Rebates/Incentives Paid to Participants.

**PARTICIPANTS TEST
(Load Reduction Scenario)**

BENEFITS

1. **Gas Bill Savings:**
 - A. (Decremental Therm Usage) X (Cost of Gas)
 - B. (Decremental Therm Usage) X (Energy Charge)

2. **Incentive Payment: Total Incentive \$ Received.**

COSTS

1. **Incremental Participant Costs:**
 - A. **Equipment Costs: (Gas Appliance Cost) - (Gas Baseline Appliance Cost)**
 - B. **Incremental O&M Costs**

**GAS RIM TEST
(Load Reduction Scenario)**

BENEFITS

1. **Decreased Gas (Commodity) Costs:**
 - A. **Gas (Pipeline Transportation Costs are included in the cost of gas)**

2. **Avoided Non-Fuel Energy (Supply/Capacity) Costs:**
 - A. **Mains**
 - B. **Measurement and Regulator Station Equipment**
 - C. **Depreciation Expense on above capital items**
 - D. **Taxes**

COSTS

1. **Revenue Decrease:**
 - A. **(Decremental Therm Usage) X (Cost of Gas)**
 - B. **(Decremental Therm Usage) X (Energy Charge)**

 2. **Incentive Payments: Total Incentive \$ Paid to Participants**
-



FLORIDA SOLAR ENERGY CENTER
Creating Energy Independence

Updating G-RIM and Participants Test Model for the Associated Gas Distributors of Florida

FSEC-CR-1918-12

Final Report
May 21, 2012

Submitted to

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Table of Contents

Abstract	1
Introduction	1
Existing Economic Analysis Tool	1
Information Template	2
Service Main Cost	3
Main Extension Cost	4
Energy Conservation Program Cost	4
Fuel Line Piping Cost	12
Utility Company Piping Costs	14
Utility Company Administrative Costs.....	15
Energy Conservation Program Costs.....	15
Modifications to Existing Assessment Tool	16
Results Summary	18

Abstract

The Florida Solar Energy Center previously created an economic assessment tool targeting seven common commercial appliances. The actual costs used to define gas utility piping and administrative costs have been updated in this assessment tool. Methodologies for determining piping and administration costs were developed through a gas utility workgroup and historic cost data were used to define specific cost inputs to the economic model. This report builds upon the previous work and describes the development of the essential cost inputs used to complete the economic analysis. Reorganization of the previous assessment tool is also described.

Introduction

Section 366.81, Florida Statutes, authorizes the Florida Public Service Commission (FPSC) to regulate electric and natural gas energy conservation programs. A regulated utility must develop plans and implement energy conservation programs according to the rules established by the FPSC. In 1996, the FPSC adopted Rule 25-17.009, Florida Administrative Code, which establishes the methodology for cost-effectiveness assessment of natural gas programs.

Rule 25-17.009 requires that each gas utility that seeks to recover costs for an existing, new, or modified demand side management program shall perform a cost-effectiveness assessment by means of the Participants Test and the Gas Rate Impact Measure (G-RIM) Test in the format set forth in Form PSC/CMP/18, entitled the "Florida Public Service Commission Cost Effectiveness Manual for Natural Gas Utility Demand Side Management Programs." As long as the programs offered pass the Participants and G-RIM Tests with a score of one or greater, it is deemed cost effective and beneficial for a utility company to offer to its customers.

The Florida Solar Energy Center (FSEC) previously developed a method for calculating the cost-effectiveness of commercial natural gas conservation programs covering several typical appliance types¹. The intent of the assessment was to develop a detailed spreadsheet that, when given the associated costs and energy use for appliances used in "typical" buildings, would calculate the resulting scores for both the Participants Test and the Gas Rate Impact Measure. The costs associated with gas utility piping and administrative costs were not accurately determined during the previous project. These costs, as they became available, were to be entered into the detailed worksheet. Costs associated with gas utility piping and administrative costs have now been defined and have been incorporated into the economic assessment tool.

Existing Economic Analysis Tool

The final report for the previous project (FSEC-CR-1834-09) describes in detail the various sections of the spreadsheet and how these sections work together to create an economic analysis. This report builds on the previous final report and associated spreadsheet. The methodology used

¹ "Developing G-RIM and Participants Tests for Specific Commercial Programs for the Associated Gas Distributors of Florida," R. Raustad, FSEC-CR-1834-09.

to determine specific cost information and recent updates to the previous spreadsheet are described here.

Information Template

Several financial inputs are required to properly identify costs incurred by both the gas utility and gas customer. Since utility companies had some difficulty in identifying these costs, the Associated Gas Distributors of Florida (AGDF) created a gas utility workgroup to define an information template which included all requisite cost categories. The information template was originally developed by this gas utility workgroup and Tactical Energy Solutions, LLC, a utility consultant on this project. The Florida Solar Energy Center reviewed the information template and provided feedback with regards to the usefulness and applicability towards the existing economic assessment tool. Table 1 describes the categories listed in the information template. These categories are primarily based on the original economic assessment tool. Using this information template, which is now included in the economic assessment tool, individual gas utility companies can provide accurate cost data for subsequent economic analysis. During the project, it was determined that some of these categories (i.e., EC Admin Cost and Service Line costs) would require more detailed information to segregate costs associated with different program and building types.

Table 1. Information Template Cost Categories

Rates:	Regulator:	Non-Fuel Gas Esc:	EC Admin Cost:
Customer Charge	Regulator Cost	Customer Charge	Water Heat Tank
Fuel Charge	Regulator Install	Gas Base Rate	Water Heat Tankless
Distribution Charge	Administrative:	Depreciation Rates:	Cooking Deep Fryer
ECCR	New Customer Admin	Service Line	Cooking Oven
Service Line:	Gas Facility O&M	Development Main	Pool Heating
Main Usage Class	Financial Data:	Meter	Des. Dehumidifier
Feeder or Supply	Discount Rate	Supply Mains	Clothes Drying
Project Main	Customer Tax Rate		
Meter:	Fuel and O&M Esc:		
Meter Cost	O&M Expenses		
Meter Set	Gas Fuel Rate		

For example, the energy conservation (EC) administrative costs were only available historically for residential EC programs. A methodology was developed to apply historical residential EC program costs to future commercial EC programs. Of course, as historical commercial cost data become available, these commercial costs may be substituted in future as necessary.

Additionally, other gas utility costs (e.g., mains cost per customer) and customer costs (e.g., piping and fuel line costs) were determined using a unified and systematic approach.

Once the financial data, as defined in the information template, was received from each gas utility company, this information was assembled in a common location for analysis. As is appropriate for financial and cost calculations, a spreadsheet was created where these costs could be organized and a methodology created to determine costs based on a per metric basis (i.e., per customer, per linear foot, per typical building area, etc.).

Costs for specific categories found in the information template were then determined based on methodologies developed by the gas utility workgroup. The cost data developed by the gas utility workgroup have been included in the economic assessment tool simply to document where these data originated. New costs can be calculated in these worksheets and copied to the appropriate locations in the economic assessment tool. The new worksheets (tabs) in the revised spreadsheet are hidden from view and can be accessed by right-clicking on the bottom group of tabs, and selecting unhide. Simply choose the specific worksheet to display. Since the original assessment tool has considerably changed, the new worksheets (tabs) in the revised assessment tool are described in Table 2.

Table 2. Economic Assessment Tool Worksheet Description

Economic Assessment Tool Worksheet	Description	Intended Data Location
Inflation Rate	Historic inflation data	Assumptions worksheet - C21
Information Template	Various costs by utility company	NG Cost Data worksheet
Service Main Cost	Utility cost, service line and piping	NG Cost Data – row 5
Main Extension Cost	Utility cost, main extension costs	NG Cost Data – row 6
EC Program Costs	Utility cost, EC programs	Preliminary data used on LDC EC Cost Adjustment Factors worksheet
LDC EC Cost Adjustment	Utility cost,	NG Cost Data – rows 40-46
Admin. O&M	Utility O&M costs	NG Cost Data – rows 27 & 28
Two Year PGA Factor Averages	Utility PGA average cost	NG Cost Data – row 23
Fuel Line Piping Cost	Customer cost, gas piping, venting, and installation	Equipment Summary – row 32-34, 43-45, etc.
Electric Cost Data	Electric utility rate data	Assumptions – row 92 - 105
NG Cost Data	All cost data for natural gas utilities	Assumptions – row 20 – 85
Assumptions	Basic financial assumptions	Financial Data Input
Equipment Summary	Basic equip. assumptions	Equipment Data Input
Water Heating (tank or tankless)	Economic Analysis Results	Results
Cooking – Deep Fryer		
Cooking – OvenRange		
Pool Heating		
Desiccant Dehumidifier		
Clothes Drying		

Specific costs attributed to the natural gas service main, main extension, energy conservation program, and building fuel line piping costs are described here. This information is included in the economic assessment tool as separate worksheets and may be used for updating these costs in the future. As previously described, these worksheets (tab) are hidden from view and can be accessed by right-clicking on the bottom group of tabs, and selecting unhide. Simply choose the specific worksheet to display.

Service Main Cost

Costs associated with service mains were provided for multiple gas utility service territories. These costs were based on previous construction projects for commercial properties ranging in size and type. Commercial properties were grouped according to the general building type as defined in the economic assessment tool. These costs were averaged for each building type and an assumed length of supply main was used to determine a cost per linear length. Table 3 identifies available utility data, the resulting linear costs, and the average costs reported by

several contributing utilities. The actual total cost reported by each gas utility company was entered into the economic assessment tool. Since only five of the seven gas utility companies provided cost data, the average costs were applied to the remaining two utility companies (see Table 13). These costs represent a gas utility company investment cost and apply to the gas rate impact measure (G-RIM) benefit to cost ratio analysis. The assumed linear length and average cost per foot metrics were not actually used in the current assessment tool.

Main Extension Cost

Main extension costs were determined based on the relative size of the property required for each building type. A sample of buildings were reviewed and categorized according to the general building type as defined in the economic assessment tool. This methodology provided the average property area of buildings in each of the general building type categories. The length of the edge of one side of the property was used to represent the typical length of a main extension. This length, calculated as the square root of the property area, was then multiplied by the average cost of various 2" and 3" main line piping and included associated installation costs. Table 4 identifies available data and the resulting main extension costs were used to define the project main cost in the economic analysis (see Table 13). A description of the methodology used is also provided. These costs represent a gas utility company investment cost and apply to the G-RIM benefit to cost ratio analysis.

Energy Conservation Program Cost

Costs associated with energy conservation (EC) projects are applied to both the customer and the gas utility company. Since the customer costs are spread over all utility customers, EC program costs are applied on a per therm basis and are included in each gas utilities rate structure. Costs applied to the gas utility company are an accumulation of all advertising and labor costs associated with a given EC program. To determine administrative costs for new commercial EC programs, historical data for current residential EC programs were used to provide a cost estimate for similar commercial programs.

There are currently three types of energy conservation programs: new construction, replacement, and retention. The new construction program type assumes a customer will incur equipment costs and all associated piping and piping installation costs. The replacement program type assumes a customer is currently using electric appliances and may convert to equivalent gas appliances when properly incentivized. Costs associated with equipment replacement, including the initial piping and main costs, are used in the analysis. Retention programs incentivize a customer to remain with the gas utility and assumes that a customer is already participating in an EC program and will only require equipment replacement.

Customers participating in EC programs for a specific gas utility company were used to determine the participation percentage for new construction, replacement, and retention programs. This data provided a method for determining the number of customers that would likely participate in an energy conservation program assuming participation was similar between residential and commercial programs. This was the first step in calculating a cost basis for use in the economic analysis.

Energy conservation program costs were calculated for each local distribution company (LDC). An allocation methodology was applied using conservation expense forecast data approved in Docket 10004-GU. The methodology took into account variables such as projected program participation rates, advertising expenses, and labor expenses by appliance type for each of three program types (i.e., new construction, retrofit, and retention). The process is described here and sections of the spreadsheet calculations are shown for steps A and B in Table 5, C and D in Table 6, E and F in Table 7, and the final calculation G in Table 8.

- A. Program participants were estimated by establishing a baseline participation rate by program type, as a percentage of total commercial customers. The baseline participation rates were obtained from FPUC's historical participation rates of residential rebate programs for New Construction, Retrofit, and Retention.
- B. Baseline participation rates were then applied to each LDC's Commercial Customer totals to project estimated rates for the Commercial Conservation Program.
- C. Advertising and Common expenses were determined by establishing a baseline advertising cost ratio of total advertising dollars to total rebates processed, based on FPUCs historical residential advertising cost per rebate. Data from each FPUC's 2010 Schedule CT-2 and 2011 Schedule C-3 were used in this process.
- D. This Ratio was then applied to the estimated number of commercial program participants to determine the advertising cost portion of the total Energy Conservation Program Costs. This advertising baseline rate was then adjusted to reflect each LDCs total historical advertising expenditures relative to total customers (based on Docket NO. 110004-GU Schedule CT-2).
- E. Labor expenses associated with administering the commercial conservation program were established by developing a baseline ratio of labor costs to rebates processed, based on historical ECCR residential labor expenses per rebate. Data from each LDC's 2010 Schedule CT-2 and 2011 Schedule C-3 were used in this process.
- F. This Ratio was then applied to the estimated number of commercial program participants to determine the labor costs portion of the total Energy Conservation Program Costs.
- G. Once all labor, Advertising, and Common Costs were calculated, a total Energy Conservation Program Cost was developed by dividing these costs across the estimated number of Commercial Customers participating in energy conservation programs.

Table 3. Supply Main (Service) Line Costs

Building Type & Description:	Assumed Footage	FPUC	FPUC \$\$/ft	TECO	TECO \$\$/ft	CFG/CPK	CFG/CPK \$\$/ft	FCG/AGL	FCG/AGL \$\$/ft	IndianTown	Indiantown \$\$/ft	LDC Average	Service Line Cost
Small Commercial Non-Food Service (Hair Salon, Florist, Drug Store, Lab, Bank, Buildings Less than 25,000 sq. ft.) Assume 4,800 Annual Therms & 548 CFH	50	\$ 1,010.00	<u>\$ 20.20</u>	\$ 1,750.00	<u>\$ 35.00</u>	\$ 1,010.00	<u>\$ 20.20</u>	\$ 1,300.00	<u>\$ 26.00</u>	\$ 1,010.00	<u>\$ 20.20</u>	\$ 24.32	<u>\$ 1,216.00</u>
Large Commercial Non-Food Service (Distribution Ctr, Cold Storage, Assembly Plant, Church, Schools, Hospitals, Comm. Bldgs. greater than 25,000 sq. ft.) Assume 7,900 Annual Therms & 902 CFH	50	\$ 1,010.00	<u>\$ 20.20</u>	\$ 1,750.00	<u>\$ 35.00</u>	\$ 1,010.00	<u>\$ 20.20</u>	\$ 1,300.00	<u>\$ 26.00</u>	\$ 1,010.00	<u>\$ 20.20</u>	\$ 24.32	<u>\$ 1,216.00</u>
Small Commercial Food Service (Fast Food, Sub Shops, Commercial Bldgs. Less than 5,000 sq. ft.) Assume 4,092 Annual Therms & 467 CFH	50	\$ 1,010.00	<u>\$ 20.20</u>	\$ 1,750.00	<u>\$ 35.00</u>	\$ 1,010.00	<u>\$ 20.20</u>	\$ 1,300.00	<u>\$ 26.00</u>	\$ 1,010.00	<u>\$ 20.20</u>	\$ 24.32	<u>\$ 1,216.00</u>
Large Commercial Food Service (Dine-In Restaurants greater than 5,000 sq. ft.) Assume 18,874 Annual Therms & 2,154 CFH	75	\$ 1,245.00	<u>\$ 16.60</u>	\$ 3,370.00	<u>\$ 44.93</u>	\$ 1,245.00	<u>\$ 16.60</u>	\$ 1,597.00	<u>\$ 21.29</u>	\$ 1,245.00	<u>\$ 16.60</u>	\$ 23.21	<u>\$ 1,740.40</u>
Large Commercial Hospitality (Hotels, Ice Arenas, Bldgs. greater than 100,000 sq. ft.) Assume 62,165 Annual Therms & 7,096 CFH	100	\$ 1,360.00	<u>\$ 13.60</u>	\$ 6,780.00	<u>\$ 67.80</u>	\$ 1,360.00	<u>\$ 13.60</u>	\$ 1,900.00	<u>\$ 19.00</u>	\$ 1,360.00	<u>\$ 13.60</u>	\$ 25.52	<u>\$ 2,552.00</u>
Commercial Cleaning Service (Laundry Mat) Assume 31,856 Annual Therms & 10,486 CFH	125	\$ 1,450.00	<u>\$ 11.60</u>	\$ 6,780.00	<u>\$ 54.24</u>	\$ 1,450.00	<u>\$ 11.60</u>	\$ 2,187.00	<u>\$ 17.50</u>	\$ 1,450.00	<u>\$ 11.60</u>	\$ 21.31	<u>\$ 2,663.40</u>

Table 4. Main Extension Costs

Lot Sizes (Sq. Ft)	South Florida (33125, 33135, 33136, 33178, 32790)	Central Florida (32818, 34787, 32806, 32818)	West Florida (33601, 336 17, 33607, 3 3563, 3360 61)	JAX (33201, 3225 7, 32244, 32202, 3220 9, 32216)	PAN Cty (32401, 3240 8, 32405)	Average Lot Size For Each Bldg. Type (Sq Ft.)	Total Average for Each Building Category (Sq Ft.)	Linear Footage (square Root of Total Average for each Building Category)	Main Extension Costs
Small Commercial Non-Food Service.									
Walgreens	50,461	82,584	62,725	59,677	43,560	59,801			
Bank	56,220	35,102	20,002	53,624	27,000	39,590	39,298	198	\$ 3,434.45
Hair Salon	15,985	18,000	32,580	8,868	17,080	18,503			
Large Commercial Non-Food Service.									
Church	44,435	154,320	160,613	90,275	51,400	100,209			
School	784,080	199,264	282,268	346,899	474,804	417,463	314,103	560	\$ 9,709.78
Hospital	435,600	803,682	105,000	108,080	670,824	424,637			
Small Commercial Food Service.									
Wendy's	23,235	43,563	33,600	34,412	45,215	36,005			
Burger King	15,600	30,450	46,280	40,032	29,969	32,466	27,795	167	\$ 2,888.40
Subway	12,630	18,140	3,325	18,000	22,476	14,914			
Large Commercial Food Service.									
Outback Steakhouse	49,974	55,584	58,252	28,980	83,983	55,355	55,355	235	\$ 4,076.15
Large Commercial Hospitality									
Holiday Inn	189,931	160,377	97,054	253,112	420,354	224,166			
Comfort Inn	161,746	138,972	152,024	107,126	108,725	133,719	178,942	423	\$ 7,328.74
Commercial Cleaning Service.									
Dry Cleaning Service	6,093	14,202	13,125	43,995	10,497	17,582	17,582	133	\$ 2,297.27

Main Size, Scenario	Cost / ft
2" Bore-Plastic	\$ 11.00
2" Bore-Steel	\$ 14.00
2" Soil Hand Dig-Plastic	\$ 2.50
2" Soil Hand Dig-Steel	\$ 4.00
3" Bore-Plastic	\$ 13.00
3" Bore-Steel	\$ 16.00
3" Soil Hand Dig-Plastic	\$ 3.80
3" Soil Hand Dig-Steel	\$ 5.00
Average	\$ 17.33

Determining Main Extension Cost: The costs for main installations were jointly developed by the AGDF workgroup based on average lot sizes for the building types utilized by the cost effectiveness model. In total, 65 commercial lot sizes from 5 regions of Florida (SF, CF, WF, NE, NW) were examined to determine an average lot size (square footage) for 6 types of commercial buildings. The square root of the average square footage was then calculated to determine length and width dimensions; which determined the linear footage of main extension for each building type. This linear footage was then multiplied by the average cost per foot of main extension, developed by the AGDF Workgroup.

Table 5. Energy Conservation Program Administrative Costs

A. Establishing Baseline Participation Rates From Historical Residential Trends (based on 47,723 Residential Customers)					
FPU New Construction Rebates					
	<u>2010 % of Total Customers</u>		<u>2011 % of Total Customers</u>		<u>2 Year Average Participation Rates</u>
Tankless	22	0.046487%	80	0.169044%	0.107765%
WH	250	0.528262%	182	0.384575%	0.456418%
Range	225	0.475436%	197	0.416270%	0.445853%
Dryer	212	0.447966%	202	0.426836%	0.437401%
Furnace	213	0.450079%	129	0.272583%	0.361331%
Total	922	1.948230%	790	1.669308%	1.808769%
FPU Replacement Rebates (E2G)					
	<u>2010 % of Total Customers</u>		<u>2011 % of Total Customers</u>		<u>2 Year Average Participation Rates</u>
Tankless	114	0.240687%	244	0.515584%	0.378236%
WH	17	0.035922%	38	0.080296%	0.058109%
Range	39	0.082409%	153	0.323296%	0.202853%
Dryer	29	0.061278%	127	0.268357%	0.164818%
Furnace	4	0.008452%	16	0.033809%	0.021130%
Total	203	0.428949%	578	1.221342%	0.825145%
FPU Retention Rebates (G2G)					
	<u>2010</u>	<u>2011 % of Total Customers</u>		<u>2 Year Average Participation Rates</u>	
Tankless	91	0.192287%	344	0.726889%	0.459588%
WH	487	1.029054%	497	1.050185%	1.039620%
Range	140	0.295827%	249	0.526149%	0.410988%
Dryer	74	0.156366%	173	0.365557%	0.260961%
Furnace	61	0.128896%	116	0.245114%	0.187005%
Total	853	1.802430%	1379	2.913893%	2.358162%

B. Applying Participation Rates to Commercial Customer Totals (based on 5,090) Commercial Customers)

Estimated Annual Commercial Customer Participation Rates

Total Commercial Customers	New Construction Rate	Est. Participants
5,090	1.808769%	92
Total Commercial Customers	Replacement (E2G) Rate	Est. Participants
5,090	0.825145%	42
Total Commercial Customers	Retention (G2G) Rate	Est. Participants
5,090	2.358162%	120

Costs associated with residential EC program advertising and labor are then used to project these costs for similar commercial EC programs. Total advertising and labor costs are estimated and then these costs are spread over the number of energy conservation program participants. When an economic analysis is preformed, this per participant cost is applied as a cost to the utility company for each year of the analysis.

Table 6. Energy Conservation Program Advertising Costs

2010 Annual ECCR Advertising Program Type		2010 Advertising Budget		2010 Rebates Per Program Type		Ratio of Advertising Dollars Spent Per Rebates	
New Construction	\$ 22,140.00	922					
Replacement (E2G)	\$ 84,416.00	203					
Retention (G2G)	\$ 82,002.00	853					
30% of Common Advertising*	\$ 120,512.00		1978				
Total	\$ 309,070.00						\$ 156.25
2011 Annual ECCR Advertising Program Type		2011 Advertising Budget		2011 Rebates Per Program Type		Ratio of Advertising Dollars Spent Per Rebates	
New Construction	\$ 23,517.00	790					
Replacement (E2G)	\$ 46,830.00	578					
Retention (G2G)	\$ 49,213.00	1379					
30% of Common Advertising*	\$ 373,321.00		2747				
Total	\$ 491,881.00						\$ 179.06

* % of Common Advertising is based on each LDC's typical allocation of total Common Advertising expenses to the 3 Program Types referenced within the Cost Effectiveness Model

2 Yr Avg \$167.66

Program Type	Estimated Participants	Advertising \$ to Rebate Ratio	Project Advertising Costs
New Construction	92	167.66	\$ 15,424.49
Replacement (E2G)	42	167.66	\$ 7,041.61
Retention (G2G)	120	167.66	\$ 20,118.90
Total			\$ 42,585.00

Table 7. EC Program Labor Costs

E. Establishing a Baseline Labor Cost to Rebate Ratio By Program Type (FPU Residential Data 2010 & 2011)			
2010 Data From Schedule CT-2 True Up, 2011 Data from Schedule C3 Projections			
2010 ECCR Labor Expenses	2010	2010 Rebates	Ratio of Labor Cost Per Rebate
New Construction Labor Exp.	\$ 41,185.00	922	\$ 44.67
Replacement (E2G) Labor Exp.	\$ 72,341.00	203	\$ 356.36
Retention (G2G) Exp.	\$ 64,190.00	853	\$ 75.25
30% of Common Labor Costs	\$ 78,849.00		
Total	\$ 256,565.00	1,978	\$ 129.71
2011 Labor Expenses	2011	2011 Rebates	Ratio of Labor Cost Per Rebate
New Construction Labor Exp.	\$ 39,475.00	790	\$ 49.97
Replacement (E2G) Labor Exp.	\$ 45,897.00	578	\$ 79.41
Retention (G2G) Exp.	\$ 38,265.00	1,379	\$ 27.75
30% of Common Labor Costs	\$ 235,325.00		
Total	\$ 358,962.00	2,747	\$ 130.67
		2 Yr avg:	\$ 130.19

	Estimated Participants	Labor \$\$ to Rebate Ratio	Project Labor Costs
New Construction	92	\$ 130.19	\$ 11,977.48
Replacement (E2G)	42	\$ 130.19	\$ 5,467.98
Retention (G2G)	120	\$ 130.19	\$ 15,622.80
			\$ 33,068.26

Table 8. EC Program Participant Cost

	Total No. of Potential Commercial Participants	Projected Advertising & Common Expenses	Projected Labor Expenses	Total Annual EC Program Cost
New Construction	92	\$ 11,724.01	\$ 4,353.33	\$174.75
Replacement (E2G)	42	\$ 19,110.90	\$ 9,151.09	\$672.90
Retention (G2G)	120	\$ 16,887.34	\$ 6,180.03	\$192.23

The final step in determining EC program costs for each gas utility company was to identify the advertising and labor budgets for each gas utility company and calculate a ratio of costs based on the specific utility company data described in the previous steps. The final calculations shown in Table 9 were used in the economic analysis. Note that the cost is calculated on a per participating customer basis for each program type (i.e., new construction, replacement, and retention).

Table 9. EC Program Costs by Utility Company

	Residential Customers (FERC Form 2 p. 26)	Advertising Adjustment Factors 2011 ECCR Advt.		Baseline Advt. to Budget Ratio	Adjustment Factor
		Budget (Dock. #11004-GU)	Budget to Cust Ratio		
FPU (Baseline)	47,325	\$ 491,881.00	\$ 10.39	\$ 10.39	1
FCG/AGL	96,472	\$ 809,049.00	\$ 8.39	\$ 10.39	0.807
TECO	304,701	\$ 1,039,486.00	\$ 3.41	\$ 10.39	0.328
CFG	13,936	\$ 140,403.00	\$ 10.07	\$ 10.39	0.969
Indiantown	-	\$ -	\$ -	\$ 10.39	0.000
Sebring	4,462	\$ 10,398.00	\$ 2.33	\$ 10.39	0.224
St. Joe	-	\$ -	\$ -	\$ 10.39	0.000

	Residential Customers (FERC Form 2 p. 26)	Labor Adjustment Factors 2011 ECCR Labor		Baseline Labor to Budget Ratio	Adjustment Factor
		Budget (Dock. #11004-GU)	Labor Budget to Cust Ratio		
FPU (Baseline)	47,325	\$ 256,565.00	\$ 5.42	\$ 5.42	1
FCG/AGL	96,472	\$ 535,735.00	\$ 5.55	\$ 5.42	1.024
TECO	304,701	\$ 328,209.00	\$ 1.08	\$ 5.42	0.199
CFG	13,936	\$ 233,294.00	\$ 16.74	\$ 5.42	3.088
Indiantown	-	\$ 1,756.00	\$ -	\$ 5.42	0.000
Sebring	4,462	\$ 5,811.00	\$ 1.30	\$ 5.42	0.240
St. Joe	-	\$ -	\$ -	\$ 5.42	0.000

Utility	Program	EC Advertising Cost	EC Labor Cost	EC Program Cost
FPU	New Construction	\$ 127.43	\$ 47.32	\$ 174.75
	Replacement (E2G)	\$ 455.02	\$ 217.88	\$ 672.90
	Retention (G2G)	\$ 140.73	\$ 51.50	\$ 192.23
FCG/AGL	New Construction	\$ 130.54	\$ 48.47	\$ 179.01
	Replacement (E2G)	\$ 466.09	\$ 223.19	\$ 689.28
	Retention (G2G)	\$ 144.15	\$ 52.75	\$ 196.91
TECO	New Construction	\$ 25.32	\$ 9.40	\$ 34.72
	Replacement (E2G)	\$ 90.41	\$ 43.29	\$ 133.70
	Retention (G2G)	\$ 27.96	\$ 10.23	\$ 38.19
CFG	New Construction	\$ 393.50	\$ 146.11	\$ 539.62
	Replacement (E2G)	\$ 1,405.05	\$ 672.79	\$ 2,077.84
	Retention (G2G)	\$ 434.55	\$ 159.03	\$ 593.57
Indiantown	New Construction	\$ 127.43	\$ 47.32	\$ 174.75
	Replacement (E2G)	\$ 455.02	\$ 217.88	\$ 672.90
	Retention (G2G)	\$ 140.73	\$ 51.50	\$ 192.23
Sebring	New Construction	\$ 30.51	\$ 11.37	\$ 41.98
	Replacement (E2G)	\$ 109.31	\$ 52.34	\$ 161.65
	Retention (G2G)	\$ 33.81	\$ 12.37	\$ 46.18
St. Joe	New Construction	\$ 127.43	\$ 47.32	\$ 174.75
	Replacement (E2G)	\$ 455.02	\$ 217.88	\$ 672.90
	Retention (G2G)	\$ 140.73	\$ 51.50	\$ 192.23

Fuel Line Piping Cost

Costs associated with piping and fuel lines are paid for by the utility customer when gas equipment is installed. These costs apply to new construction and replacement program types. The gas utility workgroup identified typical costs for each building type based on previous construction projects as shown in Table 10 and Table 11. These costs were reviewed by independent contractors and deemed fair and reasonable. Costs are itemized for piping, connection charge, gas flue vent installation, and connectors for certain appliances. All commercial kitchen appliances require commercial rated appliance connectors for stationary or removable equipment. Blue connectors are used for commercial appliances on wheels that require a quick disconnect and restraining device for easy and safe removal of appliances for cleaning or removal. Yellow connectors are used for stationary appliances and don't require the quick disconnect or restraining device.

Table 10. Piping and Fuel Line Costs

Fuel Line Cost: The AGDF Workgroup developed interior fuel line (piping) footages associated with each building analyzed in the cost effectiveness model. Appropriate footages were determined by obtained Florida-based Fuel Line/Gas Plumbing Contractors as well as Commercial Account Representatives from Florida Public Utilities. The piping costs developed were then reviewed by additional contractors who deemed the costs to be within a 5%, reasonable and acceptable rate.	Building (type examples)	Appliances Piped For:	Total Interior Piping (Footage)	Total Cost
	Small Commercial Non-Food Service: 4,800 Annual Therms & 548 CFH Florist, Drug Store, Lab, Bank, Buildings Less than 25,000 sq. ft.	Water Heater	100ft piping = \$1,800.00 CONNECT WATER HEATER @ \$95.00 VENTING 8 FT. W/HTR \$495.00	\$2,390.00
	Large Commercial Non-Food Service: 7,900 Annual Therms & 902 CFH Distribution Ctr. Church, Schools, Hospitals, Comm. Bldgs. greater than 25,000 sq. ft.	Water Heater	200 FT. PIPING = \$3,600.00 CONNECT WATER HEATER \$95.00 VENTING @ \$495.00	\$4,190.00
	Small Commercial Food Service: 4,092 Annual Therms & 467 CFH Fast Food, Sub Shops, Commercial Bldgs. Less than 5,000 sq. ft.	Water Heater Range/Oven Fryer	PIPING 50 FT. = \$1,200.00 CONNECTS @ \$95.00 YELLOW CONNECTORS @ 125.00 BLUE CONNECTORS @ \$225.00 VENTING 8 FT. @ \$495.00	\$2,140.00

Table 11. Piping and Fuel Line Costs (cont.)

Large Commercial Food Service 18,874 Annual Therms & 2,154 CFH Dine-In Restaurants greater than 5,000 sq. ft.	Water Heater	PIPING 100 FT. = \$2,400.00	
	Range/Oven	CONNECTS @ \$95.00	
	Fryer	YELLOW CONNECTORS @ \$125.00	\$3,340.00
		BLUE CONNECTORS @ \$225.00	
		VENTING 8 FT. @ \$495.00	
Large Commercial Hospitality Assume 62,165 Annual Therms & 7,096 CFH Hotels, Amusement Parks, Ice Arenas Bldgs. greater than 100,000 sq. ft.	Water Heater	PIPING 300 FT. = \$6000.00	
	Range/Oven	CONNECTS @ \$95.00	
	Fryer	YELLOW CONNECTORS @ \$125.00	\$6,940.00
	Pool	BLUE CONNECTORS @ \$225.00	
	Dryer	VENTING 8 FT. @ \$495.00	
Commercial Cleaning Service Assume 91,856 Annual Therms & 10,486 CFH Laundry Mat	Water Heater	PIPING 100 FT. = \$2,280.00	
		CONNECTS @ \$95.00	
		YELLOW CONNECTORS @ \$125.00	\$2,995.00
		VENTING 8 FT. @ \$495.00	

These customer piping and fuel line costs are applied to the economic analysis by entering these costs on the Equipment Summary worksheet in rows 32-34 for the Small Commercial Non-Food Service building type. Information for other building types are entered in a similar manner in their corresponding locations. An example for entering this information is provided in Table 12. The piping and connect charges for a water heater, shown in Table 10 for a Small Commercial Non-Food Service building type (\$1,800 + \$95), are combined and entered as the cost for piping. The venting costs in Table 10 are entered as the cost for venting. Installation costs may have been included in the original estimate, but to be conservative, a cost of \$445 is included for installation of the appliance. Venting costs for the desiccant dehumidifier were assumed to be 0 since this appliance type emits flue gasses through the exhaust air stream. These costs are applied to the gas utility customer in the economic analysis. In the future, these costs may be modified as necessary to more accurately reflect the actual costs of installing specific commercial appliances.

Table 12. Customer Piping, Venting and Installation Costs

Small Commercial Non-Food Serv	Gas		Electric
	Therms	KWH	kW Demand
Water Heating - Tank	134	2,600	10
Water Heating - Tankless	100	2,515	25
Desiccant Dehumidifier	139	1,256	1.3

Installed Cost Detail (excl equip)	Piping	Venting	Installation
Water Heating - Tank	\$1,895	\$495	\$445
Water Heating - Tankless	\$1,895	\$495	\$445
Desiccant Dehumidifier	\$1,895	\$0	\$445

Utility Company Piping Costs

Piping costs paid for by the gas utility company, as previously described in the sections describing Service Main and Main Extension costs, are entered on the NG Cost Data spreadsheet. The costs shown in Table 3 and Table 4 describe the Service Main and Main Extension entries in the economic assessment tool. An example of how these costs are entered is shown in Table 13 for a specific gas utility company. The costs in Table 3 represent the actual costs for each specific service territory (e.g., Florida City Gas [FCG] column). Average cost data by building type from Table 4 were entered in the assessment tool for each gas utility company.

A difference in the methodology from the previous analysis is that the building types chosen for analysis will typically fall into a specific gas utility rate class. Previously, the rate class was chosen based on simulated gas consumption, whereas now, the rate class is fixed for a specific building type. For example, the Small Commercial Non-Food Service and Small Commercial Food Service building types are both categorized as operating under the GS-1200 rate tariff when considering costs for Florida City Gas. These building classifications were determined by the gas utility workgroup as part of this project. Meter and regulator costs were provided by each utility company as part of the information provided on the Information Template (see Table 1). Note here that Other costs are shown to be \$0. In the future, this row can be used for any other costs paid for by the gas utility company that are not currently included in the economic analysis.

The rate schedule costs are derived from the specific utility company rate tariffs for each gas utility company and are specific to the building type and rate class category as determined by the gas utility company workgroup. These costs are entered here as a common location for all costs associated with the gas industry.

Table 13. Utility Costs for Piping, Meter, Regulator, and Associated Rate Schedule

Rate Schedule:	Florida City Gas					
	GS-1200	GS-1200	GS-6,000	GS-6,000	GS-60,000	GS-60,000
Building Type	Small Commercial Non-Food Service	Small Commercial Food Service	Large Commercial Non-Food Service	Large Commercial Food Service	Large Commercial Hospitality	Large Commercial Cleaning Service
Service Main	\$1,300	\$1,300	\$1,300	\$1,597	\$1,900	\$2,187
Main Extension	\$3,434	\$2,898	\$9,710	\$4,076	\$7,329	\$2,297
Other	\$0	\$0	\$0	\$0	\$0	\$0
Meter:						
Meter Cost	\$140	\$140	\$546	\$546	\$3,551	\$3,551
Meter Set	\$10	\$10	\$14	\$14	\$789	\$789
Regulator:						
Regulator Cost	\$77	\$77	\$241	\$241	\$41	\$41
Regulator Install	\$14	\$14	\$14	\$14	\$636	\$636
TOTAL	\$4,975	\$4,429	\$11,825	\$6,488	\$14,246	\$9,501
Rate Schedule:	Florida City Gas					
Customer Charge	\$15	\$15	\$30	\$30	\$150	\$150
ECCR	\$0.03858	\$0.03858	\$0.03214	\$0.03214	\$0.03167	\$0.03167
Distribution Charge	\$0.31715	\$0.31715	\$0.27487	\$0.27487	\$0.27477	\$0.27477
PGA Recovery Factor	\$0.63314	\$0.63314	\$0.63314	\$0.63314	\$0.63314	\$0.63314

Utility Company Administrative Costs

Administrative and operating and maintenance costs paid for by the gas utility company are entered on the NG Cost Data spreadsheet. These costs were provided by each utility company as part of the cost data provided on the Information Template (see Table 1). Economic data for discount rate and depreciation rates are also entered here as shown in Table 14. Another modification to the previous analysis was to allow for the economic assessment tool to automatically average or calculate customer weighted average costs. For each applicable row in the NG Cost Data spreadsheet, there are now calculations for average, and weighted average cost. This information can be used instead of specific utility company costs by selecting the appropriate utility company in Cell H7 on the Assumptions spreadsheet (i.e., average and weighted average are now options for the utility company name).

Table 14. Administrative Costs and Financial Data

Administrative Costs:	Florida City Gas	Florida Public Utilities	Peoples Gas	IndianTown Gas	St. Joe Natural Gas	Chesapeake Utilities	Sebring Gas	Average	Weighted Average
New Customer Admin Cost	\$1.90	\$7.19	\$12.12	\$3.04	\$3.23	\$27.75	\$1.41	\$6.11	\$7.65
Gas Facility O&M Cost	\$12.56	\$13.15	\$24.58	\$2.26	\$5.54	\$9.19	\$8.30	\$13.96	\$17.96
Financial Data:	Florida City Gas	Florida Public Utilities	Peoples Gas	IndianTown Gas	St. Joe Natural Gas	Chesapeake Utilities	Sebring Gas	Average	Weighted Average
Discount Rate	7.360%	7.200%	8.500%	9.160%	7.914%	7.350%	7.914%	7.744%	7.832%
Depreciation Rates:	Florida City Gas	Florida Public Utilities	Peoples Gas	IndianTown Gas	St. Joe Natural Gas	Chesapeake Utilities	Sebring Gas	Average	Weighted Average
Service Lines	3.900%	3.400%	4.800%	3.900%	3.500%	3.600%	2.900%	3.900%	4.163%
Development Main	3.900%	2.500%	3.100%	3.200%	3.300%	3.300%	2.500%	3.200%	3.168%
Meter	4.500%	3.400%	5.900%	5.000%	4.100%	4.000%	3.300%	4.475%	4.827%
Supply Mains	3.900%	3.400%	4.800%	3.900%	3.500%	3.600%	2.900%	3.900%	4.163%

Energy Conservation Program Costs

The costs associated with operating an energy conservation program must also be included in the economic analysis. These costs can be difficult to determine for new programs. The gas utility workgroup defined a methodology to determine these costs as described in the previous section for Energy Conservation Program Administrative Costs. Annual Energy Conservation (EC) Program Costs are paid for by the gas utility company and recovered through an ECCR customer charge. The costs paid by the gas utility company are entered on the NG Cost Data spreadsheet as shown in Table 15. These costs are entered specifically for each utility company. At this time it is assumed that these costs are dependent on utility company and also change based on appliance type. In the future, these costs may be more accurately defined as more information for commercial EC programs becomes available.

As described previously, these costs entered on the NG Cost Data spreadsheet can be used to provide an economic analysis based on costs incurred by a specific utility, or the analysis could use average or weighted average cost data. The averaged data is simply the mathematical average of entered cost data. The weighted average data is weighted based on the number of customers in each utility company's service territory. As shown in Table 15, the number of customers for each utility company must be entered in order to assess weighted average costs. If the number of customers for a given gas utility company is 0, the costs associated with that specific gas utility company are not included in the weighted average cost data.

Table 15. Annual Energy Conservation Utility Costs

Annual EC Program Cost:	Florida City Gas			Florida Public Utilities			Peoples Gas		
	New Constr.	Retrofit	Retention	New Constr.	Retrofit	Retention	New Construction	Retrofit	Retention
Water Heating Tank	\$179.01	\$689.28	\$196.91	\$174.75	\$672.90	\$192.23	\$34.72	\$133.70	\$38.19
Water heating Tankless	\$179.01	\$689.28	\$196.91	\$174.75	\$672.90	\$192.23	\$34.72	\$133.70	\$38.19
Cooking Deep Fryer	\$179.01	\$689.28	\$196.91	\$174.75	\$672.90	\$192.23	\$34.72	\$133.70	\$38.19
Cooking Oven/Range	\$179.01	\$689.28	\$196.91	\$174.75	\$672.90	\$192.23	\$34.72	\$133.70	\$38.19
Pool Heating	\$179.01	\$689.28	\$196.91	\$174.75	\$672.90	\$192.23	\$34.72	\$133.70	\$38.19
Desiccant Dehumidifier	\$179.01	\$689.28	\$196.91	\$174.75	\$672.90	\$192.23	\$34.72	\$133.70	\$38.19
Clothes Drying	\$179.01	\$689.28	\$196.91	\$174.75	\$672.90	\$192.23	\$34.72	\$133.70	\$38.19

Customer Data:	Florida City Gas	Florida Public Utilities	Peoples Gas	Indiantown Gas	St. Joe Natural Gas	Chesapeake Utilities	Sebring Gas	Total
Commercial Customers	6700	5090	2085	28	252	683	151	33719

Modifications to Existing Assessment Tool

In addition to making minor cosmetic changes to the assessment tool, other corrections were made and are documented here for completeness. While modifying the spreadsheet with the new cost data, a review of the calculations identified an error in the calculation of Program Cost on the G-RIM Test – Results page. The calculation formula that determined if the incentive should be included in the calculation was looking at the wrong cell for average life (years). This calculation was corrected along with a change to the calculation for when this cost was applied. The original calculation used actual year (2010) minus 2009, when the calculation should have been actual year minus 2010. The affected cell is shown in Table 16 and affects all cells for subsequent years. To be specific, the calculation was changed to: $=+IF(MOD((BI12-BI11),\$D\$34)=0,\$D\$21+\$D\$36,\$D\$36)$ where red highlighted data have changed. As a result, the previous assessment tool disregarded the customer incentive in the first year of the EC program. This calculation was corrected on all appliance results spreadsheets. At this time it was also realized that there was no easy way to update the year of the simulation. For this reason, the formula entries associated with dates (e.g., BI11 in the equation above previously read “2009”) were also revised here and elsewhere in the spreadsheets. The year of simulation can now be entered on the Assumptions worksheet in cell B5.

Table 16. Example G-RIM Test - Results Calculation Error

BQ12 =+IF(MOD((BI12-BI11),D\$34)=0,D\$21+D\$36,D\$36)										
G-RIM Test - Results										
Appliance Type Water Heating - Tankless (1)				Gas Utility Rate - Florida Public Utilities Elec Utility Rate - Weighted Average Building Type - Large Commercial Hospitality						
<i>Other Equipment Included in Analysis: Cooking - Deep Fryer (1), Cooking - Oven/Range (1), Pool Heating (1), Desiccant Dehumidifier (1), Clothes Drying (1)</i>										
	Incremental Revenue Energy Charge	Incremental Revenue Cost of Gas	Incremental Revenue Customer Charge	Total Gas Revenue	Gas Supply Cost	Investment Carrying Cost	Incremental Customer Costs	Program Cost	Total Costs	
	Table 1	Table 1A	Table 2	Table 3	Table 4	Table 5	9	6 thru 9		
10	1	2	3	4	2 thru 4	6	7	8	9	6 thru 9
11	2012	\$1,243	\$2,213	\$48	\$3,505	\$2,213	\$96	\$27	\$274.75	\$2,610
12	2013	\$1,353	\$2,407	\$48	\$3,808	\$2,407	\$93	\$27	\$174.75	\$2,703
13	2014	\$1,471	\$2,618	\$48	\$4,138	\$2,618	\$91	\$28	\$174.75	\$2,912

An example residential EC program report was provided to FSEC during this project. This report included life expectancy estimates for different appliance types. These same estimates were included in this commercial assessment tool. The revised data for average appliance life expectancy is shown in Table 17.

Table 17. Changes to Appliance Life Expectancy

	A	B	C	D
11	Enter appliance life expectancy			
12	Average Appliance Life in Years			
13				
14	Appliance Type	Gas	Electric	
15	Water Heating - Tank	10	10	
16	Water Heating - Tankless	20	20	
17	Cooking - Deep Fryer	15	15	
18	Cooking - Over/Range	15	15	
19	Pool Heating	12	12	
20	Desiccant Dehumidifier	12	12	
21	Clothes Drying	13	13	

NG Cost Data Assumptions Equipment Summary WaterHeating Coc

As a final revision, the electric utility rates were updated as shown in Table 18 to reflect current charges as of November 2011. Of course these rates are updated annually to reflect current costs and is mentioned here as a reminder to frequently update costs on the Electric Cost Data worksheet. If this tab is not visible, right-click the tab section at the bottom of the workbook, and select unhide. Then select the Electric Cost Data worksheet to make it visible. Instructions and links are included to aid in this data collection effort.

Table 18. Updated Electric Utility Rates

Electric cost data from Florida electric utility companies.

Rates Effective: Nov-11

		COMMERCIAL ELECTRIC RATES				Average	Weighted Average	
		General Service Demand (GSD)						
Click Find Utility Co. Rates link		Find Utility Co. Rates	FPL	Progress Energy	Tampa Elec Co	Gulf Power		
Click on "Electric and Natural Gas" on the left.		Customer Charge	16.44	11.59	57	35.0	30.0075	16.41082
Scroll down and click "Links to Electric Rate Schedules & Tariffs of Florida Investor-Owned Utilities"		Base Energy Charge	0.01384	0.03269	0.01583	0.01396	0.0457125	0.0456441
Choose Utility Company.		Fuel Charge	0.04153	0.04776	0.04225	0.05131		
Each site is different in how to		Capacity	--	0.00992	--	0.00376		
		Environmental	0.00121	0.00471	0.00402	0.01324		
		Total Storm Charge	0.0007	--	--	--		
		Energy Conservation	--	--	--	0.00074		
		Total	0.05728	0.09508	0.0621	0.08301	0.0743675	0.0803779
		FLGross Receipts Tax (%)	2.5641%	2.5641%	2.5641%	2.5641%	2.5641%	2.5641%
		Base Demand Charge	6.5	4.95	8.41	--		
		Capacity Payment Charge	2.44	--	1.07	--		
		Conservation Charge	0.78	0.9	0.93	--		
		Demand Charge	9.72	5.85	10.41	5.42	7.85	7.311033
		From 2010 FERC Form 1 2010 Q4 Page 304					Total Customers	
		# of customers (Approx)	96832	164155	12007	16202	289196	
		From 2010					0	

Fuel Line Pping Cost Electric Cost Data NG Cost Data Assumptions Equipm

Results Summary

Given the changes to the original workbook, brief results of an economic analysis are presented here and include all changes to cost data as previously described. This example simulates a large commercial hospitality building in Florida Public Utilities service territory as shown in Table 19. This analysis uses the weighted average electric utility rates of four major Florida electric utility companies, assumes new construction, and shows that the tankless water heating and oven cooking both pass the Participants and G-RIM test. EC programs for pool heating will most likely not pass the Participants test with a score of 1 or greater since the COP for electric pool water heating appliances is typically greater than 3. First cost for desiccant dehumidifying equipment can be high and expectations for this type of appliance passing the participants test are low. The deep fryer cooking and clothes drying appliances nearly pass the participants test while easily surpassing one on the G-RIM test. The amount of cooking in the deep fryer appliance influences the economics for the consumer. If the amount of product cooked is high, the resulting participants test score may be greater than one. This analysis assumed 200 pounds per day for deep frying and 200 pounds per day for oven cooking. Participants test scores can be further increased by applying a monetary customer allowance or incentive. Incentives are paid to the consumer for agreeing to use a gas appliance over a comparable electric appliance. The incentive will increase the Participants test score while decreasing the G-RIM test score. The table just to the right of these summary results on the Assumptions worksheet (not shown) is used to enter the incentive data. Changing the incentive amount for one appliance will not change the resulting scores for other appliances.

Table 19. Example Economic Analysis for a Large Commercial Hospitality building
Associated Gas Distributors of Florida
Commercial Energy Conservation Program

General Assumptions, Financial, Cost, Usage and Fuel Data

Year: 2012 ** Entries in Blue may be modified **

Gas Utility: Florida Public Utilities

SUMMARY RESULTS

Equipment Selection Option	PrintSummaryReport	Electric Rate		Building Type Selection		Gas Utility		Program Type	
		Weighted Average	Large Commercial Hospitality	Florida Public Utilities	New Construction	Florida Public Utilities	New Construction		
		Allowance (per Unit)	Participants Test	G-RIM Test	Carbon Reduction (tons CO2/yr)	Fraction of Equipment Gas Usage To Total Gas Usage			
<input type="checkbox"/>	Water Heating - Tank	\$0	0.000	0.000	0.000				
<input checked="" type="checkbox"/>	Water Heating - Tankless (1)	\$0	1.612	1.546	45.650				
<input checked="" type="checkbox"/>	Cooking - Deep Fryer (1)	\$0	0.906	1.490	7.162				
<input checked="" type="checkbox"/>	Cooking - Oven/Range (1)	\$0	1.436	1.474	13.928				
<input checked="" type="checkbox"/>	Pool Heating (1)	\$0	0.526	1.553	4.090				
<input checked="" type="checkbox"/>	Desiccant Dehumidifier (1)	\$0	0.477	1.515	0.085				
<input checked="" type="checkbox"/>	Clothes Drying (1)	\$0	0.988	1.356	3.287				

6 = Total # of Appliance Categories

In this example, including a deep fryer cooling incentive of \$3,675 will increase the Participants test score to 1.000 while decreasing the G-RIM test score to 1.295. For clothes drying, an incentive of only \$180 was required to push the Participants test score up to 1.000 and resulted in a G-RIM test score of 1.333. The new simulation results are shown in Table 20. However, these

incentives are specific to costs associated with the Florida Public Utility company and a different incentive will most likely be used so that all Florida gas utility companies use the same incentive amount. The actual incentive will typically be based on the utility company that results in the lowest participants test score for each specific appliance.

**Table 20. Revised simulation results including incentives
Associated Gas Distributors of Florida
Commercial Energy Conservation Program**

General Assumptions, Financial, Cost, Usage and Fuel Data

Year: 2012 ** Entries in Blue may be modified **

Gas Utility: Florida Public Utilities

SUMMARY RESULTS

Equipment Selection Option	PrintSummaryReport	Electric Rate	Building Type Selection	Gas Utility	Program Type
		Weighted Average	Large Commercial Hospitality	Florida Public Utilities	New Construction
<input type="checkbox"/>	Water Heating - Tank	\$0	0.000	0.000	0.000
<input checked="" type="checkbox"/>	Water Heating - Tankless (1)	\$0	1.612	1.546	45.650
<input checked="" type="checkbox"/>	Cooking - Deep Fryer (1)	\$3,675	1.000	1.295	7.162
<input checked="" type="checkbox"/>	Cooking - Oven/Range (1)	\$0	1.436	1.474	13.928
<input checked="" type="checkbox"/>	Pool Heating (1)	\$0	0.526	1.553	4.090
<input checked="" type="checkbox"/>	Desiccant Dehumidifier (1)	\$0	0.477	1.515	0.085
<input checked="" type="checkbox"/>	Clothes Drying (1)	\$180	1.000	1.333	3.287

6 = Total # of Appliance Categories

The results presented in Table 20 are based on a simulation of a newly constructed large hospitality building located in FPU's service territory. All available appliance types were included in the analysis. If the appliances with Participants test scores lower than 1 are now removed from the simulation, the Participants test score for deep fryer cooking would decrease to 0.962 even though a \$3,675 incentive for deep fryer cooking was still included. Similarly, the Participants test score for clothes drying would decrease to 0.962. This is due to certain costs (i.e., monthly gas customer charge) being allocated according to the percentage of gas used by each appliance compared to the total building gas usage. Since two of the appliances were removed from the analysis, the monthly costs attributed to these appliances were reallocated to the remaining appliances and the scores changed. For each of these appliance types, the incentive will have to be increased so that the Participant test scores are greater than or equal to 1 when all applicable appliances are included in the simulation. Table 21 shows the analysis results when the appliance incentive is increased to the point where all applicable appliances pass both the Participants and G-RIM test. The pool heating and desiccant dehumidifier appliances were removed from the simulation since the incentive amount needed to pass the Participants test would cause the G-RIM test score to fall below 1.

Table 21. Final Analysis including modified incentives and all applicable appliances

Associated Gas Distributors of Florida Commercial Energy Conservation Program						
General Assumptions, Financial, Cost, Usage and Fuel Data						
Year: 2012		** Entries in Blue may be modified **				
Gas Utility: Florida Public Utilities		Electric Rate	Building Type Selection	Gas Utility	Program Type	
SUMMARY RESULTS		Weighted Average	Large Commercial Hospitality	Florida Public Utilities	New Construction	
Equipment Selection Option	PrintSummaryReport	Allowance (per Unit)	Participants Test	G-RIM Test	Carbon Reduction (tons CO2/yr)	Fraction of Equipment Gas Usage To Total Gas Usage
	Water Heating - Tank	\$0	0.000	0.000	0.000	
<input checked="" type="checkbox"/>	Water Heating - Tankless (1)	\$0	1.550	1.531	45.650	
<input checked="" type="checkbox"/>	Cooking - Deep Fryer (1)	\$5,250	1.000	1.224	7.162	
<input checked="" type="checkbox"/>	Cooking - Oven/Range (1)	\$0	1.384	1.462	13.928	
<input type="checkbox"/>	Pool Heating	\$0	0.000	0.000	0.000	
<input type="checkbox"/>	Desiccant Dehumidifier	\$0	0.000	0.000	0.000	
<input checked="" type="checkbox"/>	Clothes Drying (1)	\$790	1.000	1.258	3.287	

4 = Total # of Appliance Categories

The number of simulations needed to determine incentive amounts for each appliance type will be numerous. For each appliance type or group of appliances, simulations would be performed for all building types (6) in each gas utility's service territory (7) for each program type (3) and may include duplicate simulations where appliances that fail either the Participants or G-RIM test are removed from the simulation.

Appendix C: Cost Development Methodologies - Projections

Florida Public Utilities								
	Estimated # of Participants	Estimated Advertising Cost	Estimated Labor Cost	Average Cost Per Rebate ¹	Total Projected Commercial Rebate Costs	Subtotal Projected Labor, Advertising & Rebate Costs	Total Projected Commercial Common Costs ²	Total Projected Cost Impacts to ECCR
New Construction	92	\$ 15,435.25	\$ 11,985.66	\$ 2,154.17	\$ 198,318.68	\$ 225,739.59	\$ 22,573.96	\$ 248,313.55
Replacement (E2G)	42	\$ 7,041.70	\$ 5,467.97	\$ 2,500.00	\$ 104,999.74	\$ 117,509.40	\$ 11,750.94	\$ 129,260.34
Retention (G2G)	120	\$ 20,124.30	\$ 15,626.76	\$ 1,973.33	\$ 236,860.04	\$ 272,611.11	\$ 27,261.11	\$ 299,872.22
	254	\$ 42,601.26	\$ 33,080.39	\$ 6,627.50	\$ 540,178.46	\$ 615,860.11	\$ 61,586.01	\$ 677,446.12
Florida City Gas (AGL)								
	Estimated # of Participants	Estimated Advertising Cost	Estimated Labor Cost	Average Cost Per Rebate ¹	Total Projected Commercial Rebate Costs	Subtotal Projected Labor, Advertising & Rebate Costs	Total Projected Commercial Common Costs ²	Total Projected Cost Impacts to ECCR
New Construction	121	\$ 16,396.24	\$ 16,155.44	\$ 2,154.17	\$ 261,048.16	\$ 293,599.85	\$ 29,359.99	\$ 322,959.84
Replacement (E2G)	55	\$ 7,480.11	\$ 7,370.26	\$ 2,500.00	\$ 138,211.83	\$ 153,062.21	\$ 15,306.22	\$ 168,368.43
Retention (G2G)	158	\$ 21,377.23	\$ 21,063.28	\$ 1,973.33	\$ 311,780.41	\$ 354,220.92	\$ 35,422.09	\$ 389,643.01
	334	\$ 45,253.58	\$ 44,588.98	\$ 6,627.50	\$ 711,040.41	\$ 800,882.98	\$ 80,088.30	\$ 880,971.27
TECO								
	Estimated # of Participants	Estimated Advertising Cost	Estimated Labor Cost	Average Cost Per Rebate ¹	Total Projected Commercial Rebate Costs	Subtotal Projected Labor, Advertising & Rebate Costs	Total Projected Commercial Common Costs ²	Total Projected Cost Impacts to ECCR
New Construction	376	\$ 20,703.62	\$ 15,684.50	\$ 2,154.17	\$ 811,002.62	\$ 847,390.73	\$ 84,739.07	\$ 932,129.80
Replacement (E2G)	172	\$ 9,445.18	\$ 7,155.41	\$ 2,500.00	\$ 429,384.97	\$ 445,985.56	\$ 44,598.56	\$ 490,584.11
Retention (G2G)	491	\$ 26,993.13	\$ 20,449.26	\$ 1,973.33	\$ 968,613.32	\$ 1,016,055.72	\$ 101,605.57	\$ 1,117,661.29
	1039	\$ 57,141.93	\$ 43,289.16	\$ 6,627.50	\$ 2,209,000.91	\$ 2,309,432.01	\$ 230,943.20	\$ 2,540,375.21
Central Florida Gas								
	Estimated # of Participants	Estimated Advertising Cost	Estimated Labor Cost	Average Cost Per Rebate ¹	Total Projected Commercial Rebate Costs	Subtotal Projected Labor, Advertising & Rebate Costs	Total Projected Commercial Common Costs ²	Total Projected Cost Impacts to ECCR
New Construction	12	\$ 2,006.97	\$ 4,966.41	\$ 2,154.17	\$ 26,611.33	\$ 33,584.70	\$ 3,358.47	\$ 36,943.17
Replacement (E2G)	6	\$ 915.60	\$ 2,265.72	\$ 2,500.00	\$ 14,089.36	\$ 17,270.67	\$ 1,727.07	\$ 18,997.74
Retention (G2G)	16	\$ 2,616.66	\$ 6,475.14	\$ 1,973.33	\$ 31,782.99	\$ 40,874.79	\$ 4,087.48	\$ 44,962.27
	34	\$ 5,539.23	\$ 13,707.26	\$ 6,627.50	\$ 72,483.67	\$ 91,730.16	\$ 9,173.02	\$ 100,903.18
Indiantown								
	Estimated # of Participants	Estimated Advertising Cost	Estimated Labor Cost	Average Cost Per Rebate ¹	Total Projected Commercial Rebate Costs	Subtotal Projected Labor, Advertising & Rebate Costs	Total Projected Commercial Common Costs ²	Total Projected Cost Impacts to ECCR
New Construction	1	\$ 167.66	\$ 130.19	\$ 2,154.17	\$ 2,154.17	\$ 2,452.02	\$ 245.20	\$ 2,697.22
Replacement (E2G)	1	\$ 167.66	\$ 130.19	\$ 2,500.00	\$ 2,500.00	\$ 2,797.85	\$ 279.79	\$ 3,077.64
Retention (G2G)	2	\$ 335.32	\$ 260.38	\$ 1,973.33	\$ 3,946.67	\$ 4,542.37	\$ 454.24	\$ 4,996.60
	4	\$ 670.64	\$ 520.76	\$ 6,627.50	\$ 8,600.83	\$ 9,792.23	\$ 979.22	\$ 10,771.46
Sebring								
	Estimated # of Participants	Estimated Advertising Cost	Estimated Labor Cost	Average Cost Per Rebate ¹	Total Projected Commercial Rebate Costs	Subtotal Projected Labor, Advertising & Rebate Costs	Total Projected Commercial Common Costs ²	Total Projected Cost Impacts to ECCR
New Construction	2.7	\$ 102.57	\$ 85.34	\$ 2,154.17	\$ 5,883.32	\$ 6,071.23	\$ 607.12	\$ 6,678.35
Replacement (E2G)	1.2	\$ 46.79	\$ 38.93	\$ 2,500.00	\$ 3,114.92	\$ 3,200.65	\$ 320.06	\$ 3,520.71
Retention (G2G)	3.6	\$ 133.73	\$ 111.26	\$ 1,973.33	\$ 7,026.69	\$ 7,271.68	\$ 727.17	\$ 7,998.85
	7.5	\$ 283.09	\$ 235.53	\$ 6,627.50	\$ 16,024.94	\$ 16,543.56	\$ 1,654.36	\$ 18,197.92
St. Joe								
	Estimated # of Participants	Estimated Advertising Cost	Estimated Labor Cost	Average Cost Per Rebate ¹	Total Projected Commercial Rebate Costs	Subtotal Projected Labor, Advertising & Rebate Costs	Total Projected Commercial Common Costs ²	Total Projected Cost Impacts to ECCR
New Construction	4.56	\$ 764.18	\$ 593.40	\$ 2,154.17	\$ 9,818.53	\$ 11,176.11	\$ 1,117.61	\$ 12,293.72
Replacement (E2G)	2.08	\$ 348.63	\$ 270.71	\$ 2,500.00	\$ 5,198.42	\$ 5,817.75	\$ 581.78	\$ 6,399.53
Retention (G2G)	5.94	\$ 996.33	\$ 773.66	\$ 1,973.33	\$ 11,726.67	\$ 13,496.66	\$ 1,349.67	\$ 14,846.33
	12.58	\$ 2,109.14	\$ 1,637.77	\$ 6,627.50	\$ 26,743.61	\$ 30,490.52	\$ 3,049.05	\$ 33,539.57

¹Rebate dollar cost derived by taking an multiplying participants by the average rebate dollar amount for each of 4 Building Type Programs

²A 10% Common Cost was added to the ECCR Impact Projections to account for unanticipated expense projections, utilities may increase or decrease % for budgeting purposes

Appendix C: Cost Development Methodologies

Final Line Cost: The ACIP Workgroup developed starter fuel line (green) footage associated with each building analyzed in the cost effectiveness model. Appropriate footage were determined by obtaining Florida-based Fuel Line/Plumbing Contractors as well as Commercial Account Representatives from Florida Public Utilities. The piping costs developed were then reviewed by additional contractors who deemed the costs to be within a 5% reasonable and acceptable rate.

Building Type (examples)	Appliances Piped For	Total Interior Piping (Footage)	Pipeline Footage	Cost per Foot	Piping Cost	Connects	Venting	Total Cost
Small Commercial Non-Food Service 1,975 Annual Therms & 549 CFH Florist Drug Store, Lab Bank Buildings Less than 25,000 sq. ft.)	Water Heater	1008 piping @ \$1,800.00 ADDL PIPING @ \$15.00 A.F.T. CONNECT WATER HEATER @ \$95.00 VENTING 8 FT. W/HTR. @ \$55.00	100	\$18.00	\$1,800.00	\$95.00	\$495.00	\$2,390.00
	Desiccant	ADDL VENTING @ \$26.00 A.F.T.	25	\$15.00	\$375.00	\$95.00	\$0.00	\$470.00
Large Commercial Non-Food Service 5,839 Annual Therms & 902 CFH Distribution Ctr Church, Schools, Hospitals Comm. Bldgs. greater than 25,000 sq. ft.)	Water Heater	200 FT. PIPING @ \$3,600.00 ADDL PIPING @ \$15.00 A.F.T. CONNECT WATER HEATER \$95.00	200	\$18.00	\$3,600.00	\$95.00	\$495.00	\$4,190.00
	Desiccant	VENTING @ \$495.00 ADDL VENTING @ \$26.00 A.F.T.	50	\$15.00	\$750.00	\$95.00	\$0.00	\$845.00
Small Commercial Food Service 5,742 Annual Therms & 447 CFH Fast Food Sub Shops Commercial Bldgs. Less than 5,000 sq. ft.)	Water Heater	PIPING 50 FT. @ \$1,250.00	50	\$25.00	\$1,250.00	\$445.00	\$495.00	\$2,190.00
	Range/Oven	ADDL PIPING @ \$15.00 A.F.T. CONNECTS @ \$95.00	10	\$15.00	\$150.00	\$445.00	\$495.00	\$1,090.00
	Fryer	YELLOW CONNECTORS @ \$125.00 BLUE CONNECTORS @ \$225.00	10	\$15.00	\$150.00	\$445.00	\$495.00	\$1,090.00
	Desiccant	VENTING 8 FT. @ \$495.00 ADDL VENTING @ \$26.00 A.F.T.	20	\$15.00	\$300.00	\$95.00	\$0.00	\$395.00
Large Commercial Food Service 20,260 Annual Therms & 2,154 CFH Dine-In Restaurants greater than 5,000 sq. ft.)	Water Heater	PIPING 100 FT. @ \$2,500.00 ADDL PIPING @ \$15.00 A.F.T.	100	\$25.00	\$2,500.00	\$445.00	\$495.00	\$3,440.00
	Range/Oven	CONNECTS @ \$95.00 YELLOW CONNECTORS @ \$125.00 BLUE CONNECTORS @ \$225.00	20	\$15.00	\$300.00	\$445.00	\$495.00	\$1,240.00
	Fryer	YELLOW CONNECTORS @ \$125.00 BLUE CONNECTORS @ \$225.00	20	\$15.00	\$300.00	\$445.00	\$495.00	\$1,240.00
	Desiccant	VENTING 8 FT. @ \$495.00 ADDL VENTING @ \$26.00 A.F.T.	40	\$15.00	\$600.00	\$95.00	\$0.00	\$695.00
Large Commercial Hospitality Amenity 31,062 Annual Therms & 7,096 CFH Hotels, Amusement Parks Ice Arenas Bldgs. greater than 100,000 sq. ft.)	Water Heater	PIPING 300 FT. @ \$6,000.00 ADDL PIPING @ \$18.00 A.F.T. CONNECTS @ \$95.00	300	\$20.00	\$6,000.00	\$445.00	\$495.00	\$6,940.00
	Range/Oven	CONNECTS @ \$95.00 YELLOW CONNECTORS @ \$125.00 BLUE CONNECTORS @ \$225.00	60	\$18.00	\$1,080.00	\$445.00	\$495.00	\$2,020.00
	Fryer	YELLOW CONNECTORS @ \$125.00 BLUE CONNECTORS @ \$225.00	60	\$18.00	\$1,080.00	\$445.00	\$495.00	\$2,020.00
	Pool	YELLOW CONNECTORS @ \$125.00 BLUE CONNECTORS @ \$225.00	150	\$18.00	\$2,700.00	\$445.00	\$0.00	\$3,145.00
	Desiccant	BLUE CONNECTORS @ \$225.00 VENTING 8 FT. @ \$495.00 ADDL VENTING @ \$26.00 A.F.T.	80	\$18.00	\$1,440.00	\$95.00	\$0.00	\$1,535.00
Large Commercial Cleaning Service Assume \$5,225 Annual Therms & 10,488 CFH Laundry Mfg	Water Heater	PIPING 100 FT. @ \$7,600.00 ADDL PIPING @ \$18.00 A.F.T. CONNECTS @ \$95.00 YELLOW CONNECTORS @ \$125.00 BLUE CONNECTORS @ \$225.00	100	\$26.00	\$2,600.00	\$445.00	\$495.00	\$3,440.00
	Desiccant	VENTING 8 FT. @ \$495.00 ADDL VENTING @ \$26.00 A.F.T.	40	\$18.00	\$720.00	\$95.00	\$0.00	\$815.00
	Dryer	ADDL VENTING @ \$26.00 A.F.T.	60	\$18.00	\$1,080.00	\$445.00	\$495.00	\$2,020.00

Appendix C: Cost Development Methodologies

Lot Sizes (Sq. Ft)

Building Types	South Florida (33125,33135,3313 6,33178,32790)	Central Florida (32818,34787, 32806,32818, 32703,32811, 32789)	West Florida (33601,33617,33 607,33563,33606)	JAX (33201,32257,322 44, 32202,32209,322 16)	PAN City (32401,32408,324 05)	Average Lot Size For Each Bldg. Type (Sq Ft.)	Total Average for Each Building Category (Sq Ft.)	Linear Footage (square root of Total Average for each Building Category)	Estimated Annual Building NG Load	Load Correction factor	Main Extension Costs
Small Commercial Non-Food Service											
Walgreens	50,461	82,584	62,725	59,677	43,560	59,801					
Bank	56,220	35,102	20,002	59,624	27,000	39,590	39,298	198	\$ 1,921.25	1975	1.5031912 \$ 2,888.00
Hair Salon	15,985	18,000	32,580	8,868	17,080	18,503					
Large Commercial Non-Food Service											
Church	44,435	154,320	160,613	90,275	51,400	100,209					
School	784,080	199,264	282,268	346,899	474,804	417,463	314,103	560	\$ 5,431.68	5839	0.5316952 \$ 2,888.00
Hospital	435,600	803,682	105,000	108,080	670,824	424,637					
Small Commercial Food Service											
Wendy's	23,235	43,563	33,600	34,412	45,215	36,005					
Burger King	15,600	30,450	46,280	40,032	29,969	32,466	27,795	167	\$ 1,615.78	5742	1.7873695 \$ 2,888.00
Subway	12,630	18,140	3,325	18,000	22,476	14,914					
Large Commercial Food Service											
Outback Steakhouse	49,974	55,584	58,252	28,980	83,983	55,355	55,355	235	\$ 2,280.21	20260	1.7875527 \$ 4,076.00
Large Commercial Hospitality											
Holiday Inn	189,931	160,377	97,054	253,112	420,354	224,166					
Comfort Inn	161,746	138,972	152,024	107,126	108,725	133,719	178,942	423	\$ 4,099.73	31082	0.9942130 \$ 4,076.00
Commercial Cleaning Service											
Dry Cleaning Service	6,093	14,202	13,125	43,995	10,497	17,582	17,582	133	\$ 1,285.10	65928	5.7030499 \$ 7,329.00

Main Size, Scenario	Cost/ft
2" Bore-Plastic	\$ 11.00
2" Bore-Steel	\$ 14.00
2" Soil Hand Dig-Plastic	\$ 2.50
2" Soil Hand Dig-Steel	\$ 4.00
3" Bore-Plastic	\$ 13.00
3" Bore-Steel	\$ 16.00
3" Soil Hand Dig-Plastic	\$ 3.80
3" Soil Hand Dig-Steel	\$ 5.00
6" Bore-Plastic	\$ 16.00
6" Bore-Steel	\$ 19.00
6" Soil Hand Dig-Plastic	\$ 5.00
6" Soil Hand Dig-Steel	\$ 7.00
	\$ 9.69 Average Cost/Foot

Determining Main Extension Cost: A step process was developed to estimate costs for main installations by the AGDF workgroup. First, a baseline linear footage was determined for each Building type, which was based on average lot sizes for the building types utilized by the cost effectiveness model. In total, 65 commercial lot sizes from 5 regions of Florida (SF, CF, WF, NE, NW) were examined to determine an average lot size (square footage) for 6 types of commercial buildings. The square root of the average square footage was then calculated to determine length and width dimensions; which determined the linear footage of main extension for each building type. The linear footage for each building type was then multiplied by the each utility's cost per linear foot of main extension, assuming 2" plastic main. This linear footage was then multiplied by the average cost per foot of main extension, developed by the AGDF Workgroup.

The Second step was to apply a methodology to the baseline square footages so the main costs for each building type would correlate to each building's total annual load. the purpose of this second step was to apply the logic that the buildings with the largest load would have the biggest main extension costs. which is more reflective of reality. Incorporating step 2 into the Main Extension Cost Mthodolgy results in a more conservative approach to estimate main extension costs and is more consistent with the individual

Appendix C: Cost Development Methodologies

Appendix C: Cost Development Methodologies

Florida Public Utilities Co. Incremental Admin and O&M Cost Data

FERC Account	2010 FERC Form 2 Expenses	COMM to Total Adj Ratio from MFR H-2	subtotal	Growth Trend Adj. Ratio from MFR G-2	Adjusted Growth O&M Expense	2010 Commerical Customers	Annual Cost Per Customer	Monthly Cost Per Customer
Operations								
870	\$483,815							0
871	\$11,700							0
874	\$1,468,745							0
875	\$3,585							0
876	\$11,588							0
877	\$58,978							0
878	\$1,591,235							0
879	\$147,235							0
880	\$744,804							0
881	\$22,131							0
total	\$4,512,307					5,080	\$117.96	\$9.63
Maintenance								
885	\$137,125							0
886	\$54,781							0
887	\$508,190							0
888	\$45,815							0
890	\$1,273							0
891	\$55,564							0
892	\$288,427							0
893	\$155,368							0
894	\$35,837							0
total	\$1,301,710					5,090	\$39.88	\$3.32
Total 800 Acts.	\$5,814,023					0		\$13.15
								O&M Incremental
Cust. Act Expenses								
901	\$186,351							0
902	\$727,908							0
903	\$1,409,510							0
904	\$188,043							0
905	\$11,674							0
total	\$2,611,386					5,090	\$50.25	\$4.19
Operation								
907	\$105,742							0
908	\$1,209,750							0
909	\$694,587							0
910	\$74,255							0
total	\$2,064,274							0
Sales Expenses								
911	\$117,073							0
912	\$771,787							0
913	\$125,501							0
916	\$499,278							0
total	\$1,465,369					5,090	\$35.99	\$3.00
A&G Expenses								
920	\$1,887,815							0
921	\$731,827							0
923	\$520,800							0
924	\$38,520							0
925	\$818,140							0
926	\$2,008,607							0
928	\$291,810							0
930.1	\$0							0
930.2	\$181,834							0
931	\$18,543							0
total	\$6,271,496							0
Maintenance								
935	\$722,714							0
Total 900 Accounts	\$12,383,005					0		\$7.19
								Admin Incremental

Cost Explanation

Step 1:
Columns A & B (in BLUE) were populated from each LDCs Annual Filing FERC Form 2.

Step 2:
Columns C & D (in GREEN) illustrate what % of total O&M and Administrative Costs are proportional to the types of Commerical Customers classes who will be participating in the program. (i.e. excludes Residential and Industrial Customers). These ratios obtained from each LDCs most recent MFR Schedule H-2. (See Tab titled Commercial Ratios)

Step 3:
Columns E & F (ORANGE) replicates the process approved in previous AGDF Conservation filings, where Expenses not trended for growth are excluded from determining incremental O&M and Admin Costs.

Step 4:
Columns H, I, and J (YELLOW) divide the Adjusted Commerical Customer O&M and Admin Costs by total commercial customers to determine, annual and monthly incremental O&M and Admin Costs.

Non-fuel O&M Expenses from 2010 FERC Form 2 <http://www.psc.state.fl.us/library/Financials/GU603-DOCS/ANNUAL-REPORTS/GU603-10-AR.PDF>
Ratio adjustment based on FPUC rate filing in Docket 080368-GU-GU - MFR Schedule G-2 Trended Expenses and MFR Schedule H-2 O&M Expenses RES vs. Total

Appendix C: Cost Development Methodologies
FPU

Ratio of Commerical O&M to Total O&M

Schedule H-2 MRF Data

FERC Act.	Total O&M	<u>Commerical Customer Classes</u>				Total Commercial	Ratio Total Comm to Total O&M
		GS/GSTS	LV/LVTS	IS/ITS	GLS/GSLTS		
Customer							
878	\$1,702,587	\$283,594				\$283,594	17%
893	\$135,247	\$22,528				\$22,528	17%
874	\$479,207	\$79,820				\$79,820	17%
892	\$215,085	\$35,826				\$35,826	17%
*All Other Customer	\$10,347,094	\$1,723,479				\$1,723,479	17%
Capacity							
876	\$14,342	\$3,279				\$3,279	23%
890	\$0					\$0	#DIV/0!
874	\$1,136,998	\$259,949				\$259,949	23%
887	\$458,653	\$104,861				\$104,861	23%
*All Other Capacity	\$3,192,931	\$729,991				\$729,991	23%
	\$17,682,144	\$3,243,327					

*Includes commodity

Summary Table

	Totals	Comm Total	Comm Ratio
878	\$1,702,587	\$283,594	16.66%
893	\$135,247	\$22,528	16.66%
874	\$1,616,205	\$339,769	21.02%
892	\$215,085	\$35,826	16.66%
876	\$14,342	\$3,279	22.86%
890	\$0		#DIV/0!
887	\$458,653	\$104,861	22.86%
All Other O&M Exp.	\$13,540,025	\$2,453,470	18.12%

Appendix C: Cost Development Methodologies

Appendix C: Cost Development Methodologies

Average PGA (or equivalent) Price per Therm
 JANUARY 2012 through DECEMBER 2012

VALUE IN DOLLARS PER DEKATHERM (\$/Dth)		* = Mid-course Correction												Average	Average
COMPANY	CAP	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Per Dt	Per Therm
CHESAPEAKE	SouthStar TTS Standard Pool	\$7.00	\$6.91	\$7.78	\$7.42	\$5.80	\$7.69	\$8.64	\$9.24	\$8.72	\$9.03	\$8.98	\$8.02	\$7.88	\$0.79
	Infinite TTS Standard Pool	\$6.17	\$6.02	\$6.21	\$7.18	\$5.10	\$7.39	\$8.46	\$9.60	\$8.55	\$10.94	\$9.31	\$8.85		
CITY		\$8.20	\$4.80	\$4.80	\$4.80	\$4.50	\$4.50	\$4.50	\$4.50	\$4.00	\$4.60	\$5.30	\$5.80	\$4.72	\$0.47
FLORIDA PUBLIC		\$7.91	\$6.00	\$6.00	\$5.00	\$4.00	\$4.00	\$3.00	\$3.00	\$3.00	\$4.00	\$5.00	\$5.00	\$4.33	\$0.43
INDIANTOWN	Infinite Standard Pool	\$4.94	\$4.55	\$4.24	\$4.22	\$4.03	\$4.51	\$4.91	\$5.19	\$4.69	\$4.94	\$5.63	\$5.63	\$4.79	\$0.48
PEOPLES Residential		\$9.84	\$8.06	\$7.56	\$7.56	\$7.81	\$7.81	\$7.81	\$7.81	\$7.81	\$7.81	\$7.81	\$7.81	\$7.91	
	Commercial	\$9.84	\$8.03	\$7.23	\$7.15	\$7.56	\$7.30	\$7.27	\$7.03	\$7.03	\$7.17	\$7.03	\$7.13	\$7.47	\$7.28
SEBRING	PESCO Standard Pool	\$5.27	\$4.67	\$4.62	\$3.62	\$3.59	\$4.28	\$4.61	\$4.87	\$4.30	\$5.04	\$5.17	\$5.74	\$4.65	\$0.46
ST. JOE		\$7.68	\$6.50	\$6.50	\$6.50	\$5.50	\$5.50	\$5.50	\$5.50	\$5.50	\$5.50	\$5.50	\$5.50	\$5.83	\$0.58

Appendix C: Cost Development Methodologies

Building Selection Process: 3 Step Process

1. Identify the Appropriate Rebate Type (from the list below):
 - a. **New Construction**-New Bricks & Mortar, or complete renovation (ex. A hair salon is renovated into a restaurant)
 - b. **Replacement/Retrofit**-Upgrading from an ELECTRIC Appliance to a Natural Gas Appliance.
 - c. **Retention**-Replacing an Existing Natural Gas Appliance with a new Natural Gas Appliance.

2. Identify the Building Use Type (from the list below):
 - a. **Foodservice**
 - b. **Non-Food Service**
 - c. **Hospitality**
 - d. **Cleaning Service/Laundry Mat**

3. Match the Appropriate Building Use Type with the Therm Load Table Below:

Building Use Type	Therm Load	Rebate Category to be used
Foodservice	2,046 to 9,437	Small Commercial
Foodservice	9,438 and over	Large Commercial
Non-Food Service	Less than 3,950	No Rebate
Non-Food Service	Greater than 3,950	Large Commercial Non-Food Service
Hospitality	Under 31,082	Large Commercial Non-Food Service
Hospitality	31,082 and over	Large Commercial Hospitality
Cleaning Service	Under 45,928	Large Commercial Non-Food Service
Cleaning Service	45,928 and Over	Large Commercial Cleaning

Appendix C: Cost Development Methodologies

Appendix C: Cost Development Methodologies

<u>Determining Fractional Gas usage for Workbook Model</u>				
Building Type	Rate Selection Load Criteria Range	Load Utilized By Model	Need for Fractional Gas Usage	Building Load Utilized
Small Commercial Food Service	2,046-9,437	5,868	NO	5,868
Large Commercial Food Service	9,438 and over	5,868	YES	20,260
Large Commercial Hospitality	31,082	12,128	YES	31,082
Large Commercial Cleaning Service	45,928 and over	2,270	YES	65,928
Large Commercial NON-Food Service	3,950 and over	707	YES	5,839

Large Commercial Food Service			
Fraction of Equipment Gas Usage to Total Gas Usage Amount			
	Equipment Gas usage	Building Load	Equip. Fractional Usage Amount
Water Heating - Tank (1)	3,125	20,260	0.154266651
Water Heating - Tankless	2,334	20,260	0.115211803
Cooking - Deep Fryer	1,376	20,260	0.067935641
Cooking - Oven/Range	1,367	20,260	0.067455244

Large Commercial Hospitality			
Fraction of Equipment Gas Usage to Total Gas Usage Amount			
	Equipment Gas usage	Building Load	Equip. Fractional Usage Amount
Water Heating - Tank (1)	4,681	31,082	0.150586059
Water Heating - Tankless	3,496	31,082	0.112463006
Cooking - Deep Fryer	1,376	31,082	0.044282096
Cooking - Oven/Range	1,367	31,082	0.043968961
Clothes Drying (1)	642	31,082	0.020655042

Large Commercial Cleaning Service			
Fraction of Equipment Gas Usage to Total Gas Usage Amount			
	Equipment Gas usage	Building Load	Equip. Fractional Usage Amount
Water Heating - Tank (1)	2,270	65,928	0.034428181
Water Heating - Tankless	1,695	65,928	0.025712186
Clothes Drying (1)	964	65,928	0.014622012

Large Commercial NON-Food Service			
Fraction of Equipment Gas Usage to Total Gas Usage Amount			
	Equipment Gas usage	Building Load	Equip. Fractional Usage Amount
Water Heating - Tank (1)	707	5,839	0.121079413
Water Heating - Tankless	528	5,839	0.090426397

Determining Annual Commercial Energy Conservation Program Costs

A. Establishing Rebate Participation Rates Based On Historical Residential Data (Based on 47,325 Residential Customers)

FPU New Construction Rebates

	2010 % of Total Customers	2011 % of Total Customers	2 Year Average Participation Rates
Tankless	22 0.046487%	80 0.169044%	0.107765%
WH	250 0.528262%	182 0.384575%	0.456418%
Range	225 0.475436%	197 0.416270%	0.445859%
Dryer	212 0.447966%	202 0.426836%	0.437401%
Furnace	213 0.450079%	129 0.272583%	0.361331%
Total	922 1.948230%	790 1.669308%	1.808769%

FPU Replacement Rebates (E2G)

	2010 % of Total Customers	2011 % of Total Customers	2 Year Average Participation Rates
Tankless	114 0.240887%	244 0.515584%	0.378236%
WH	17 0.035922%	38 0.080296%	0.058109%
Range	39 0.082409%	153 0.323296%	0.202853%
Dryer	29 0.061278%	127 0.268357%	0.164818%
Furnace	4 0.008452%	16 0.033809%	0.021130%
Total	203 0.428949%	578 1.221342%	0.825145%

FPU Retention Rebates (G2G)

	2010 % of Total Customers	2011 % of Total Customers	2 Year Average Participation Rates
Tankless	91 0.192287%	344 0.726889%	0.459588%
WH	487 1.029054%	497 1.050185%	1.039620%
Range	140 0.295827%	249 0.526149%	0.410988%
Dryer	74 0.156366%	173 0.365557%	0.260961%
Furnace	61 0.128896%	116 0.245114%	0.187005%
Total	853 1.802430%	1379 2.913893%	2.358162%

B. Applying Participation Rates to Commercial Customer Totals (based on 5,090 Commercial Customers)

Estimated Annual Commercial Customer Participation Rates

Total Commercial Customers	New Construction Rate	Est. Participants
5,090	1.808769%	92
Total Commercial Customers	Replacement (E2G) Rate	Est. Participants
5,090	0.825145%	42
Total Commercial Customers	Retention (G2G) Rate	Est. Participants
5,090	2.358162%	120

2010 Data From Schedule CT-2 True Up, 2011 Data from Schedule C3 Projections

2010 Annual ECCR Advertising Program Type	2010 Advertising Budget	2010 Rebates Per Program Type	Ratio of Advertising Dollars Spent Per Rebates
New Construction	\$ 22,140.00	922	\$ 67.58
Replacement (E2G)	\$ 84,416.00	203	\$ 613.73
Retention (G2G)	\$ 82,002.00	853	\$ 143.23
30% of Common Advertising*	\$ 120,512.00		
Total	\$ 309,070.00	1978	\$ 156.25

\$ 274.85

2011 Annual ECCR Advertising Program Type	2011 Advertising Budget	2011 Rebates Per Program Type	Ratio of Advertising Dollars Spent Per Rebates
New Construction	\$ 23,517.00	790	\$ 187.29
Replacement (E2G)	\$ 46,830.00	578	\$ 296.32
Retention (G2G)	\$ 48,213.00	1379	\$ 125.20
30 % of Common Advertising*	\$ 373,321.00		
Total	\$ 491,881.00	2747	\$ 179.06

2 Year Avg

\$ 167.66

* % of Common Advertising is based on each LDC's typical allocation of total Common Advertising expenses to the 3 Program Types referenced within the Cost Effectiveness Model

	Estimated Participants	Advertising \$\$ to Rebate Ratio	Project Advertising Costs
New Construction	92	\$ 167.66	\$ 15,424.49
Replacement (E2G)	42	\$ 167.66	\$ 7,041.61
Retention (G2G)	120	\$ 167.66	\$ 20,118.90
			\$ 42,585.00

Determining Energy Conservation Program Cost Rates

Energy Conservation Program Costs were calculated for each LDC. An allocation methodology was applied using conservation expense forcast data approved in Docket 10004-GU. The methodology used took into account variables such as projected program participation rates, advertising expenses, and labor expenses by appliance type; for each of three program types (New Construction, Retrofit, and Retention).

The AGDF Workgroup developed consistent program participation rates, advertising rates, and labor rates associated with a Commercial Conservation program. These consistent rates were derived by utilizing FPUC's 2 year historical residential data and were then applied to each LDC's commercial customer base.

The approach to use consistent rates for participation, advertising, and labor for all of the AGDF LDCs was chosen for several reasons. First, each LDC will be offering the same commercial programs and can expect similar participation rates. Secondly, there is a strong likelihood that the LDCs will participate in a collective advertising outreach campaign to promote the commercial programs. Additionally, the administrative labor associated with processing rebates is consistent among each LDC.

A. Program participants were estimated by establishing a baseline participation rate by program type, as a percentage of total commercial customers. The baseline participation rates were obtained from each FPUC's historical participation rates for New Construction, Retrofit, and Retention.

B. Baseline participation rates were then applied to each LDC's Commercial Customer totals to project estimated rates for the Commercial Conservation Program.

C. Advertising and Common expenses were determined by establishing a baseline advertising cost ratio of total advertising dollars to total rebates processed, based on FPUC's historical residential advertising cost per rebate. Data from FPUC's 2010 Schedule CT-2 and 2011 Schedule C-3 were used in this process.

D. This Ratio was then applied to the estimated number of commercial program participants for each LDC to determine the advertising cost portion of the total Energy Conservation Program Costs. This advertising baseline rate was then adjusted to reflect each LDC's total historical advertising expenditures relative to total customers (based on Docket NO. 110004-GU Schedule CT-2).

E. Labor expenses associated with administering the commercial conservation program were established by developing a baseline ratio of labor costs to rebates processed, based on historical ECCR residential labor expenses per rebate. Data from FPUC's 2010 Schedule CT-2 and 2011 Schedule C-3 were used in this process.

F. This Ratio was then applied to the estimated number of commercial program participants to determine the labor costs portion of the total Energy Conservation Program Costs.

G. Once all labor, Advertising, and Common Costs estimated, a total Energy Conservation Program Cost was developed by dividing these costs across the entire LDC Rate base.

Appendix C: Cost Development Methodologies

E. Establishing a Baseline Labor Cost to Rebate Ratio By Program Type (PPU Residential Data 2010 & 2011)

2010 Data From Schedule CT-2 True Up, 2011 Data from Schedule C3 Projections

2010 ECCR Labor Expenses	2010	2010 Rebates	Ratio of Labor Cost Per Rebate
New Construction Labor Exp.	\$ 41,185.00	922	\$ 44.67
Replacement (E2G) Labor Exp.	\$ 72,341.00	203	\$ 356.36
Retention (G2G) Exp.	\$ 64,190.00	853	\$ 75.25
30% of Common Labor Costs	\$ 78,849.00		
Total	\$ 256,565.00	1,978	\$ 129.71

2011 Labor Expenses	2011	2011 Rebates	Ratio of Labor Cost Per Rebate
New Construction Labor Exp.	\$ 39,475.00	790	\$ 49.97
Replacement (E2G) Labor Exp.	\$ 45,897.00	578	\$ 79.41
Retention (G2G) Exp.	\$ 38,265.00	1,379	\$ 27.75
30% of Common Labor Costs	\$ 235,325.00		
Total	\$ 358,962.00	2,747	\$ 130.67
		2 Yr avg:	\$ 130.19

2 Year Avg Adv. \$/Rebate Ratio

\$ 130.19

	Estimated Participants	Labor \$\$ to Rebate Ratio	Project Labor Costs
New Construction	92	\$ 130.19	\$ 11,977.64
Replacement (E2G)	42	\$ 130.19	\$ 5,468.05
Retention (G2G)	120	\$ 130.19	\$ 15,623.01
			\$ 33,068.70

	Total No. of Potential Commercial Participants	Projected Advertising & Common Expenses	Projected Labor Expenses	Total Comm. EC Program Costs	Total Number of Customers (Res/Com)	Total Annual Commercial EC Program Costs
New Construction	92	\$ 15,424.49	\$ 11,977.64	\$ 27,402.13	52415	\$ 0.52
Replacement (E2G)	42	\$ 7,041.61	\$ 5,468.05	\$ 12,509.67		\$ 0.24
Retention (G2G)	120	\$ 20,118.90	\$ 15,623.01	\$ 35,741.91		\$ 0.68

Appendix C: Cost Development Methodologies

Advertising Adjustment Factors

	Residential Customers (FERC Form 2 p. 26)	2011 ECCR Advt. Budget (Dock. #11004-GU)	Advertsing Budget to Cust Ratio	Basline Advt. to Budget Ratio	Adjustment Factor
FPU (Baseline)	47,325	\$ 491,881.00	\$ 10.39	\$ 10.39	0
FCG/AGL	96,472	\$ 809,049.00	\$ 8.39	\$ 10.39	0.807
TECO	304,701	\$ 1,039,486.00	\$ 3.41	\$ 10.39	0.328
CFG	13,936	\$ 140,403.00	\$ 10.07	\$ 10.39	0.969
Indiantown*	700	\$ -	\$ -	\$ 10.39	0.000
Sebring	4,462	\$ 10,398.00	\$ 2.33	\$ 10.39	0.224
St. Joe*	2,688	\$ -	\$ -	\$ 10.39	0.000

Labor Adjustment Factors

	Residential Customers (FERC Form 2 p. 26)	2011 ECCR Labor Budget (Dock. #11004-GU)	Labor Budget to Cust Ratio	Basline Labor to Budget Ratio	Adjustment Factor
FPU (Baseline)	47,325	\$ 256,565.00	\$ 5.42	\$ 5.42	0
FCG/AGL	96,472	\$ 535,735.00	\$ 5.55	\$ 5.42	1.024
TECO	304,701	\$ 328,209.00	\$ 1.08	\$ 5.42	0.199
CFG	13,936	\$ 233,294.00	\$ 16.74	\$ 5.42	3.088
Indiantown*	700	\$ -	\$ 5.42	\$ 5.42	1.000
Sebring	4,462	\$ 5,811.00	\$ 1.30	\$ 5.42	0.240
St. Joe*		\$ -	\$ 5.42	\$ 5.42	1.000

*Small Sample size, will use FPU Base Line Ratios

Appendix C: Cost Development Methodologies

Utility	Program	EC Program Cost
FPU	New Construction	\$ 0.52
	Replacement (E2G)	\$ 0.24
	Retention (G2G)	\$ 0.68
FCG/AGL	New Construction	\$ 0.32
	Replacement (E2G)	\$ 0.14
	Retention (G2G)	\$ 0.41
TECO	New Construction	\$ 0.09
	Replacement (E2G)	\$ 0.04
	Retention (G2G)	\$ 0.12
CFG	New Construction	\$ 0.48
	Replacement (E2G)	\$ 0.22
	Retention (G2G)	\$ 0.62
Indiantown*	New Construction	\$ 0.21
	Replacement (E2G)	\$ 0.09
	Retention (G2G)	\$ 0.27
Sebring	New Construction	\$ 0.04
	Replacement (E2G)	\$ 0.02
	Retention (G2G)	\$ 0.05
St. Joe*	New Construction	\$ 0.42
	Replacement (E2G)	\$ 0.19
	Retention (G2G)	\$ 0.55

*Adjustment ratio factor of "1"

FCG/AGL**LDC Energy Conservation Program Costs****Commercial EC Participants**

	# of Commercial Customers	Participation Rate	Estimated # of Participants
New Construction	6,700	1.80870%	121
Replacement (E2G)	6,700	0.82515%	55
Retention (G2G)	6,700	2.35816%	158

Commercial EC Advertising Costs

	Estimated # of Participants	Baseline Advertising Rate	Estimated Advertising Cost	Adjusted Advertising Factor	Advertising Cost Total
New Construction	121	\$167.66	\$20,317.53	0.807	\$16,396.24
Replacement (E2G)	55	\$167.66	\$9,269.04	0.807	\$7,480.11
Retention (G2G)	158	\$167.66	\$26,489.75	0.807	\$21,377.23

Determining Commercial Labor Costs

	Estimated # of Participants	Baseline Labor Rate	Estimated Labor Cost	Adjusted Labor Factor	Labor Cost Total
New Construction	121	\$ 130.19	\$15,776.80	1.024	\$16,155.44
Replacement (E2G)	55	\$ 130.19	\$7,197.52	1.024	\$7,370.26
Retention (G2G)	158	\$ 130.19	\$20,569.61	1.024	\$21,063.28

	Estimated Advertising Cost	Estimated Labor Cost	# of Com/Res Customers	Annual EC Program Cost	Monthly EC Program Cost
New Construction	\$16,396.24	\$16,155.44	103,172	\$ 0.32	\$ 0.03
Replacement (E2G)	\$7,480.11	\$7,370.26	103,172	\$ 0.14	\$ 0.01
Retention (G2G)	\$21,377.23	\$21,063.28	103,172	\$ 0.41	\$ 0.03

TECO Peoples Gas

LDC Energy Conservation Program CostsCommercial EC Participants

	# of Commercial Customers	Participation Rate	Estimated # of Participants
New Construction	20,815	1.80870%	376
Replacement (E2G)	20,815	0.82515%	172
Retention (G2G)	20,815	2.35816%	491

Commercial EC Advertising Costs

	Estimated # of Participants	Baseline Advertising Rate	Estimated Advertising Cost	Adjusted Advertising Factor	Advertising Cost Total
New Construction	376	\$167.66	\$63,120.79	0.328	\$20,703.62
Replacement (E2G)	172	\$167.66	\$28,796.27	0.328	\$9,445.18
Retention (G2G)	491	\$167.66	\$82,296.14	0.328	\$26,993.13

Determining Commercial Labor Costs

	Estimated # of Participants	Baseline Labor Rate	Estimated Labor Cost	Adjusted Labor Factor	Labor Cost Total
New Construction	376	\$ 130.19	\$49,014.05	0.199	\$9,753.80
Replacement (E2G)	172	\$ 130.19	\$22,360.65	0.199	\$4,449.77
Retention (G2G)	491	\$ 130.19	\$63,903.94	0.199	\$12,716.88

	Estimated Advertising Cost	Estimated Labor Cost	# of Com/Res Customers	Annual EC Program Cost	Monthly EC Program Cost
New Construction	\$20,703.62	\$9,753.80	325,516	\$ 0.09	\$ 0.01
Replacement (E2G)	\$9,445.18	\$4,449.77	325,516	\$ 0.04	\$ 0.00
Retention (G2G)	\$26,993.13	\$12,716.88	325,516	\$ 0.12	\$ 0.01

CFG/CPK

LDC Energy Conservation Program Costs

Commercial EC Participants

	# of Commercial Customers	Participation Rate	Estimated # of Participants
New Construction	683	1.80870%	12
Replacement (E2G)	683	0.82515%	6
Retention (G2G)	683	2.35816%	16

Commercial EC Advertising Costs

	Estimated # of Participants	Baseline Advertising Rate	Estimated Advertising Cost	Adjusted Advertising Factor	Advertising Cost Total
New Construction	12	\$167.66	\$2,071.17	0.969	\$2,006.97
Replacement (E2G)	6	\$167.66	\$944.89	0.969	\$915.60
Retention (G2G)	16	\$167.66	\$2,700.37	0.969	\$2,616.66

Determining Commercial Labor Costs

	Estimated # of Participants	Baseline Labor Rate	Estimated Labor Cost	Adjusted Labor Factor	Labor Cost Total
New Construction	12	\$ 130.19	\$1,608.29	3.088	\$4,966.41
Replacement (E2G)	6	\$ 130.19	\$733.72	3.088	\$2,265.72
Retention (G2G)	16	\$ 130.19	\$2,096.87	3.088	\$6,475.14

	Estimated Advertising Cost	Estimated Labor Cost	# of Com/Res Customers	Annual EC Program Cost	Monthly EC Program Cost
New Construction	\$2,006.97	\$4,966.41	14,619	\$ 0.48	\$ 0.04
Replacement (E2G)	\$915.60	\$2,265.72	14,619	\$ 0.22	\$ 0.02
Retention (G2G)	\$2,616.66	\$6,475.14	14,619	\$ 0.62	\$ 0.05

Indiantown (FPU)

LDC Energy Conservation Program Costs

Commercial EC Participants

	# of Commercial Customers	Participation Rate	Estimated # of Participants
New Construction	28	1.80870%	1
Replacement (E2G)	28	0.82515%	0
Retention (G2G)	28	2.35816%	1

Commercial EC Advertising Costs

	Estimated # of Participants	Baseline Advertising Rate	Estimated Advertising Cost	Adjusted Advertising Factor	Advertising Cost Total
New Construction	0.5	\$167.66	\$84.91	1.000	\$84.91
Replacement (E2G)	0.2	\$167.66	\$38.74	1.000	\$38.74
Retention (G2G)	0.7	\$167.66	\$110.70	1.000	\$110.70

Determining Commercial Labor Costs

	Estimated # of Participants	Baseline Labor Rate	Estimated Labor Cost	Adjusted Labor Factor	Labor Cost Total
New Construction	0.5	\$ 130.19	\$65.93	1.000	\$65.93
Replacement (E2G)	0.2	\$ 130.19	\$30.08	1.000	\$30.08
Retention (G2G)	0.7	\$ 130.19	\$85.96	1.000	\$85.96

	Estimated Advertising Cost	Estimated Labor Cost	# of Com/Res Customers	Annual EC Program Cost	Monthly EC Program Cost
New Construction	\$84.91	\$65.93	728	\$ 0.21	\$ 0.02
Replacement (E2G)	\$38.74	\$30.08	728	\$ 0.09	\$ 0.01
Retention (G2G)	\$110.70	\$85.96	728	\$ 0.27	\$ 0.02

Sebring

LDC Energy Conservation Program Costs

Commercial EC Participants

	# of Commercial Customers	Participation Rate	Estimated # of Participants
New Construction	151	1.80870%	3
Replacement (E2G)	151	0.82515%	1
Retention (G2G)	151	2.35816%	4

Commercial EC Advertising Costs

	Estimated # of Participants	Baseline Advertising Rate	Estimated Advertising Cost	Adjusted Advertising Factor	Advertising Cost Total
New Construction	2.7	\$167.66	\$457.90	0.224	\$102.57
Replacement (E2G)	1.2	\$167.66	\$208.90	0.224	\$46.79
Retention (G2G)	3.6	\$167.66	\$597.01	0.224	\$133.73

Determining Commercial Labor Costs

	Estimated # of Participants	Baseline Labor Rate	Estimated Labor Cost	Adjusted Labor Factor	Labor Cost Total
New Construction	2.7	\$ 130.19	\$355.57	0.240	\$85.34
Replacement (E2G)	1.2	\$ 130.19	\$162.21	0.240	\$38.93
Retention (G2G)	3.6	\$ 130.19	\$463.58	0.240	\$111.26

	Estimated Advertising Cost	Estimated Labor Cost	# of Com/Res Customers	Annual EC Program Cost	Monthly EC Program Cost
New Construction	\$102.57	\$85.34	4,613	\$ 0.04	\$ 0.00
Replacement (E2G)	\$46.79	\$38.93	4,613	\$ 0.02	\$ 0.00
Retention (G2G)	\$133.73	\$111.26	4,613	\$ 0.05	\$ 0.00

St. Joe

LDC Energy Conservation Program Costs

Commercial EC Participants

	# of Commercial Customers	Participation Rate	Estimated # of Participants
New Construction	228	1.80870%	4
Replacement (E2G)	228	0.82515%	2
Retention (G2G)	228	2.35816%	5

Commercial EC Advertising Costs

	Estimated # of Participants	Baseline Advertising Rate	Estimated Advertising Cost	Adjusted Advertising Factor	Advertising Cost Total
New Construction	4.1	\$167.66	\$691.40	1.000	\$691.40
Replacement (E2G)	1.9	\$167.66	\$315.42	1.000	\$315.42
Retention (G2G)	5.4	\$167.66	\$901.44	1.000	\$901.44

Determining Commercial Labor Costs

	Estimated # of Participants	Baseline Labor Rate	Estimated Labor Cost	Adjusted Labor Factor	Labor Cost Total
New Construction	4.1	\$ 130.19	\$536.88	1.000	\$536.88
Replacement (E2G)	1.9	\$ 130.19	\$244.93	1.000	\$244.93
Retention (G2G)	5.4	\$ 130.19	\$699.98	1.000	\$699.98

	Estimated Advertising Cost	Estimated Labor Cost	# of Com/Res Customers	Annual EC Program Cost	Monthly EC Program Cost
New Construction	\$691.40	\$536.88	2,916	\$ 0.42	\$ 0.04
Replacement (E2G)	\$315.42	\$244.93	2,916	\$ 0.19	\$ 0.02
Retention (G2G)	\$901.44	\$699.98	2,916	\$ 0.55	\$ 0.05

APPENDIX D

INDIVIDUAL LDC G-RIM & PARTICIPANTS TEST COST-EFFECTIVENESS RESULTS TESTS

(Summaries/ Results on DVD)

AGDF Commercial Program Filing

Cost Effectiveness Results Summary Page

Building Type: Small Commercial FOOD SERVICE

Rebate Type: New Construction

Utility Results: CENTRAL FLORIDA GAS

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$1000.00	1.231	1.347
TANKLESS W/H	\$2000.00	1.495	1.342
RANGE/OVEN	\$1000.00	1.574	1.305
FRYER	\$4000.00	1.004	1.174

Rebate Type: RETROFIT

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$1,500.00	1.215	1.378
TANKLESS W/H	\$2,500.00	1.505	1.323
RANGE/OVEN	\$1,500.00	1.574	1.305
FRYER	\$4,000.00	1.004	1.174

Rebate Type: RETENTION

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$1000.00	1.218	1.454
TANKLESS W/H	\$2000.00	1.500	1.424
RANGE/OVEN	\$1000.00	1.566	1.409
FRYER	\$4000.00	1.009	1.228

AGDF Commercial Program Filing

Cost Effectiveness Results Summary Page

Building Type: LARGE Commercial NON-FOOD SERVICE

Rebate Type: New Construction

Utility Results: CENTRAL FLORIDA GAS

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$1,500.00	1.374	1.220
TANKLESS W/H	\$2,000.00	1.549	1.102

Rebate Type: RETROFIT

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$2,000.00	1.403	1.167
TANKLESS W/H	\$2,500.00	1.585	1.045

Rebate Type: RETENTION

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$1,500.00	1.386	1.279
TANKLESS W/H	\$2,000.00	1.566	1.150

AGDF Commercial Program Filing

Cost Effectiveness Results Summary Page

Building Type: LARGE Commercial FOOD SERVICE

Rebate Type: New Construction

Utility Results: CENTRAL FLORIDA GAS

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$1,500.00	1.314	1.290
TANKLESS W/H	\$2,000.00	1.628	1.255
RANGE/OVEN	\$1,500.00	1.681	1.234
FRYER	\$4,000.00	1.085	1.107

Rebate Type: RETROFIT

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$2,000.00	1.323	1.275
TANKLESS W/H	\$2,500.00	1.639	1.236
RANGE/OVEN	\$1,500.00	1.681	1.234
FRYER	\$4,000.00	1.085	1.107

Rebate Type: RETENTION

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$1,500.00	1.318	1.316
TANKLESS W/H	\$2,000.00	1.634	1.279
RANGE/OVEN	\$1,500.00	1.691	1.257
FRYER	\$4,000.00	1.091	1.125

AGDF Commercial Program Filing

Cost Effectiveness Results Summary Page

Building Type: LARGE Commercial HOSPITALITY

Rebate Type: New Construction

Utility Results: CENTRAL FLORIDA GAS

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$1,500.00	1.222	1.294
TANKLESS W/H	\$2,000.00	1.564	1.270
RANGE/OVEN	\$1,500.00	1.671	1.223
FRYER	\$4,000.00	1.079	1.097
Dryer	\$1,500.00	1.012	1.291

Rebate Type: RETROFIT

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$2,000.00	1.228	1.284
TANKLESS W/H	\$2,500.00	1.571	1.257
RANGE/OVEN	\$1,500.00	1.671	1.223
FRYER	\$4,000.00	1.079	1.097
Dryer	\$1,500.00	1.176	1.131

Rebate Type: RETENTION

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$1,500.00	1.224	1.316
TANKLESS W/H	\$2,000.00	1.568	1.291
RANGE/OVEN	\$1,500.00	1.681	1.242
FRYER	\$4,000.00	1.085	1.112
Dryer	\$1,500.00	1.176	1.147

AGDF Commercial Program Filing

Cost Effectiveness Results Summary Page

Building Type: LARGE Commercial CLEANING SERVICE

Rebate Type: New Construction

Utility Results: CENTRAL FLORIDA GAS

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$1,500.00	1.329	1.214
TANKLESS W/H	\$2,000.00	1.754	1.185
Dryer	\$1,500.00	1.076	1.144

Rebate Type: RETROFIT

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$2,000.00	1.340	1.195
TANKLESS W/H	\$2,500.00	1.761	1.146
Dryer	\$1,500.00	1.074	1.144

Rebate Type: RETENTION

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$1,500.00	1.328	1.215
TANKLESS W/H	\$2,000.00	1.754	1.185
Dryer	\$1,500.00	1.074	1.158

AGDF Commercial Program Filing

Cost Effectiveness Results Summary Page

Building Type: Small Commercial FOOD SERVICE

Rebate Type: New Construction

Utility Results: INDIANTOWN GAS

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$1000.00	2.436	1.069
TANKLESS W/H	\$1500.00	2.976	1.029
RANGE/OVEN	\$1000.00	2.960	1.019
FRYER	\$1000.00	1.748	1.025

Rebate Type: RETROFIT

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$1,000.00	2.436	1.069
TANKLESS W/H	\$1,500.00	2.976	1.030
RANGE/OVEN	\$1,000.00	2.960	1.019
FRYER	\$1,000.00	1.748	1.025

Rebate Type: RETENTION

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$1000.00	2.438	1.132
TANKLESS W/H	\$1500.00	2.979	1.097
RANGE/OVEN	\$1000.00	2.965	1.085
FRYER	\$1000.00	1.751	1.091

AGDF Commercial Program Filing

Cost Effectiveness Results Summary Page

Building Type: LARGE Commercial NON-FOOD SERVICE

Rebate Type: New Construction

Utility Results: INDIANTOWN GAS

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$400.00	2.275	1.040
TANKLESS W/H	\$450.00	2.349	1.005

Rebate Type: RETROFIT

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$400.00	2.257	1.039
TANKLESS W/H	\$450.00	2.372	1.007

Rebate Type: RETENTION

Utility Results: INDIANTOWN GAS

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$400.00	2.263	1.098
TANKLESS W/H	\$450.00	1.846	1.583

AGDF Commercial Program Filing

Cost Effectiveness Results Summary Page

Building Type: LARGE Commercial FOOD SERVICE

Rebate Type: New Construction

Utility Results: INDIANTOWN GAS

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$1,000.00	2.449	1.055
TANKLESS W/H	\$1,500.00	2.740	1.008
RANGE/OVEN	\$1,000.00	2.983	1.005
FRYER	\$1,000.00	1.796	1.011

Rebate Type: RETROFIT

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$1,000.00	2.449	1.055
TANKLESS W/H	\$1,500.00	2.989	1.016
RANGE/OVEN	\$1,000.00	2.983	1.005
FRYER	\$1,000.00	1.796	1.011

Rebate Type: RETENTION

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$1,000.00	2.451	1.097
TANKLESS W/H	\$1,500.00	2.993	1.055
RANGE/OVEN	\$1,000.00	2.989	1.044
FRYER	\$1,000.00	1.799	1.050

AGDF Commercial Program Filing

Cost Effectiveness Results Summary Page

Building Type: LARGE Commercial HOSPITALITY

Rebate Type: New Construction

Utility Results: INDIANTOWN GAS

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$1,000.00	2.268	1.070
TANKLESS W/H	\$1,500.00	2.856	1.042
RANGE/OVEN	\$1,000.00	2.926	1.006
FRYER	\$1,000.00	1.760	1.012
Dryer	\$500.00	1.878	1.004

Rebate Type: RETROFIT

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$1,000.00	2.268	1.070
TANKLESS W/H	\$1,500.00	2.856	1.042
RANGE/OVEN	\$1,000.00	2.926	1.006
FRYER	\$1,000.00	1.760	1.012
Dryer	\$500.00	1.878	1.004

Rebate Type: RETENTION

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$1,000.00	2.269	1.098
TANKLESS W/H	\$1,500.00	2.858	1.070
RANGE/OVEN	\$1,000.00	2.931	1.032
FRYER	\$1,000.00	1.763	1.038
Dryer	\$500.00	1.878	1.029

AGDF Commercial Program Filing

Cost Effectiveness Results Summary Page

Building Type: LARGE Commercial CLEANING SERVICE

Rebate Type: New Construction

Utility Results: INDIANTOWN GAS

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$1,000.00	2.363	1.039
TANKLESS W/H	\$1,250.00	3.036	1.003
Dryer	\$500.00	1.766	1.032

Rebate Type: RETROFIT

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$1,000.00	2.361	1.039
TANKLESS W/H	\$1,250.00	3.003	1.003
Dryer	\$500.00	1.763	1.032

Rebate Type: RETENTION

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$1,000.00	2.364	1.055
TANKLESS W/H	\$1,250.00	3.037	1.018
Dryer	\$500.00	1.763	1.047

AGDF Commercial Program Filing

Cost Effectiveness Results Summary Page

Building Type: Small Commercial FOOD SERVICE

Rebate Type: New Construction

Utility Results: FLORIDA CITY GAS

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$1000.00	1.651	1.623
TANKLESS W/H	\$2000.00	2.053	1.518
RANGE/OVEN	\$1000.00	1.302	1.350
FRYER	\$3000.00	2.077	1.549

Rebate Type: RETROFIT

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$1,500.00	1.661	1.594
TANKLESS W/H	\$2,500.00	2.067	1.483
RANGE/OVEN	\$1,500.00	2.098	1.488
FRYER	\$3,000.00	1.302	1.350

Rebate Type: RETENTION

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$1000.00	1.656	1.733
TANKLESS W/H	\$2000.00	2.061	1.629
RANGE/OVEN	\$1000.00	2.091	1.648
FRYER	\$3000.00	1.311	1.425

AGDF Commercial Program Filing

Cost Effectiveness Results Summary Page

Building Type: LARGE Commercial NON-FOOD SERVICE

Rebate Type: New Construction

Utility Results: FLORIDA CITY GAS

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$1,500.00	1.761	1.342
TANKLESS W/H	\$2,000.00	1.946	1.154

Rebate Type: RETROFIT

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$2,000.00	1.794	1.254
TANKLESS W/H	\$2,500.00	1.991	1.070

Rebate Type: RETENTION

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$1,500.00	1.608	1.613
TANKLESS W/H	\$2,000.00	1.972	1.209

AGDF Commercial Program Filing

Cost Effectiveness Results Summary Page

Building Type: LARGE Commercial FOOD SERVICE

Rebate Type: New Construction

Utility Results: FLORIDA CITY GAS

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$1,500.00	1.712	1.571
TANKLESS W/H	\$2,000.00	2.109	1.503
RANGE/OVEN	\$1,500.00	2.153	1.463
FRYER	\$3000.00	1.355	1.324

Rebate Type: RETROFIT

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$2,000.00	1.723	1.541
TANKLESS W/H	\$2,500.00	2.124	1.467
RANGE/OVEN	\$1,500.00	1.355	1.324
FRYER	\$3,000.00	2.153	1.463

Rebate Type: RETENTION

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$1,500.00	1.718	1.618
TANKLESS W/H	\$2,000.00	2.118	1.547
RANGE/OVEN	\$1,500.00	2.167	1.504
FRYER	\$3000.00	1.364	1.358

AGDF Commercial Program Filing

Cost Effectiveness Results Summary Page

Building Type: LARGE Commercial HOSPITALITY

Rebate Type: New Construction

Utility Results: FLORIDA CITY GAS

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$1,500.00	1.588	1.600
TANKLESS W/H	\$2,000.00	2.020	1.551
RANGE/OVEN	\$1,500.00	2.218	1.461
FRYER	\$3000.00	1.339	1.321
Dryer	\$1,500.00	1.480	1.294

Rebate Type: RETROFIT

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$2,000.00	1.595	1.580
TANKLESS W/H	\$2,500.00	2.030	1.527
RANGE/OVEN	\$1,500.00	1.339	1.321
FRYER	\$3,000.00	2.128	1.461
Dryer	\$1,500.00	1.480	1.295

Rebate Type: RETENTION

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$1,500.00	1.592	1.633
TANKLESS W/H	\$2,000.00	2.026	1.583
RANGE/OVEN	\$1,500.00	2.142	1.488
FRYER	\$3000.00	1.348	1.343
Dryer	\$1,500.00	1.480	1.315

AGDF Commercial Program Filing

Cost Effectiveness Results Summary Page

Building Type: LARGE Commercial CLEANING SERVICE

Rebate Type: New Construction

Utility Results: FLORIDA CITY GAS

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$1,500.00	1.622	1.531
TANKLESS W/H	\$2,000.00	2.171	1.442
Dryer	\$1,500.00	1.330	1.393

Rebate Type: RETROFIT

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$2,000.00	1.676	1.492
TANKLESS W/H	\$2,500.00	2.188	1.397
Dryer	\$1,500.00	1.329	1.393

Rebate Type: RETENTION

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$1,500.00	1.668	1.558
TANKLESS W/H	\$2,000.00	2.181	1.466
Dryer	\$1,500.00	1.329	1.415

AGDF Commercial Program Filing

Cost Effectiveness Results Summary Page

Building Type: Small Commercial FOOD SERVICE

Rebate Type: New Construction

Utility Results: SEBRING GAS

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$1000.00	1.402	1.964
TANKLESS W/H	\$2000.00	1.744	1.841
RANGE/OVEN	\$1000.00	1.775	1.867
FRYER	\$3000.00	1.110	1.626

Rebate Type: RETROFIT

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$1,500.00	1.411	1.928
TANKLESS W/H	\$2,500.00	1.756	1.798
RANGE/OVEN	\$1,500.00	1.794	1.793
FRYER	\$3,000.00	1.110	1.626

Rebate Type: RETENTION

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$1000.00	1.404	2.089
TANKLESS W/H	\$2000.00	1.748	1.967
RANGE/OVEN	\$1000.00	1.792	1.985
FRYER	\$3000.00	1.120	1.714

AGDF Commercial Program Filing

Cost Effectiveness Results Summary Page

Building Type: LARGE Commercial NON-FOOD SERVICE

Rebate Type: New Construction

Utility Results: SEBRING GAS

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$1,500.00	1.548	1.617
TANKLESS W/H	\$2,000.00	1.773	1.390

Rebate Type: RETROFIT

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$2,000.00	1.581	1.512
TANKLESS W/H	\$2,500.00	1.773	1.287

Rebate Type: RETENTION

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$1,500.00	1.558	1.701
TANKLESS W/H	\$2,000.00	1.746	1.451

AGDF Commercial Program Filing

Cost Effectiveness Results Summary Page

Building Type: LARGE Commercial FOOD SERVICE

Rebate Type: New Construction

Utility Results: SEBRING GAS

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$1,500.00	1.578	1.736
TANKLESS W/H	\$2,000.00	1.949	1.660
RANGE/OVEN	\$1,500.00	1.999	1.616
FRYER	\$3000.00	1.255	1.460

Rebate Type: RETROFIT

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$2,000.00	1.588	1.703
TANKLESS W/H	\$2,500.00	1.962	1.620
RANGE/OVEN	\$1,500.00	1.999	1.616
FRYER	\$3,000.00	1.255	1.460

Rebate Type: RETENTION

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$1,500.00	1.581	1.792
TANKLESS W/H	\$2,000.00	1.954	1.712
RANGE/OVEN	\$1,500.00	2.007	1.664
FRYER	\$3000.00	1.260	1.500

AGDF Commercial Program Filing

Cost Effectiveness Results Summary Page

Building Type: LARGE Commercial HOSPITALITY

Rebate Type: New Construction

Utility Results: SEBRING GAS

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$1,500.00	1.475	1.756
TANKLESS W/H	\$2,000.00	1.881	1.703
RANGE/OVEN	\$1,500.00	1.992	1.602
FRYER	\$3000.00	1.251	1.446
Dryer	\$1,500.00	1.387	1.417

Rebate Type: RETROFIT

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$2,000.00	1.482	1.733
TANKLESS W/H	\$2,500.00	1.890	1.674
RANGE/OVEN	\$1,500.00	1.992	1.602
FRYER	\$3,000.00	1.251	1.446
Dryer	\$1,500.00	1.387	1.417

Rebate Type: RETENTION

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$1,500.00	1.477	1.794
TANKLESS W/H	\$2,000.00	1.884	1.739
RANGE/OVEN	\$1,500.00	2.001	1.633
FRYER	\$3000.00	1.256	1.472
Dryer	\$1,500.00	1.387	1.442

AGDF Commercial Program Filing

Cost Effectiveness Results Summary Page

Building Type: LARGE Commercial CLEANING SERVICE

Rebate Type: New Construction

Utility Results: SEBRING GAS

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$1,500.00	1.500	1.737
TANKLESS W/H	\$2,000.00	1.965	1.636
Dryer	\$1,500.00	1.205	1.580

Rebate Type: RETROFIT

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$2,000.00	1.044	2.167
TANKLESS W/H	\$2,500.00	1.980	1.579
Dryer	\$1,500.00	1.204	1.580

Rebate Type: RETENTION

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$1,500.00	1.503	1.770
TANKLESS W/H	\$2,000.00	1.970	1.665
Dryer	\$1,500.00	1.204	1.607

AGDF Commercial Program Filing

Cost Effectiveness Results Summary Page

Building Type: Small Commercial FOOD SERVICE

Rebate Type: New Construction

Utility Results: FLORIDA PUBLIC UTILITIES

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$1000.00	1.551	1.859
TANKLESS W/H	\$2000.00	1.930	1.729
RANGE/OVEN	\$1000.00	1.954	1.755
FRYER	\$3000.00	1.223	1.519

Rebate Type: RETROFIT

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$1,500.00	1.561	1.822
TANKLESS W/H	\$2,500.00	1.943	1.687
RANGE/OVEN	\$1,500.00	1.960	1.767
FRYER	\$3,000.00	1.228	1.528

Rebate Type: RETENTION

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$1000.00	1.556	2.006
TANKLESS W/H	\$2000.00	1.938	1.877
RANGE/OVEN	\$1000.00	1.973	1.900
FRYER	\$3000.00	1.236	1.625

AGDF Commercial Program Filing

Cost Effectiveness Results Summary Page

Building Type: LARGE Commercial NON-FOOD SERVICE

Rebate Type: New Construction

Utility Results: FLORIDA PUBLIC UTILITIES

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$1,500.00	1.674	1.515
TANKLESS W/H	\$2,000.00	1.860	1.294

Rebate Type: RETROFIT

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$2,000.00	1.709	1.413
TANKLESS W/H	\$2,500.00	1.903	1.195

Rebate Type: RETENTION

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$1,500.00	1.692	1.611
TANKLESS W/H	\$2,000.00	1.885	1.364

AGDF Commercial Program Filing

Cost Effectiveness Results Summary Page

Building Type: LARGE Commercial FOOD SERVICE

Rebate Type: New Construction

Utility Results: FLORIDA PUBLIC UTILITIES

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$1,500.00	1.638	1.753
TANKLESS W/H	\$2,000.00	2.020	1.673
RANGE/OVEN	\$1,500.00	2.066	1.625
FRYER	\$3000.00	1.298	1.462

Rebate Type: RETROFIT

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$2,000.00	1.531	1.674
TANKLESS W/H	\$2,500.00	2.034	1.631
RANGE/OVEN	\$1,500.00	2.066	1.625
FRYER	\$3,000.00	1.298	1.462

Rebate Type: RETENTION

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$1,500.00	1.643	1.837
TANKLESS W/H	\$2,000.00	2.029	1.749
RANGE/OVEN	\$1,500.00	2.080	1.697
FRYER	\$3000.00	1.308	1.520

AGDF Commercial Program Filing

Cost Effectiveness Results Summary Page

Building Type: LARGE Commercial HOSPITALITY

Rebate Type: New Construction

Utility Results: FLORIDA PUBLIC UTILITIES

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$1,500.00	1.801	1.520
TANKLESS W/H	\$2,000.00	1.937	1.740
RANGE/OVEN	\$1,500.00	2.025	1.705
FRYER	\$3000.00	1.285	1.465
Dryer	\$1,500.00	1.434	1.435

Rebate Type: RETROFIT

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$2,000.00	1.528	1.772
TANKLESS W/H	\$2,500.00	1.947	1.709
RANGE/OVEN	\$1,500.00	2.046	1.631
FRYER	\$3,000.00	1.285	1.465
Dryer	\$1,500.00	1.434	1.435

Rebate Type: RETENTION

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$1,500.00	1.525	1.855
TANKLESS W/H	\$2,000.00	1.943	1.794
RANGE/OVEN	\$1,500.00	2.039	1.756
FRYER	\$3000.00	1.294	1.503
Dryer	\$1,500.00	1.434	1.459

AGDF Commercial Program Filing

Cost Effectiveness Results Summary Page

Building Type: LARGE Commercial CLEANING SERVICE

Rebate Type: New Construction

Utility Results: FLORIDA PUBLIC UTILITIES

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$1,500.00	1.603	1.721
TANKLESS W/H	\$2,000.00	2.095	1.614
Dryer	\$1,500.00	1.286	1.555

Rebate Type: RETROFIT

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$2,000.00	1.616	1.675
TANKLESS W/H	\$2,500.00	2.112	1.560
Dryer	\$1,500.00	1.284	1.556

Rebate Type: RETENTION

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$1,500.00	1.609	1.752
TANKLESS W/H	\$2,000.00	2.106	1.641
Dryer	\$1,500.00	1.284	1.580

AGDF Commercial Program Filing

Cost Effectiveness Results Summary Page

Building Type: Small Commercial FOOD SERVICE

Rebate Type: New Construction

Utility Results: ST. JOE

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$1000.00	1.387	1.616
TANKLESS W/H	\$2000.00	1.716	1.543
RANGE/OVEN	\$1000.00	1.749	1.560
FRYER	\$3000.00	1.093	1.391

Rebate Type: RETROFIT

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$1,500.00	1.395	1.591
TANKLESS W/H	\$2,500.00	1.728	1.513
RANGE/OVEN	\$1,500.00	1.767	1.510
FRYER	\$3,000.00	1.093	1.391

Rebate Type: RETENTION

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$1000.00	1.388	1.699
TANKLESS W/H	\$2000.00	1.719	1.629
RANGE/OVEN	\$1000.00	1.772	1.630
FRYER	\$3000.00	1.108	1.444

AGDF Commercial Program Filing

Cost Effectiveness Results Summary Page

Building Type: LARGE Commercial NON-FOOD SERVICE

Rebate Type: New Construction

Utility Results: ST. JOE

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$1,500.00	1.391	1.520
TANKLESS W/H	\$2,000.00	1.828	1.448

Rebate Type: RETROFIT

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$2,000.00	1.403	1.489
TANKLESS W/H	\$2,500.00	1.843	1.410

Rebate Type: RETENTION

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$1,500.00	1.393	1.557
TANKLESS W/H	\$2,000.00	1.830	1.481

AGDF Commercial Program Filing

Cost Effectiveness Results Summary Page

Building Type: LARGE Commercial FOOD SERVICE

Rebate Type: New Construction

Utility Results: ST. JOE

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$1,500.00	1.451	1.556
TANKLESS W/H	\$2,000.00	1.794	1.501
RANGE/OVEN	\$1,500.00	1.848	1.467
FRYER	\$3000.00	1.158	1.348

Rebate Type: RETROFIT

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$2,000.00	1.460	1.532
TANKLESS W/H	\$2,500.00	1.807	1.471
RANGE/OVEN	\$1,500.00	1.848	1.467
FRYER	\$3,000.00	1.158	1.348

Rebate Type: RETENTION

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$1,500.00	1.452	1.583
TANKLESS W/H	\$2,000.00	1.797	1.525
RANGE/OVEN	\$1,500.00	1.853	1.490
FRYER	\$3000.00	1.161	1.368

AGDF Commercial Program Filing

Cost Effectiveness Results Summary Page

Building Type: LARGE Commercial HOSPITALITY

Rebate Type: New Construction

Utility Results: ST. JOE

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$1,500.00	1.343	1.578
TANKLESS W/H	\$2,000.00	1.715	1.539
RANGE/OVEN	\$1,500.00	1.828	1.463
FRYER	\$3000.00	1.145	1.344
Dryer	\$1,500.00	1.277	1.321

Rebate Type: RETROFIT

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$2,000.00	1.349	1.561
TANKLESS W/H	\$2,500.00	1.724	1.518
RANGE/OVEN	\$1,500.00	1.828	1.463
FRYER	\$3,000.00	1.145	1.344
Dryer	\$1,500.00	1.277	1.321

Rebate Type: RETENTION

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$1,500.00	1.344	1.596
TANKLESS W/H	\$2,000.00	1.717	1.556
RANGE/OVEN	\$1,500.00	1.833	1.478
FRYER	\$3000.00	1.148	1.357
Dryer	\$1,500.00	1.277	1.333

AGDF Commercial Program Filing

Cost Effectiveness Results Summary Page

Building Type: LARGE Commercial CLEANING SERVICE

Rebate Type: New Construction

Utility Results: ST. JOE

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$1,500.00	1.357	1.573
TANKLESS W/H	\$2,000.00	1.734	1.534
Dryer	\$1,500.00	1.282	1.319

Rebate Type: RETROFIT

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$2,000.00	1.364	1.556
TANKLESS W/H	\$2,500.00	1.742	1.515
Dryer	\$1,500.00	1.282	1.319

Rebate Type: RETENTION

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$1,500.00	1.358	1.577
TANKLESS W/H	\$2,000.00	1.736	1.538
Dryer	\$1,500.00	1.282	1.327

AGDF Commercial Program Filing

Cost Effectiveness Results Summary Page

Building Type: Small Commercial FOOD SERVICE

Rebate Type: New Construction

Utility Results: PEOPLES GAS

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$1000.00	1.343	1.323
TANKLESS W/H	\$2000.00	1.671	1.266
RANGE/OVEN	\$1000.00	1.708	1.282
FRYER	\$3000.00	1.067	1.168

Rebate Type: RETROFIT

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$1,500.00	1.352	1.307
TANKLESS W/H	\$2,500.00	1.682	1.246
RANGE/OVEN	\$1,500.00	1.717	1.244
FRYER	\$3,000.00	1.061	1.164

Rebate Type: RETENTION

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$1000.00	1.350	1.410
TANKLESS W/H	\$2000.00	1.682	1.358
RANGE/OVEN	\$1000.00	1.717	1.371
FRYER	\$3000.00	1.073	1.242

AGDF Commercial Program Filing

Cost Effectiveness Results Summary Page

Building Type: LARGE Commercial NON-FOOD SERVICE

Rebate Type: New Construction

Utility Results: PEOPLES GAS

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$1,500.00	1.482	1.161
TANKLESS W/H	\$2,000.00	1.658	1.044

Rebate Type: RETROFIT

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$2,000.00	1.513	1.108
TANKLESS W/H	\$2,300.00	1.681	1.009

Rebate Type: RETENTION

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$1,500.00	1.509	1.228
TANKLESS W/H	\$2,000.00	1.695	1.097

AGDF Commercial Program Filing

Cost Effectiveness Results Summary Page

Building Type: LARGE Commercial FOOD SERVICE

Rebate Type: New Construction

Utility Results: PEOPLES GAS

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$1,500.00	1.422	1.271
TANKLESS W/H	\$2,000.00	1.757	1.234
RANGE/OVEN	\$1,500.00	1.805	1.211
FRYER	\$3000.00	1.130	1.131

Rebate Type: RETROFIT

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$2,000.00	1.431	1.255
TANKLESS W/H	\$2,500.00	1.769	1.214
RANGE/OVEN	\$1,500.00	1.805	1.211
FRYER	\$3,000.00	1.130	1.131

Rebate Type: RETENTION

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$1,500.00	1.429	1.302
TANKLESS W/H	\$2,000.00	1.769	1.263
RANGE/OVEN	\$1,500.00	1.825	1.240

AGDF Commercial Program Filing

Cost Effectiveness Results Summary Page

Building Type: LARGE Commercial HOSPITALITY

Rebate Type: New Construction

Utility Results: PEOPLES GAS

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$1,500.00	1.315	1.290
TANKLESS W/H	\$2,000.00	1.680	1.265
RANGE/OVEN	\$1,500.00	1.783	1.212
FRYER	\$3000.00	1.115	1.214
Dryer	\$1,500.00	1.257	1.117

Rebate Type: RETROFIT

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$2,000.00	1.321	1.279
TANKLESS W/H	\$2,500.00	1.688	1.251
RANGE/OVEN	\$1,500.00	1.783	1.214
FRYER	\$3,000.00	1.115	1.133
Dryer	\$1,500.00	1.257	1.117

Rebate Type: RETENTION

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$1,500.00	1.319	1.312
TANKLESS W/H	\$2,000.00	1.687	1.285
RANGE/OVEN	\$1,500.00	1.802	1.233
FRYER	\$3000.00	1.128	1.149
Dryer	\$1,500.00	1.257	1.132

AGDF Commercial Program Filing

Cost Effectiveness Results Summary Page

Building Type: LARGE Commercial CLEANING SERVICE

Rebate Type: New Construction

Utility Results: PEOPLES GAS

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$1,500.00	1.410	1.223
TANKLESS W/H	\$2,000.00	1.848	1.175
Dryer	\$1,500.00	1.142	1.147

Rebate Type: RETROFIT

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$2,000.00	1.422	1.202
TANKLESS W/H	\$2,500.00	1.864	1.149
Dryer	\$1,500.00	1.141	1.147

Rebate Type: RETENTION

Appliance Type	Rebate Dollar Amount	Participants Test Score	RIM Score
TANK W/H	\$1,500.00	1.420	1.238
TANKLESS W/H	\$2,000.00	1.865	1.188
Dryer	\$1,500.00	1.141	1.160