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July 14, 2010 (revised August 2, 2010)

Beth W. Salak
Director, Office of Regulatory Analysis
Florida Public Service Commission
2540 Shumard Oak Blvd.
Tallahassee, Florida 32399

Re: Docket Nos. 100155-EG (Florida Power and Light);
100160-EG (Progress Energy Florida);
100159-EG (Tampa Electric Company);
100154-EG (Gulf Power Company);
100161-EG (Orlando Utilities Commission)
100157-EG (JEA); and
100158-EG (Florida Public Utilities Company)

Dear Ms. Salak:

Southern Alliance for Clean Energy (SACE) offers preliminary comments and recommendations in response to the Demand Side Management (DSM) plans submitted on March 30, 2010 pursuant to Commission Order No. PSC-09-0855-FOF-EG. SACE has copied the Commissioners on this correspondence, and by copy of this letter, we have noticed all the parties of record in the above dockets. Our review encompassed three components: a comprehensive review of each utility's forecast program impacts and budgets[1], benchmarking of those impacts and budgets against five peer utilities from other states, and an in-depth review of the costs and program design of selected programs, including benchmarking against those same five peer utilities.

Although it had been our intention to complete an exhaustive review prior to filing comments and opinion, our findings at this point raise serious concerns that we felt should be brought to your attention immediately. It is our desire to see Florida's utilities expeditiously implement aggressive energy efficiency programs – but in order to be sustainable, those programs must be cost-effective.

Major Findings

- The major utilities filed generally what the commission requested, with the exception of Progress Energy Florida, which proposes to defer achieving a substantial portion of its goals until after the next anticipated goal-setting proceeding.
- Energy efficiency program costs range from excessively high to improbably low. The four major investor-owned utilities all have costs that are more than twice the costs reported by five peer utilities we reviewed to establish benchmarks. Progress Energy Florida appears to have a cost of saved energy that is three to six times higher than what peer utilities consider reasonable.
- Two FEECA utilities use a measure-driven approach to respond to the Commission's decision to expand goals beyond the E-TRC. This approach is inconsistent with best practices, and suggests something short of a good-faith effort to implement leading energy efficiency programs.
- None of the proposed plans describe a process for program improvement and cost control.

Of course, the Commission Staff will reach its own conclusions. We anticipate filing additional comments as we continue our research. We are considering filing further discovery requests to clarify some of the troubling findings we are providing at this time. Nevertheless, considering the appropriate schedule for quick Commission review and action on these plans, we have several recommendations for you to consider in light of your own research.

[1] Due to resource limitations, we have not reviewed the revised material submitted by FPL on July 1, 2010.

First, the commission staff should recommend approval or further program development on a program by program basis, except for Progress Energy Florida, whose entire DSM plan should be revised to address cost-effectiveness issues at a minimum. Our findings suggest that some of the programs are adequately prepared, particularly those that are already operational to the extent that adequate EM&V oversight has been performed to ensure they are cost-effective.

Second, to the extent that confusing, technically flawed or contradictory problems remain at the time of Commission action, the utilities should be authorized to begin work on programs that appear to be acceptable. Instead of delaying such programs, the Commission should require the utilities to submit further information within 90 days correcting or explaining their findings.

Third, in order to control costs, the Florida PSC should establish an incentive mechanism that benefits utilities with relatively cost-effective program impacts. We urge the Commission to immediately request proposals for implementing the financial incentive mechanism authorized in Section 366.82(9), F.S. consistent with the 50 basis point cap, but also incorporating measures to address net lost revenues and a performance-based mechanism that rewards cost control and verified customer savings.

Fourth, the Florida PSC may also wish to evaluate alternative means of providing energy efficiency opportunities to utility customers, such as third-party administered programs, if it determines that one or more utilities are not willing or able to offer a leading program. For a number of reasons, SACE prefers to see energy efficiency program administration led by utilities; but we are also aware of several states with highly cost-effective and popular energy efficiency programs operated by a third-party "energy efficiency utility." Considering that Florida's utilities have responded to the Legislature's direction to step up their energy efficiency programs with less-than-stellar plans, we suggest that this option may need to be considered.

As you are aware, SACE was a party and submitted expert testimony in the Florida Energy Efficiency and Conservation (FEECA) goal setting Dockets Nos. 080407 – 080413-EG, that produced Commission Order No. PSC-09-0855-FOF-EG. SACE petitioned for intervention in the subject DSM plan dockets on April 12, 2010. Our comments are provided in the interest of ensuring a deliberate and thorough review.

Thank you for taking the time to consider our comments. We would be pleased to expeditiously provide workpapers and relevant documentation to the staff or any party in the interests of advancing understanding of the utilities' plans. Recognizing that we have limited resources and have endeavored to complete our analysis in a very limited period of time, we acknowledge that there may be instances where we have overlooked relevant information that may address some of our concerns. If any party to the proceedings identifies a material omission or error, we will of course acknowledge such as soon as we are able to confirm the suggestion.

Sincerely,

John D. Wilson
Director of Research

Attachment: Preliminary Findings, with Appendices

cc: Chairman Argenziano, Commissioner Edgar and Commissioner Skop via email
Parties of record via email

Preliminary Findings from Review of FEECA Utilities Demand-Side Management Plan Proposals

Southern Alliance for Clean Energy

Finding: With the exception of Progress Energy Florida, the utilities have proposed energy efficiency programs whose scale and pace meet the goals adopted by the Florida Public Service Commission. In fact, OUC, JEA, FPUC and TECO propose programs that would significantly exceed the goals adopted by the Florida Public Service Commission in the first five years.

We analyzed the program and (where necessary) measure-level data from six of the seven Florida utilities to reconcile program level data with the totals filed by the utilities. These seven utilities are required to implement energy efficiency, demand response, and demand-side renewable energy programs under the Florida Energy Efficiency and Conservation Act (FEECA). We found some discrepancies and inconclusive data, but generally the utilities have filed what the commission requested, with the exception of Progress Energy Florida.

In the case of Progress Energy Florida, the goals established by the Commission direct the utility to achieve about 49% of its total goals of 3,205 GWh through 2014. Progress Energy Florida's filing proposes to only achieve 28% of that goal through 2014, and accelerate its efforts after 2014 – and after the next deadline for Commission revision of FEECA goals.

Table 1: Energy Savings Impacts of Florida Utility Efficiency Programs

Utility	Adopted Goals (GWh 2010-19)	Adopted Goals (% of 2019 Sales)	Program Impacts		
			GWh 2019	% of 2014 adopted goals	% of 2019 adopted goals
FPL	3,082.2	2.6%	3,082.2	107%	112%
PEF	3,204.6	7.8%	3,204.6	57%	103%
Gulf	573.8	3.8%	576.4	100%	102%
TECO	360.3	1.6%	362.3	120%	112%
JEA	155.3	1.1%	210.3	148%	130%
OUC	36.0	0.5%	56.5	157%	157%
FPUC	8.0	1.0%	17.5	219%	136%
Total	**7,420.2**	**3.4%**	**7,509.8**	**87%**	**108%**

Finding: Costs anticipated by the six Florida utilities range from excessively high to improbably low.

We evaluated the costs of Florida's energy efficiency programs using a simple metric of "saved energy cost" which is calculated as the total cost to the utility (program costs plus incentives) per total annual energy savings attributed to those programs, irrespective of measure life.[1] While this metric is not one of the official metrics required by the Florida Public Service Commission, it has some important advantages.

Saved Energy Cost

Example: A program with a saved energy cost of 40¢ per kWh with an expected measure life of ten years would cost about 4¢/kWh per year.

The main reason that we chose to use it was that it was relatively simple to compare Florida utilities to peer or benchmark utilities in other states using readily available data. In contrast, "standard" cost-effectiveness tests are interpreted differently across regulatory jurisdictions. These interpretations cannot be directly compared due to important differences including definitions of benefits and assumptions regarding measure life. Furthermore, levelized or lifetime costs are not always available or feasible to estimate with available data.

As illustrated below, the cost of saved energy varies by a factor of 16 among the utilities, from 7 – 109 cents per annual kWh for energy efficiency programs only. Our review of national data suggests that utilities often deliver:

- Residential energy efficiency impacts for 15 – 30 cents per annual kWh saved; and
- Commercial energy efficiency impacts for 10 – 20 cents per annual kWh saved.

Using these high-level generalizations, the costs suggested by FPL, PEF, and Gulf appear excessive. TECO's costs appear reasonable. OUC's residential costs appear high, while its commercial costs appear reasonable. JEA's costs appear improbably low.

Table 2: Saved Energy Cost (cents per annual kWh saved)

Utility	Residential Efficiency	Commercial Efficiency	Total Efficiency	Renewable Energy	All Programs
FPL	79	35	**56**	127	**93**
PEF	110	101	**109**	86	**136**
Gulf	81	66	**79**	131	**94**
TECO	44	12	**29**	123	**56**
JEA	10	5	**7**	29	**8**
OUC	63	14	**34**		**34**
FPUC	22	13	**18**	na	**24**

Recognizing that these conclusions represent high-level generalizations, we assessed these costs in greater detail by benchmarking Florida utilities against five peer utilities. Resource limitations prevented us from considering every program in detail. There were notable limitations in data that prevented us from completing certain analyses. We investigated both the overall cost-effectiveness of the peer utilities, as well as the specific costs and program management practices of those utilities.

[1] Energy efficiency experts refer to the "saved energy cost" as "first-year cost," but we have found that this term is often misunderstood to relate to the first year of a five or ten year program, and thus we prefer not to adopt this term.

Table 3: Costs at Florida Utilities Compared to Peer Utilities

Utility	10-Year Program Impacts‡		Total Cost ($ millions)	Saved Energy Cost (¢ / kWh)
	(MWh)	(% sales)		
Florida Power & Light (FPL)	3,507,244	3.0%	3,249	93
Progress Energy Florida (PEF)	3,333,865	8.1%	4,523	136
Gulf Power Company (Gulf)	588,868	3.9%	551	94
Tampa Electric Company (TECO)	408,764	1.8%	230	56
JEA	210,356	1.4%	17	8
Orlando Utilities Commission (OUC)	56,470	0.7%	19	34
Florida Public Utility Co. (FPUC)	8,000	1.0%	4	24
Arizona Public Service (APS)	3,520,000	12.3%	683	19
Duke Energy Carolinas (DEC)	1,730,000	3.6 - 7.0%[2]	176	10
Xcel Energy (Xcel-CO)	2,200,000	10.0%	526	24
Interstate Power & Light (IPL-IA)	1,671,000	9.4%	687	41
MidAmerican (MA-IA)	2,828,000	14.3%	487	17

‡ Consistent with Florida utility practice in summary tables, we have assumed a measure life of 10 years when developing estimates of 10-year program impacts for peer utilities. Cost and program impact benchmarks for peer utilities are extrapolated from the latest program plan or activity report available. The actual data from the peer utilities cover periods that vary from one quarter year to four years.

If Florida's FEECA-regulated utilities could deliver energy efficiency program impacts at an average cost of 40 cents per kWh (representing the most costly of the five peer utilities that we benchmarked), then the total state budget would be about $3 billion. This would represent a cost savings to ratepayers of $5.5 billion.

We found three reasons that explain the majority of the approximately $5.5 billion in excessive cost.[3]

1. **For reasons that are not explained, Progress Energy Florida uses an "escalation factor" that appears to add more than $1 billion to program costs of most of its energy efficiency programs**.[4] In fact, this is probably the main reason that about $3 billion of the $5.5 billion in excessive costs can be attributed to Progress Energy Florida. ***This "escalation factor" is not applied to the benefits*** of these same programs, and no other utility uses an "escalation factor" or anything resembling it. This issue is discussed in Appendix T.

2. Another reason that Florida utilities' proposed programs have relatively high costs is that **many of the most cost-effective energy efficiency programs are not being proposed or fully exploited by Florida utilities**. Nationally recognized program types not being widely adopted in Florida include:

[2] Based on Duke Energy Carolinas' 2010 Integrated Resource Plan, the company forecasts 3.6% energy savings over the next ten years. In its energy efficiency plan, Duke Energy Carolinas represents a goal for efficiency that is approximately 7% over ten years, which we consider to be a credible goal considering its current level of effort. Source: *Direct Testimony of John D. Wilson on behalf of Environmental Defense Fund, the Sierra Club, Southern Alliance for Clean Energy and the Southern Environmental Law Center*, North Carolina Utilities Commission Docket No. E-100 Sub 124, February 19, 2010.

[3] Renewable energy program costs represent a portion of this higher cost as well.

[4] We did not attempt to calculate the exact impact of the "escalation factor" on costs because of interaction with other cost escalation factors. Note that none of the specific items discussed below (e.g., air filters) are in programs whose costs are affected by the "escalation factor."

- Home Performance with ENERGY STAR® (Appendix G),
- Building (re)commissioning (Appendix M), and
- Commercial new construction programs (Appendix N).

Residential lighting is an example of a program that is offered at low cost by peer utilities, but appears to be relatively underutilized by Florida utilities (Appendix I). Progress Energy Florida appears to be an exception. However, although PEF anticipates 25% of its savings will come from residential lighting, 93% of the CFLs are forecast for installation in 2014-19 – after federal standards will require bulbs with the efficiency of CFLs to be installed (Appendix I). Another area where Florida utilities fail to fully exploit the most-cost effective strategies is in the area of audits. While Florida utilities plan to offer residential audits at a reasonable cost, the more costly approaches used by peer utilities tend to get more bang for the buck (Appendix K).

3. **Even where Florida utilities are proposing to implement adequately (or better) designed programs, there are instances of excessive costs.**

   - Gulf and OUC documentation indicate excessive costs for residential CFL bulb measures: $30.50 and $21 per bulb, respectively (Appendix I). PEF documentation indicates a remarkable cost of $79 per bulb for commercial CFL bulbs (Appendix L).
   - PEF proposes a $2,000 incentive or rebate for high efficiency air handler motor replacements – ten times the incentive proposed by Gulf for the same technology (Appendix J).
   - PEF proposes to spend $570 per household, per year to encourage the "annual cleaning of outdoor coils in the HVAC system," including a $120 incentive or rebate to the customer (Appendix J).
   - PEF proposes to spend $540 per household, per year to "encourage customers to regularly replace air filters on central HVAC systems," including a $60 incentive or rebate to the customer (Appendix J).
   - PEF proposes to offer a pool pump incentive of $2,000, which is eight times the incentive offered by APS, and actually exceeds the incremental cost (Appendix K).
   - PEF proposes to provide businesses with energy efficiency products, including a refrigerator thermometer for $72, switch plate thermometer for $76, and a smart strip for $93 (Appendix L).

We identified several other issues with costs, participation levels, and incentive levels (Appendix Q.)

Notably, there are some bright spots where Florida utilities are adopting cutting-edge programs. For example, Gulf Power is proposing to implement Home Energy Comparison Reports (Appendix K). If successful, ***Gulf Power could expand this program to serve its entire customer base and meet over 25% of the 478 GWh residential energy savings goal established by the Commission for 2019 with this single program.*** In other words, Gulf Power could cut residential energy use by 1.6% by this single program. Other utilities could do the same. Clearly, there is a lot of opportunity to meet and exceed the goals set by the Florida Public Service Commission.

Finding: Progress Energy Florida and, to a lesser extent, Gulf Power propose to meet the portion of the goals associated with the "two-year payback measures" with measure-driven, rather than outcome-driven, program designs that are contrary to best practice in program design. This seems to be a rather petulant response to the Commission's order, and suggests something short of a good-faith effort to implement leading energy efficiency programs.

Progress Energy Florida and Gulf Power have interpreted the Commission's order to mean that it must achieve the full technical potential associated with the several measures used as the basis for the increased final goals established by the Commission. This interpretation is patently erroneous. The Commission clearly intended the utilities to develop their plans using best planning practices, and PEF's approach in particular is clearly unorthodox and not likely to result in a cost-effective or successful result.

The Commission's decision to increase the DSM goals for PEF and the other IOUs had nothing to do with the specific qualities of the "top ten" measures presented by staff. Rather, the discussion at the FEECA goal-setting agenda conferences clearly showed that the Commissioners were concerned over the arbitrary manner in which the two-year payback lowered the level of the goals and excluded substantial amounts of the most-cost effective energy efficiency.[5]

In response to the Commissioners' concerns, the staff offered the top ten commercial and residential measures as a compromise approach in order to raise the level of the overall goals. The Commission chose to use the top-ten residential measure's technical potential as a value by which overall goals would be increased. Commissioner Skop emphasized, in stating the Commission's decision, that when the utilities develop their implementation plans, they should *not* be limited to the specific measures within the top-ten group.[6]

Commission Staff later reinforced direction by the Commission in stating that "when submitting their programs for our approval, the utilities can consider the residential portion of the top ten measures, but they shall *not* be limited to those specific measures."[7] The decision by PEF and Gulf to focus on those particular measures is contrary to the intent of the Commission. PEF's indication that it will try to achieve the entire technical potential associated with those measures is particularly petulant and demonstrates a lack of professionalism in attempting to achieve the goals established by the Commission.

Finding: Although several of the utilities appear to be concerned about high costs, none of the utilities' proposed plans includes any process for program improvement and cost control.

A common theme in utility programs in other states that we have reviewed is to reflect on past program results with an eye towards greater impacts at lower costs. We did not find this type of discussion to be developed or even at all present in the FEECA-regulated utility DSM plans or the supporting documentation provided during discovery. Considering the very high costs exhibited in many programs by most of the utilities, this is a disappointing omission.

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[5] Commission Review of Numeric Docket Nos. 080407-EG – 080413-EG, Agenda Item Conference No. 9 Transcripts, November 10, 2009 pp. 50-51, 54-55, 64, 66-68, 70-71, 85; Commission Review of Numeric Docket Nos. 080407-080413, Agenda Conference Item No. 12, December 1, 2009, pp. 43-47.

[6] *Id.* at pp. 60, 63.

[7] Staff recommendation on Decisions on Motions for Reconsideration, Docket Nos. 080407-EG—080413-EG, May 4, 2010. p.11

Preliminary Findings from Review of FEECA Utilities Demand-Side Management Plan Proposals

Southern Alliance for Clean Energy

July 2010

Appendices

Appendix A: Interstate Power & Light (IPL-IA)

Interstate Power & Light of Iowa (IPL-IA) is a subsidiary of Alliant. Iowa uses a “societal” cost-effectiveness test. With the exception of the renewable residential and nonresidential portfolios, every portfolio in its plan was designed to be cost effective from a "societal" perspective.

IPL-IA's expenditures are projected to lead to an initial increase of 1.2 percent on average across all electric customer classes, as measured by the average bill increase from implementing the first year of this plan as compared to the current plan.

Over $330 million of the $411 million of IPL-IA costs, or 80 percent, are incentive payments. About 7 percent of IPL spending is for program promotion. In sum, over 87 percent of forecast IPL spending is for incentives, advertising and promotion.

Overview of IPL Program Savings & Costs (2009-2013)

	Energy Savings MWh	% of Total	Cost ($000)	Cost (¢/kWh)
Residential Conservation Programs				
Residential Prescriptive Rebates	101,147	12%	33,621	33
Home Energy Audits	8,098	1%	2,247	28
Appliance Recycling	48,539	6%	4,463	9
New Home Construction	20,995	3%	8,083	38
Home Performance with ENERGY STAR	259	0%	1,770	684
Low Income	13,173	2%	3,635	28
Business Conservation Programs				
Nonresidential Prescriptive Rebates	57,643	7%	16,110	28
Custom Rebates	357,737	43%	44,289	12
Performance Contracting	31,510	4%	7,568	24
Commercial New Construction	65,073	8%	20,100	31
Agriculture Sector	31,890	4%	8,910	28
Conservation Programs	**736,064**	**88%**	**150,795**	**20**
Residential Demand Response Programs				
Residential Direct Load Control	319	0%	16,611	5,204
Business Demand Response				
Nonresidential Interruptible	832	0%	123,025	14,794
Demand Response Programs	**1,151**	**0%**	**139,636**	**12,134**
Residential Renewable Energy Programs	4,832	1%	8,847	183
Business Renewable Energy Programs	93,380	11%	15,631	17
Renewable Energy Pilot Programs	**98,212**	**12%**	**24,478**	**25**
Outreach, Education and Training	271	0%	24,126	8,887
Load Management Research & Development			4,632	
Residential Programs	**197,362**	**24%**	**79,276**	**40**
Business Programs	**638,065**	**76%**	**235,633**	**37**
TOTAL	**835,698**	**100%**	**343,667**	**41**
Total less Demand Response Programs	834,547	99.9%	204,031	24

Source: SACE analysis of IPL 2008.

Appendix B: MidAmerican Energy (MA-IA)

MidAmerican Energy of Iowa (MA-IA) operates under the same regulatory requirements as IPL-IA (Appendix A). Its cost structure is similar, but 94% of its budget is for incentives.

Overview of MidAmerican Energy Program Savings & Costs (2009-2013)

	Energy Savings MWh	% of Total	Cost ($000)	Cost (¢/kWh)
Residential Conservation Programs				
Equipment	261,595	19%	30,058	11
Audit	23,831	2%	7,014	29
New Construction	31,216	2%	13,722	44
Business Conservation Programs				
Equipment	436,812	31%	17,695	4
Custom	37,144	3%	5,462	15
Efficiency Bid	72,464	5%	5,418	7
Small Commercial Energy Audit	17,892	1%	5,296	30
Energy Analysis	164,755	12%	16,085	10
New Construction	238,255	17%	30,906	13
Multisector Conservation Programs				
Appliance Recycling	54,885	4%	4,955	9
Low-Income	11,867	1%	4,694	40
Multifamily	4,270	0%	1,478	35
Agriculture	3,373	0%	1,725	51
Third-Party	18,353	1%	4,771	26
Education	-	-	13,007	-
Trees	-	-	1,542	-
Assessments	-	-	6,442	-
Conservation Programs	**1,376,712**	**97%**	**170,270**	**12**
Residential Demand Response				
Load Management	4,194	0%	20,327	485
Critical-Peak Pricing	10	0%	2,245	21,504
Business Demand Response				
Load Management	33,082	2%	50,570	153
Demand Response Programs	**37,286**	**3%**	**73,142**	**196**
Renewable Energy Programs	-	-	-	-
Residential Programs	**320,846**	**23%**	**73,366**	**23**
Business Programs	**1,000,404**	**71%**	**131,432**	**13**
Multi-Sector Programs	**92,748**	**7%**	**38,614**	**42**
TOTAL	**1,413,998**	**100%**	**243,412**	**17**
Total less Demand Response Programs	1,376,712	97%	170,270	12

Source: SACE analysis of MA 2008.

Appendix C: Xcel Energy (Xcel-CO)

Xcel Energy of Colorado (Xcel-CO) operates as Public Service Company of Colorado. It is the largest electric utility in Colorado, providing 55% of its electricity to more than 1.3 million customers. Xcel will spend up to $196 million on its demand-side management programs through 2013, under a widely-endorsed agreement for its "Least-Cost Plan."

Beginning in 2008 under new law, regulated utilities in Colorado began to offer programs to help their customers save energy, and by 2015, they must be able to meet 2% of their customers' energy needs with energy efficiency, rather than by selling more electricity. This program is projected to save Coloradans more than $2 billion a year on energy costs. Xcel's programs are anticipated to reduce electricity use by 11.5% by 2020.[1]

Overview of Xcel Energy Program Savings & Costs (2009)

	Energy Savings		Cost	Cost
	MWh	% of Total	($000)	(¢/kWh)
Residential Conservation Programs				
Energy Efficient Showerheads	2,391	1%	75	3
ENERGY STAR New Homes	359	0%	131	36
ENERGY STAR Retailer Incentive	211	0%	234	111
Evaporative Cooling Rebate	1,182	1%	1,089	92
High Efficiency Air Conditioning	88	0%	418	477
Home Lighting & Recycling	58,264	27%	3,809	7
Home Performance w/ENERGY STAR	1	0%	52	3,776
Insulation Rebate	-	-	7	-
Refrigerator Recycling	471	0%	169	36
School Education Kits	1,560	1%	332	21
Saver's Switch	48	0%	12,106	25,479
Low-Income				
Easy Savings Energy Kits	8,202	4%	473	6
Multi-Family Weatherization	180	0%	168	93
Non-Profit Energy Efficiency	1,201	1%	133	11
Single-Family Weatherization	1,674	1%	860	51
Business Conservation Programs				
Compressed Air Efficiency	4,012	2%	544	14
Cooling Efficiency	6,564	3%	1,716	26
Custom Efficiency	10,176	5%	1,949	19
Data Center Efficiency	-	-	154	-
Energy Management Services	5,553	3%	772	14
Lighting Efficiency	74,789	34%	6,087	8
Motor & Drive Efficiency	24,896	11%	2,418	10
New Construction	11,915	5%	3,169	27
Process Efficiency	798	0%	460	58
Recommissioning	4,723	2%	767	16
Segment Efficiency	59	0%	331	558
Self-Directed Custom Efficiency	-	-	79	-
Small Business Lighting	298	0%	318	107
Standard Offer	-	-	208	-
Conservation Programs	**219,611**	**100%**	**39,028**	**18**

[1] American Council for an Energy-Efficient Economy, "Colorado Utility-Sector Policies," www.aceee.org/energy/state/colorado/co_utility.htm, last accessed July 14, 2010.

	Energy Savings MWh	% of Total	Cost ($000)	Cost (¢/kWh)
Demand Response Programs	-	-	-	-
Renewable Energy Programs	-	-	-	-
Indirect Programs				
Education/Market Transformation				
Business Energy Analysis	-	-	1,112	-
Customer Behavioral Change - Business	-	-	144	-
Customer Behavioral Change - Residential	-	-	288	-
Residential Home Energy Audit	-	-	419	-
In-Home Smart Device Pilot	-	-	1,043	-
Planning and Research				
DSM Market Research	-	-	706	-
DSM Planning & Administration	-	-	261	-
DSM Product Development	-	-	219	-
Evaluation, Measurement & Verification	-	-	644	-
Incentive	-	-	8,773	-
Indirect Programs	-	-	**13,609**	-
Residential Programs	**75,829**	**35%**	**20,056**	**26**
Business Programs	**143,782**	**65%**	**18,972**	**13**
TOTAL	**219,611**	**100%**	**52,637**	**24**

Source: SACE analysis of Xcel 2010.

Appendix D: Arizona Public Service Company (APS)

Arizona Public Service Company (APS) is a subsidiary of Pinnacle West. APS is currently scaling up its energy efficiency programs, with goals of 1% in 2010, 1.25% in 2011 and 1.5% in 2012.

Overview of APS Program Savings & Costs (2011 Budget)

	Energy Savings		Cost	Cost
	MWh	% of Total	($000)	(¢/kWh)
Residential Conservation Programs				
Consumer Products	99,000	28%	7,547	8
Existing Homes	22,000	6%	14,560	66
New Construction	7,000	2%	2,800	40
Appliance Recycling	11,000	3%	1,661	15
Low Income	2,000	1%	2,779	139
Behavioral	25,000	7%	1,017	4
Multi-Family	4,000	1%	1,277	32
Shade Trees	1,000	0%	419	42
Business Conservation Programs				
Large Existing	101,000	29%	13,792	14
New Construction	27,000	8%	3,410	13
Small Business	28,000	8%	4,460	16
Schools	23,000	7%	3,458	15
Energy Info Services	2000	1%	195	10
Conservation Programs	**352,000**	**100%**	**57,375**	**16**
Residential Demand Response Programs	0	-	3,941	-
Business Demand Response	0	-	6,679	-
Demand Response Programs	**0**	**0%**	**10,620**	**-**
Renewable Energy Programs	**0**	**0%**	**0**	**-**
Measurement, Evaluation and Research	0	-	2,500	-
Performance Incentive	0	-	8,383	-
Residential Programs	**171,000**	**49%**	**36,001**	**21**
Business Programs	**181,000**	**51%**	**31,994**	**18**
TOTAL	**352,000**	**100%**	**78,878**	**22**
Total less Demand Response Programs	352,000	100%	68,258	19

Source: SACE analysis of APS 2010b.

Appendix E: Duke Energy Carolinas

Duke Energy Carolinas (DEC) serves North and South Carolina with its "Save-a-Watt" programs. In June of 2009, Duke Energy Carolinas agreed to dramatically increase the size of its "Save-a-Watt" energy efficiency program, while at the same time adding features to ensure that it is fair to customers.[2]

The results reported in this summary are based on first quarter 2010 results, which were the first reports provided to its Carolinas Energy Efficiency Collaborative. Some of the key findings (see DEC 2010c) include:

- Energy efficiency impacts have primarily been driven by lighting measures in both the residential and non-residential space
- Non-residential EE impacts are ahead of target to date – may be due to customers front loading projects
- Residential participation for assessments and HVAC & heat pumps are higher than expected
- Trade ally network has been critical in marketing programs to customers
- Acquisition costs have been lower than expected – it is too soon to tell if this trend will continue

SACE staff has reviewed mid-term cost projections for Duke Energy Carolinas' programs and believe that these results are a useful representation of costs for the purposes of benchmarking forecast costs.

[2] Duke Energy Carolinas, *Agreement and Joint Stipulation of Settlement*, *Application of Duke Energy Carolinas, LLC for Approval of Save-a-Watt Approach, Energy Efficiency Rider and Portfolio of Energy Efficiency Programs*, North Carolina Utilities Commission, Docket No. E-7, Sub 831, June 12, 2009; and North Carolina Utilities Commission, *Order Approving Agreement and Joint Stipulation of Settlement Subject to Certain Commission-Required Modifications and Decisions on Contested Issues*, Docket No. E-7, Sub 831, February 9, 2010.

Overview of Duke Energy Carolinas Program Savings & Costs (1st Qtr. 2010)

	Energy Savings		Cost	Cost
	MWh	% of Total	($000)	(¢/kWh)
Residential Conservation Programs				
Energy Assessments	10,858	25%	959	9
Prescriptive (Smart $aver)	5,326	12%	1,444	27
K-12 Education	1,616	4%	225	14
Low Income Services	2,062	5%	45	2
Business Conservation Programs				
Prescriptive (Smart $aver)	20,495	47%	1,717	8
Custom	2,932	7%	1,717	59
Conservation Programs	**43,288**	**100%**	**6,106**	**14**
Residential Demand Response Programs				
Power Manager	0	-	787	-
Business Demand Response				
PowerShare	0	-	1,180	-
Demand Response Programs	**0**	**-**	**1,967**	**-**
Renewable Energy Programs [3]	-	-	-	-
Residential Programs	**19,861**	**46%**	**3,460**	**17**
Business Programs	**23,427**	**54%**	**4,613**	**20**
TOTAL	**43,288**	**100%**	**8,073**	**19**
Total less Demand Response Programs	43,288	100%	6,106	14

Source: SACE analysis of DEC 2010c and associated reports.

[3] Duke Energy Carolinas is required to meet renewable energy goals, including customer-sited generation, under North Carolina's renewable energy portfolio standard.

Appendix F: Residential Audits

Overview

FEECA utilities are not in agreement regarding whether it is appropriate to count savings from audit and education programs towards achieving goals. TECO, FPUC, JEA and OUC propose to take credit for energy savings associated with their audits. Gulf, FPL and PEF do not, although PEF takes credit for measures installed as a result of a related program.

The content and strategy of the utilities' audits is not entirely clear from the program filings, but does appear to vary. For example, Progress Energy closely links distribution of an energy efficiency "kit" to its audit program, providing audit recipients with simple self-install measures. This is a common part of programs nationwide. JEA offers a different emphasis, promoting thirteen "behavioral measures" such as washing in cold water and cleaning refrigerator coils.

To the extent that the utilities offer per-audit energy savings data, the impact varies widely, from 100 kWh to over 500 kWh per audit. However, audit cost appears generally quite uniform across Florida utilities, with FPUC standing out with a much higher average cost per audit (but with relatively good impact for cost per annual kWh saved).

Comparison of Utility Residential Audit and Education Programs

Utility	Residential Program	Savings (% of plan)	Cost per audit	Cost per annual kWh saved
FPL	Home Energy Survey	None	~ $100	n/a
PEF	Two programs[4]	13%	$ 94	72 ¢
Gulf	Energy Audit and Education[5]	None	n/a	n/a
TECO	Four programs[6]	17%	$136	33 ¢
JEA	Energy Audit	3%	$103	49 ¢
OUC	Home Energy Surveys	23%	$125	71 ¢
FPUC	Energy Survey	18%	$527	41 ¢
APS - AZ	(See Appendix G)	None	n/a	n/a
DEC	Home Energy House Call	25%	$ 34	9 ¢
Xcel - CO	(See Appendix G)	None	n/a	n/a
IPL - IA	Home Energy Audits	1%	$324	28 ¢
MA - IA	HomeCheck	2%	$231	29 ¢

Sources: SACE analysis of utility plans and worksheets furnished during discovery; APS 2010a and 2010b; DEC 2010a; IPL 2008; MA 2008; Xcel 2009 and 2010.

Nationally, audit and education programs are evolving away from "tips and trinkets" techniques in two directions. One approach is to use demographic and energy analysis to emphasize behavioral changes, such as using a Home Energy Comparison Report (discussed below).

The other approach is to tie in offers to assist customers with more extensive efficiency investments during the audit. Integration of other incentives and program opportunities into the

[4] Home Energy Check and Education programs. Note that some of the savings included in this area include lighting efficiency measures discussed in Appendix I.
[5] Home energy comparison reports not included, discussed below.
[6] Walk-Through Audit (Free), On-Line Energy Audit, Computer-Assisted Energy Audit, Phone Assisted Audit, and Energy Education Outreach.

audit experience may increase the audit cost, but lead to an overall reduction in program implementation costs. For example, even though IPL's audit costs about three times the typical Florida audit, it is actually more cost-effective because it achieves 1,242 kWh in savings. These savings are achieved through installation of low-cost efficiency measures and insulation rebates. (IPL 2008)

Utilities are also taking this one step further in Home Performance with ENERGY STAR® programs (Appendix G).

Comments

- Duke Energy's Home Energy House Call participation has exceeded expectations, and could achieve double its annual goals. Furthermore, by "making a few revisions to the program, Duke believes [its] auditors will be able to install more measures and boost impacts, creating customers to spread the word of the program." (DEC 2010a)
- Duke Energy is using market analytics to predict response rates for targeting purposes. As a result, it has achieved a 24% response rate. Notably, the vast majority of audits are mail-in surveys, a method that is not widely used in Florida.

Home Energy Comparison Reports

A relatively new concept in residential energy auditing and education is the home energy comparison report. In Florida, only Gulf Power is proposing to offer this type of program to its customers.

The report is a mailed or online tool that allows a residential customer to obtain a customized comparison of energy use with similar residences. The combination of demographic data with customer energy usage data allows for targeted recommendations to help consumers make behavioral changes and adopt more efficient technologies. Several firms are offering this type of program as vendors to utilities across the country. Recent measurement and verification studies of similar programs indicate an opportunity for almost immediate 2% residential energy savings.[7]

APS and Duke Energy Carolinas are proposing pilot programs. Duke's proposed budget is 5.9 cents per kWh.[8] APS notes that, "It is anticipated that in addition to achieving conservation related savings of approximately 2% usage reductions per household, this program can help increase participation in other efficiency programs by up to 25%. (APS 2010b)

Gulf Power's proposed program projects a 300 kWh reduction per customer. Gulf is proposing to offer this program to 35,000 customers for three years – about 9% of its customer base – saving 11 GWh per year. ***If successful, Gulf Power could expand this program to serve its entire customer base and meet over 25% of its 478 GWh residential goal for 2019 with this single program.***

[7] Allcott, H., *Social Norms and Energy Conservation*, MIT Center for Energy and Environmental Policy Research Report 09-014, October 2009; and Summit Blue Consulting, LLC, *Impact Evaluation of OPOWER SMUD Pilot Study*, September 24, 2009.

[8] Duke Energy Carolinas, *Home Energy Comparison Report*, North Carolina Utilities Commission Docket No. E-7, Sub 954, June 7, 2010.

Appendix G: Home Performance with ENERGY STAR®

Discussion

Florida utilities are not offering integrated "whole house" energy efficiency programs such as the nationally-branded Home Performance with ENERGY STAR program. Rather than working component-by-component, the program assesses how improvements to the building shell, ductwork, heating and cooling system, lighting and appliances would increase both comfort and efficiency.

Four of the five utilities[9] we benchmarked against Florida utilities are offering this program. For these four utilities, the program is in the early stages of implementation and we did not locate useful program cost and impact reports.

Utility budgets and forecasts suggest substantial opportunities from this program. Arizona Public Service forecasts annual energy savings of 2,551 kWh per customer. About half of those savings are due to air sealing plus attic insulation, with most of the rest of the savings attributed to direct installation of CFLs, low-flow water fixtures, and duct repairs. The program costs about 55 cents per annual kWh saved, which is quite low considering that APS is offering to pay 75% of the cost of measures installed as a result of the assessment. (APS 2009)

Xcel Colorado budgeted for similar cost-effectiveness, but found its initial start-up year to require a number of detailed adjustments to its program design, including timeframes, participation requirements, and program measures. In spite of early difficulties, the utility appears to be making a strong effort to succeed. (Xcel 2010)

[9] All except Duke Energy Carolinas.

Appendix H: Residential New Construction

Most residential new construction efficiency programs offer an incentive or range of incentives for achieving ENERGY STAR® or another green certification. The process is usually streamlined to encourage participation and reduce administrative costs.

For example, IPL (Iowa) offers two program options, one targeted at mass market "spec" builders, and the other at the custom home market. (IPL 2008) A mass market "spec" builder will build using a pre-specified set of energy efficiency measures that are verified to achieve the ENERGY STAR level of performance. A custom home builder would choose measures during construction, with the ENERGY STAR certification being awarded when the home receives a satisfactory Home Energy Rating System score.

Some utilities offer "beyond ENERGY STAR" incentives. For example, APS is proposing to add an ENERGY STAR Plus measure which would be approximately double that of the "regular" ENERGY STAR performance. (APS 2010a) APS also offers a very interesting solar tie-in for homebuilders, described below.

Florida does not have strong market penetration for new ENERGY STAR New Homes. According to the US EPA, 23 states have at least 12% market penetration rates.[10] Florida's rate is listed as "between 3% and 11%." Peer states that exceed Florida's market penetration rates include Arizona (31%), Kentucky (25%), New Mexico (13%), Oklahoma (31%) and Texas (41%). The average national market presence of ENERGY STAR in new homes for 2008 was nearly 17%, with over 1 million homes labeled ENERGY STAR since 1995; Orlando is the only Florida city on the EPA's "top 20 cities" list with 7,600 homes labeled since 1995.[11]

Comparison of Utility Residential New Construction Programs

Utility	Residential Program	Savings (% of plan)	Cost per home	Cost per annual kWh saved
FPL	BuildSmart	4%	$1,276	81 ¢
PEF	New Construction	2%	$1,025	$ 1.56
Gulf	n/a	None	n/a	n/a
TECO	New Construction	1%	$ 992	58 ¢
JEA	Green Built Homes of Florida	4%	$ 395	19 ¢
OUC	Gold Ring Home	< 1%	$1,265	93 ¢
FPUC	n/a	None	n/a	n/a
APS - AZ	New Construction	2%	$2,505	39 ¢
DEC	n/a	None	n/a	n/a
Xcel - CO	ENERGY STAR New Homes	< 1%	$ 439	48 ¢
IPL - IA	New Home Construction	3%	$1,368	38 ¢
MA - IA	New Construction	2%	$ 842	44 ¢

Sources: SACE analysis of utility plans and worksheets furnished during discovery; APS 2010a and 2010b; DEC 2010a; IPL 2008; MA 2008; Xcel 2009 and 2010.

[10] US Environmental Protection Agency, "2008 ENERGY STAR Qualified New Homes Market Indices for States," released July 2, 2009.
[11] US Environmental Protection Agency, "Celebrating 1 Million ENERGY STAR Homes," released November 10, 2009.

Unexplained variation among Florida utilities

Other than JEA's multi-certification program (discussed below), Florida's new construction programs are described in fairly similar manner. Yet there is significant variation in cost (see above), energy savings, and market penetration, for reasons that are not easily elicited from the program plans.

- Four Florida utilities forecast savings of 1,300 to 1,600 kWh per home. Progress Energy forecasts savings at about half that level (500 to 700 kWh).
- Market penetration estimates vary widely. OUC and TECO anticipate about 2% market penetration, JEA about 9%, FPL about 20%, and PEF about 50% market penetration.

JEA's unusual program design

Although JEA's Green Built Homes supports six certifications, it is primarily an ENERGY STAR new home program, as "all requested incentives have been based on the ENERGY STAR Home qualification."[12] The average cost to support a participating home is only $395 (including incentive and all utility program costs), even though incentives of up to $1,500 are available.

JEA's per customer energy savings estimate of 2,021 kWh is significantly higher than that of other Florida utilities. However, JEA derived this estimate from a detailed study by the Florida Solar Energy Center, giving it a high degree of credibility for forecasting purposes.

Integrating efficiency and solar

Arizona Public Service has a one-year-old "ENERGY STAR and Solar Homes Program" that encourages builders to offer both energy efficiency and solar features. (APS 2010a) Builders who wish to access special homebuilder incentives for solar communities must also meet ENERGY STAR new construction standards. APS explains, "This is to ensure that homes incorporate efficiency first to enable solar to be as cost effective as possible."

Builders participating in this APS program commit that all of the homes in a community will be APS ENERGY STAR homes, that all homes will be "solar ready" (pre-wired and plumbed to accommodate future solar PV panels and/or water heaters), and that 50% of homes must feature a solar system (either PV or hot water).

[12] JEA's Responses to SACE's First Request for Production of Documents (No. 1-5), workbook titled "GBHF Calcs," May 17, 2010.

Appendix I: Residential Lighting [13]

Overview

Residential lighting programs are not being fully utilized by Florida utilities. These highly cost-effective programs are relied upon both to achieve energy savings and to develop customer interest in other energy efficiency programs. In addition to the underutilization, costs anticipated by two of the utilities are unjustifiably high.

For three reasons, residential lighting programs face special difficulties that are not confronted as directly in other programs. First, federal regulations will begin to phase out incandescent bulbs for ***some*** residential lighting applications. Second, because of high off-peak use, residential lighting tends to have higher lost revenues and hence a lower RIM test score. Third, there is a perception that residential lighting energy savings programs have high free-ridership. Leading programs are strategically designed to address these issues, a perspective that is not exhibited in the program descriptions submitted by Florida utilities.

While some regulators and utilities are reducing support for ***general service*** CFLs, this is occurring primarily in markets where utilities have "captured most of the general service CFL savings already, remaining sockets require specialty bulbs."[14] Achieving all cost-effective energy efficiency in the residential lighting sector, whether with CFLs or with emerging LED technology, will require overcoming market barriers such as reluctance to adopt the technology due to prior experience (e.g., poor quality early-technology CFLs).[15]

Comparison of Utility Residential Lighting Programs

Utility	Residential Program	Savings (% of plan)	Cost per bulb	Cost per annual kWh saved
FPL	n/a	None	n/a	n/a
PEF	Technical Potential	25%	$5.50	14 ¢
Gulf	Self-Install Energy Efficiency	5%	$30.50	56 ¢
TECO	Energy Education Outreach	0.4%	Unspecified, but small	<< 14 ¢
JEA	Energy Efficient Products[16]	33%	$0.87	3 ¢
OUC	Home Energy Surveys	2%	$21	35 ¢
FPUC	n/a	None	n/a	n/a
APS - AZ	Consumer Products	44%	$2.26	4.1 ¢
DEC	Smart Saver	8%	$7.50	13 ¢
Xcel - CO	Home Lighting & Recycling	26%	$3.17	6.8 ¢
IPL - IA	Prescriptive Rebates	Measure-level data not available.		
MA - IA	Residential Equipment	Measure-level data not available.		

Sources: SACE analysis of utility plans and worksheets furnished during discovery; APS 2010a and 2010b; DEC 2010a; IPL 2008; MA 2008; Xcel 2009 and 2010.

[13] Not including low-income programs.
[14] Stephen Bickel, *Maximizing Energy Savings with CFLs: Don't Bench Your Superstar,* D&R International, Ltd., presented to the ACEEE Fifth National Conference on Energy Efficiency As A Resource, September 27 – 29, 2009.
[15] Jeff Haase, *Including CFLs in the Next Generation of Residential Conservation Programs in Minnesota*, Minnesota Office of Energy Security, presented to the ACEEE Fifth National Conference on Energy Efficiency As A Resource, September 27 – 29, 2009.
[16] JEA appears to offer its Energy Efficient Products program to both residential and commercial customers.

Comments

- Gulf Power and OUC's estimated program cost of $30.50 and $21 per bulb, respectively, is clearly unreasonable. Most of these costs are program delivery costs; Gulf and OUC's direct cost per bulb is $2.50 and $3, respectively. OUC appears to allocate its overall efficiency marketing budget on a per-kWh saved basis, which tends to result in high costs for the measures that save the most energy. In Gulf's case, the cost appears to be a per-measure charge that is uniform for all measures.
- Although Progress Energy anticipates 25% of its savings will come from residential lighting, 93% of the CFLs are forecast for installation in 2014-19. Progress Energy is the only utility that anticipates energy savings due to CFL installation after federal standards phase in for general service incandescent bulbs. While such a program is feasible if it targets specialty bulbs, Progress Energy's plan seems to target 60 – 100 watt bulbs, which are covered by federal standards.
- Programs with reasonable costs offer CFLs through established retail channels, or as an inducement to participate in a larger program. JEA's low-cost program is "an upstream program where utility interaction is limited to retailers." (JEA 2010a, p. III-8)
- In cases where RIM scores are provided, the poor score is generally driven by very high lost revenues (unrecovered non-fuel costs in customer bill) and has little to do with the actual program cost. For example, OUC estimates the RIM test using non-fuel "costs" of 8.5 cents per kWh saved. A contrasting example is Gulf Power, where CFLs would pass the RIM test based on the cost of the incentive and non-fuel costs of 5.1 cents per kWh saved, but fail due to the unreasonably high per-measure program cost of $28 per bulb.
- Georgia Power Company's proposed Residential Lighting and Appliances Program is more cost-effective than its sister company Gulf Power's offering. Georgia Power is proposing a program with annual costs of $1.43 million and energy savings of 6.89 GWh, or 21 cents per kWh saved.[17]
- Duke Energy Carolinas program is in its first year. One reason its costs are higher than projected is that coupon redemption processing time is long. The company anticipates that as coupon redemption occurs, average costs will drop significantly since the customer incentive is only 75 cents per bulb. (Energy savings will increase significantly while costs will only go up slightly.)
- Although Interstate Power & Light (IPL / Alliant) of Iowa does not provide measure data, its costs appear to be relatively low. According to its most recent plan, it has shifted from a $2 per bulb incentive to an "upstream" incentive of 50% of bulb price. (IPL 2008, Appendix A)

Strategic Program Leadership Using Residential Lighting

While Florida utilities may be avoiding opportunities in residential lighting programs for what appear to be valid reasons, there is another perspective.

Even though federal regulations will begin to phase out current incandescent bulb designs for ***some*** residential lighting applications, the impact of this will not be fully felt for nearly five years, sometime after the final phase-in date of January 1, 2014. Furthermore, there are a number of bulb types (e.g., recessed lighting) where inefficient alternatives will remain available in the market and where a well-designed residential lighting program could assist customers with installing efficient lighting alternatives.

[17] Georgia Power Company, *2010 Integrated Resource Plan* and *Certification of Certain Demand Side Management Programs*, Volume 2, Economic Scenario Summary, January 29, 2010.

There is a perception among some that supporting residential lighting installations is a cross-subsidization because of lower RIM test scores and high free-ridership. As discussed above, Xcel Energy has found that its programs do not have a free-ridership "problem" – it has actually driven the free adoption of efficient lighting technology by offering a successful program. But more simply, considering that most leading utilities are reaching customers with residential lighting programs through very low-cost mechanisms: ***Is it really cross-subsidization when the expense is minimal and incidental to a larger program purpose? Even if it does lead to substantial low-cost energy savings?***

Arizona Public Service (APS) proposed an *increase* in its CFL giveaway program in 2011 (APS 2011), including the following explanations:

- "APS has found that one of the best ways to engage customers in DSM is through direct customer contact at … public events"
- "Giveaway CFLs provide an opportunity for ASP to attract customer traffic and engage customers in conversations …"
- "CFLs are packaged in boxes that include information about APS's other EE and renewable energy rebate programs …"
- "APS has piloted a program to provide free outreach CFLs to local charitable organizations and non-profit community groups …"
- "… organizations document the mission of their organization or event … and how they will educate customers and promote APS EE programs."

Another approach is demonstrated by Xcel Energy (Colorado), which used an "upstream manufacturer mark-down approach [that] resulted in a dramatic increase in CFL sales … at the same time CFL sales declined nationally."[18] The increase in CFL sales was so dramatic that the independent program evaluator suggested that as much as 1.65 CFL bulb installations could be attributed to each CFL bulb directly incentivized by the rebate.[19]

[18] The Cadmus Group, Inc., *Colorado Home Lighting Program Process and Impact Evaluation Report*, prepared for Xcel Energy, January 22, 2010.

[19] The evaluator recommended a more "conservative estimate … whereby Xcel Energy takes full credit for every bulb incented, but does not take credit for additional CFLs that were outside of program sales."

Appendix J: Residential HVAC [20]

Overview

Maintenance and replacement of residential heating and air conditioning systems[21] comprises a large part of most Florida utilities' efficiency program. While more expensive on an up-front basis, the long life and on-peak savings result in these measures passing most cost-effectiveness screens, including RIM, Participant, and Total Resource.

The one utility that does not find these programs to be so cost-effective is Progress Energy Florida. However, as discussed below, its costs appear to be 3-10 times greater than its peers without any explained justification.

As discussed in Appendix G, Florida utilities are not embracing the nationally-branded Home Performance with ENERGY STAR® program. The peer utilities used in this study are utilizing this program as a delivery mechanism for HVAC measures, particularly maintenance and repair.

Comparison of Utility Residential HVAC Programs

Utility	Residential Program	Savings (% of plan)	Cost per unit / service	Cost per annual kWh saved
FPL	Three HVAC programs[22]	30%	$ 270	71 ¢
PEF	Home Energy Improvement	9%	$ 681	$ 1.74
	Tech. Potential: SEER 16+	5%	$2,960	$ 4.41
	Tech. Potential: HVAC TU	3%	$570	$ 3.20
	Tech. Potential: AC Filter	1%	$540	$ 5.75
Gulf	HVAC Energy Efficiency	56%	$1,428	65 ¢
TECO	Four HVAC programs[23]	21%	$210	50 ¢
JEA	n/a	None	n/a	n/a
OUC	Two HVAC programs[24]	12%	$460	58 ¢
FPUC	HVAC Efficiency Upgrade	34%	$257	10 ¢
APS - AZ	Existing Homes HVAC	4%	$529	41 ¢
DEC	Smart Saver	4%	$400	59 ¢
Xcel - CO	Two HVAC programs	1%	$540	$ 1.19
IPL - IA	Prescriptive Rebates	Measure-level data not available.		
MA - IA	Residential Equipment	Measure-level data not available.		

Sources: SACE analysis of utility plans and worksheets furnished during discovery; APS 2010a and 2010b; DEC 2010a; IPL 2008; MA 2008; Xcel 2009 and 2010.

[20] Not including low-income programs.
[21] JEA offers an incentive for room air conditioners only.
[22] Air Conditioning, Duct System Testing & Repair, and Air-Conditioning Tune-Up & Maintenance
[23] Heating and Cooling, Electronically Commutated Motor (ECM) Program, HVAC Re-Commissioning, and Duct Repair
[24] Duct Repair Rebates and Efficient Electric Heat Pump Rebates

Comments

- For PEF's Technical Potential Program, we have reported the three measures individually due to the extraordinarily high costs and poor cost-effectiveness of these measures. These measures[25] are:
    - SEER 16+ - "Electronically Commutated Motors as part of HVAC Replacement 16 SEER or Higher: Electronically Commutated Motors are the standard air handler motor on high efficiency HVAC systems (typically 16 SEER or higher) and offer significant energy savings compared to other motor types. This measure will be promoted through education to both consumers and through the contractor channels to generate awareness and participation." Costs include a participant incentive or rebate of $2,000, which is ten times more than the incentive proposed by Gulf Power for the same technology.
    - HVAC TU (tune-up) – "HVAC Annual Maintenance: This measure encourages the annual cleaning of outdoor coils in the HVAC system … Education directly to the customers and through the contractor channels will be used to generate awareness of and participation in this measure." Costs include a participant incentive or rebate of $120 for outdoor coil cleaning.
    - AC Filter – "Air filter replacement: Progress energy will encourage customers to regularly replace air filters on central HVAC systems that have standard air filtration. Continuous education and awareness marketing will play a key role in encouraging customers to adopt this energy-saving behavior." Costs include a participant incentive or rebate of $60 per year.

  While we believe that these measures could be an appropriate part of a cost-effective energy efficiency program, we in no way endorse these costs or any similar costs. While barely explained, this program design is clearly inappropriate.
- For Progress Energy Florida's (PEF) Home Energy Improvement program, we estimated the percentage of costs and energy savings based on measure-level data, and then applied this ratio to the program-level costs and energy savings. This procedure was necessary due to the use of "escalation values" as discussed in Appendix T.
- For both FPL and PEF Home Energy Improvement (HEI) programs, one reason that the costs appear unusually high is that the projected savings per measure is relatively low, less than 400 kWh per year. In contrast, Duke Energy Carolinas projects savings of 682 kWh per year for each measure installed. (Duke 2010a)
- While Gulf Power's average measure cost of $1,428 appears relatively high, its programs are also very aggressive, saving 2,020 kWh per year for each participant on average across all measures.
- TECO's programs provide perhaps the best basic benchmark for costs and savings. Its four programs are really measures:
    - High efficiency heat pump replacement, at a cost of $1,003 per unit and 32 cents per annual kWh savings.
    - Air-handler motor replacement, at a cost of $146 per unit and 39 cents per annual kWh savings.

[25] Descriptions are from PEF 2010a, costs are from PEF 2010b worksheet "PROGRAM: Technical Potential".

- HVAC maintenance and tune-up, at a cost of $86 per unit and 23 cents per annual kWh savings.
- Sealing and repairing the air distribution system, at a cost of $280 per system and 97 cents per annual kWh savings.

Although the duct repair measure appears less cost-effective than other measures, it has been offered since 1992 and passes both RIM and TRC.

- FPUC's program costs of 10¢, per kWh saved are low compared to the other FEECA utilities. FPUC achieves these lower costs because they assume higher energy savings per upgraded unit.
- Duke Energy Carolinas notes promising early results from its new Smart Saver program. Its goal of 990 heat pumps for the first quarter of 2010 was exceeded, with 2,450 installations. The company "expect[s] these numbers to continue and at year end could easily see triple the expected participation." Success is attributed to "a greater than expected acceptance of the program by customers and participating trade allies" and over 600 trade allies signed up to participate in less than one year. (DEC 2010a)
- Xcel – Colorado reported that it was having trouble with the cost-effectiveness of its High Efficiency Air Conditioning Program, its AC tune-up pilot. (Xcel 2010)

Appendix K: Residential Pools

Overview

Two Florida utilities, Gulf Power and Progress Energy Florida, propose to offer incentives for residential pool pumps. Of the peer utilities we used for benchmarking purposes, Arizona Public Service is also proposing to offer these measures.

While the energy savings attributed to more efficient pool pumps are similar among the three utilities, the incentives vary widely.

- APS is proposing to offer $75-270 incentives, depending on technology, using incentives paid directly to distributors, "making the cost of highly efficient pumps more competitive with conventional pumps." The APS incentives represent 38-48% of the incremental cost, so the customer's additional cost for the more efficient technology would be $100-700. (APS 2009)
- APS bases its incentive proposal on a review of existing programs at other utilities, including PG&E, SCE, SDGE, NV Energy, Pasadena Water & Power, Austin Energy and LIPA. (APS 2009)
- Gulf is proposing incentives up to 75% of the incremental cost, with a maximum incentive of $900 per participant. Its forecast program cost is $2,269 per participant. While the program passes the cost-effectiveness test, it is unclear why Gulf's costs are so much higher than Progress Energy. It is also unclear how Gulf intends to deliver the incentive, although the reference to "customer awareness" suggests that individual pool owners would need to apply for the savings.
- PEF includes efficient pool pumps in its "technical potential" program; it is unclear how the program would be marketed and administered. Oddly, while the incentive listed in workpapers for the 2-speed pump is a relatively low $100, the incentive for the variable speed pump is listed at $2,000, which appears to exceed the incremental cost estimated by APS. PEF does not provide a cost-effectiveness evaluation for these measures or the "technical potential" program.

Overall, the program costs suggested by Gulf and PEF appear to be much higher than those suggested by APS and the other utility programs it reviewed.

No utility appears to offer incentives to non-residential customers.

Appendix L: Non-Residential Audits / Evaluation

The energy efficiency audits offered by Florida utilities are structured differently than the audits offered by four peer utilities. The Florida audit programs are stand-alone, "educational" audits. In contrast, the four other peer utilities offering audits or studies provide them as a component or pathway to a specific set of energy efficiency services.

Of course, Florida utilities do encourage and qualify customers for participation in other efficiency programs based on the audit findings. Some utilities provide kits or lighting samples to audit participants, providing further education and an opportunity to easily increase efficiency. However, none of the program descriptions indicated that the audit is an integral component of other program services in the same way that the four benchmark utilities programs indicate.

Most of the Florida utilities appear to offer fairly standardized audits. However, Gulf Power offers a more sophisticated Technical Assistance Audit that may be subcontracted to an independent firm when in-house resources are not well-matched to the customer's needs.[26]

The benchmarked utilities offer a variety of both general and sector-specific program strategies that utilize an audit as an entry point into project development and execution. Typically, the customer shares in the cost of the audit, but may pay for it only in the course of the overall project implementation so that it is a small part of the overall project cost. The budget for sector-specific audits (e.g., agriculture or office buildings) appears to vary based on the complexity of the sector and the nature of typical recommendations. One type of program that includes a study, building (re)commissioning, is discussed below (Appendix M).

Comparison of Utility Nonresidential Audit and Education Programs

Utility	Nonresidential Program	Savings (% of plan)	Cost per audit	Cost per annual kWh saved
FPL	Business Energy Evaluation	None	$ 497	n/a
PEF	Business Energy Check	None	$ 1,314	n/a
Gulf	Commercial/Industrial Audit	None	n/a	n/a
TECO	Commercial/Industrial Audit[27]	2%	$ 321	41 ¢
JEA	Commercial Energy Audit	1%	$ 260	46 ¢
OUC	Commercial/Ind. Energy Audit	4%	$ 643	73 ¢
FPUC	Commercial Energy Survey	6%	$ 436	22 ¢
APS - AZ	Component of 2 programs[28]	Measure-level data not available.		
DEC	Not offered	None	n/a	n/a
Xcel - CO	Component of 4 programs[29]	Measure-level data not available.		
IPL - IA	Component of 2 programs[30]	Measure-level data not available.		
MA - IA	Component of 5 programs[31]	Measure-level data not available.		

[26] TECO's paid audit may also provide advanced services, but the only specific difference between the free and paid audits is the use of monitoring to determine the electric usage of specific equipment.
[27] Two programs: free and paid.
[28] Large Existing Facilities and Small Business programs
[29] Recommissioning, Segment Efficiency, Self-Direct, and Standard Offer programs
[30] Custom Rebates and Agricultural Sector programs
[31] Small Commercial Energy Audit, Nonresidential Energy Analysis, Nonresidential Custom, Multifamily, and Agriculture programs

Sources: SACE analysis of utility plans and worksheets furnished during discovery; APS 2010a and 2010b; IPL 2008; MA 2008; Xcel 2009 and 2010.

Comments

- The high cost of PEF's Business Energy Check is not explained by any material difference with other utility programs. PEF offers four types of audits, but there is no information on the relative savings of the different audit types or how they differ in cost.
- PEF's Commercial Energy Program is an add-on to its Business Energy Check, including samples that are provided during or after the audit. The costs seem to be excessive:
    - CFLs: $79 each
    - Refrigerator thermometer: $72
    - Switch plate thermometer: $76
    - Smart strip: $93
- TECO's estimate of 748 kWh savings (at the meter) appears to be based on a reasonable measurement & verification method, as described in its plan.

    > The kWh billing histories of customers who received commercial/industrial audits were examined in comparison to those matched unaudited customers. Matching customers were required to be on the same meter reading route and rate, and have consumption closely matched during the 12 months preceding the audit. Consumption before and after the audit was compared for both sets of customers to estimate the impact associated with the audit. Based on load research data, the consumption impacts were extrapolated into corresponding demand impacts. (TECO 2010a, p. 124)

- FPUC's Energy Survey commercial audit program anticipates relatively high energy savings per unit, driving a relatively low 22 ¢ per kWh cost of energy saved.
- Some utilities are providing better access to data as a means to facilitate customer-adopted energy efficiency. The Arizona Public "Service Energy Information Services program provides 15-minute interval data to large non-residential customers through a web-based energy information tool. … information that can be used to improve or monitor energy usage patterns, reduce energy use, reduce demands during on-peak periods …" (APS 2009)
- One example of a sector-specific program is Xcel Colorado's commercial real estate (office building) segment program. The program assists customers in two phases. First, there are basic phone interviews and on-site walk-through which results in an ENERGY STAR® Benchmark Score, Energy Systems Rating, and list of efficiency opportunities. Second, customers may participate in an investment-grade engineering study, leading to implementation, including measure-specific rebates. In addition to a 50% cost-share for the study, Xcel also offers a 30% bonus rebate above standard rebates for implementation of study recommendations. (Xcel 2009)

Appendix M: Non-Residential (Re)commissioning

Overview of Program Concepts

Building commissioning is the systematic and documented process of ensuring that the owner's operational needs are met, building systems perform efficiently and building operators are properly trained during the period immediately following new construction. Building re-commissioning or retro-commissioning (generally, "commissioning") refers to the same practice on a periodic basis during the lifetime of the building. These programs are most often offered to commercial, government, and/or industrial buildings, although multifamily residential buildings may also be suitable properties.

Missed Opportunities in Florida

No Florida utilities are proposing to offer a comprehensive building (re)commissioning program.[32]

The presence of building retrofit measures in a utility's energy efficiency portfolio should not be regarded as an adequate substitute for a commissioning program. For example, even though a number of building retrofit measures were included in the technical potential study conducted for Florida utilities, the technical potential of those measures represented less than 20% of the total potential energy savings that could be achieved in a commissioning program. This missed opportunity represents about 5% of statewide retail electricity sales.

The potential energy savings due to commission has reported over the past decade by organizations including the Energy Systems Laboratory of Texas A&M University, National Association of Energy Service Companies, and Energy Service Coalition. In particular, Lawrence Berkeley National Laboratories (LBNL) reports median whole-building energy savings of 16% for existing buildings and 13% for new construction.[33]

Based on the LBNL estimated savings potential and data presented in the Florida study, the statewide energy savings potential for commissioning in Florida is 9,785 GWh of annual energy savings. After adjusting for the technical potential associated with retrofit measures identified by the study consultant as being typical components of a building commissioning program, the technical potential of the remaining practices performed in a commissioning project is 8,105 GWh of energy savings.

[32] Gulf Power and TECO are proposing commercial HVAC recommissioning programs. However, these programs are limited in scope. For example, Gulf's program includes diagnosis of HVAC "refrigerant level, evaporator airflow, refrigerant metering performance, and condenser performance." (Gulf 2010a, TECO 2010a) Due to the limited scope, we are not considering these to be full recommissioning programs. These programs are properly reviewed in Appendix P.

[33] Evan Mills, *Building Commissioning: A Golden Opportunity for Reducing Energy Costs and Greenhouse Gas Emissions*, Lawrence Berkeley National Laboratory, prepared for California Energy Commission and Public Interest Energy Research, July 2009.

The reason that retrofit measures alone fail to represent the full potential of building commissioning programs is that the programs emphasize improving the way that a building is used and operated. The ENERGY STAR® Building Upgrade Manual explains:

> The following items are indicators of retrocommissioning opportunities commonly found during a building walk-through. Their presence indicates potential problems that can be identified and fixed through a retrocommissioning project:
>
> - Systems that are inefficient due to simultaneous heating and cooling of the same air volume
> - Repair or adjustment of economizers due to frozen dampers, broken or disconnected linkages, malfunctioning actuators and sensors, and improper control settings
> - Pumps with throttled discharges
> - Equipment or lighting that is on when it may not need to be
> - Improper building pressurization due to doors that stand open or are difficult to get open
> - Equipment or piping that is hot or cold when it should not be; unusual flow noises at valves or mechanical noises
> - Short cycling of equipment
> - Variable-frequency drives that operate at unnecessarily high speeds, or at a constant speed even though the load being served should vary [34]

We have found that the majority of the interventions listed are not typically captured in a "measures database."

Widespread Interest in Building (Re)Commissioning

The omission of this important demand-side resource cannot be justified by claim of novelty or obscurity. The widespread understanding of building commissioning is demonstrated by the recent release of the US EPA Rapid Deployment Energy Efficiency Toolkit, which "provides detailed program design and implementation guides for *10 broadly applicable energy efficiency programs*."(emphasis added) One of the ten programs cited is "Retro-commissioning" for "Commercial/Government/Schools."[35] A number of model utility commissioning programs were recognized by the American Council for an Energy-Efficient Economy in its 2008 "Compendium of Champions: Chronicling Exemplary Energy Efficiency Programs from Across the U.S." and could serve as models for Florida utilities.

Furthermore, in 2002 the national commissioning market was estimated to include annual retro-commissioning projects valued at $175 million and new commissioning projects valued at of $114 million. Notably, the potential market opportunity for retro-commissioning services is estimated to be nearly 50 to 100 times greater than new commissioning.[36]

Building commissioning programs are ideal for a utility energy efficiency program because the barriers to customer adoption tend to be awareness and technical expertise, rather than financial. The cost-effectiveness of commissioning is indicated by median costs with a payback time of 1.1 years and 4.2 years for existing and new buildings, respectively.[37]

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[34] US Environmental Protection Agency, *ENERGY STAR Building Upgrade Manual,* Office of Air and Radiation, 2008 Edition, p. 5-7.
[35] US Environmental Protection Agency, *Rapid Deployment Energy Efficiency Toolkit*, version dated May 20, 2009.
[36] FMI, "NEMI Retro-commissioning Existing Building Inventory," February 2002.
[37] Mills 2009 (see note 33).

Three of the benchmark utilities offer a building (re)commissioning program

- IPL Iowa offers a Retro-Commissioning program; the engineering study is paid for by its Custom Rebates program, "provided that the building owner commits to implementing all energy savings measures that have a payback of one year or less. The program will provide incentives for measures that have been identified and have a payback period of longer than one year. For projects that have a simple payback of less than two years, Nonresidential Prescriptive Rebates or Performance Contracting are available." (IPL 2008) Energy savings are attributed to the study if they are associated with resulting operational changes or service repairs, but capital measures would only be credited when associated with the award of a prescriptive or custom incentive. (APS 2007)
- APS offers "Energy Study incentives [that] provide partial reimbursement of feasibility studies, design assistance, commissioning and retro-commissioning services for new or existing facilities. Customers can apply for up to 50 percent of the qualifying study cost to $10,000 per study ($20,000 for retro-commissioning)."[38]
- While Xcel Energy – Colorado's Recommissioning Program is relatively new, the utility has been offering a similar program in Minnesota since 2000. Xcel indicates that a typical project has a one to two year sales cycle, and that substantial education is required for both customers and trade allies. Common markets for the program are offices, hospitals and schools. Xcel will pay for up to 75% of the recommissioning study cost, and an implementation rebate, for example, up to $0.08 per lifetime kWh saved. While the per-customer cost of building recommissioning is high ($14,474 in 2009), the energy savings are also substantial, resulting in a cost-effective 16 cents per annual kWh saved. (Xcel 2009)

[38] Arizona Public Service, "Solutions for Business: Incentives," http://www.aps-solutionsforbusiness.com/ProjectCenter/Default.aspx?tabid=1870, last accessed June 30, 2010.

Appendix N: Commercial New Construction

Only Progress Energy Florida is offering a commercial new construction program, in contrast to several of the benchmark utilities that are relying heavily on this type of program to achieve overall impacts.

A typical commercial new construction program encourages efficiency using three tools: free consulting advice (either from the utility or its contractor), a financial incentive to the design team (perhaps based on square footage, energy performance, or other factors), and construction incentives (either prescriptive or custom incentives). There may also be a minimum performance requirement, such as efficiency 15% above building code minimum performance.

Utilities are using a variety of incentive structures for new construction programs. In some cases, the incentives may closely track the incentives available in other programs. Other utilities are using performance-based incentives based on estimated energy and demand savings, sometimes on a sliding scale (higher incentives for deeper savings). For example, energy savings incentives range from 5 to 14 cents per annual kWh saved among the utilities included in this analysis.

One unusual incentive structure is the Whole Building Design offer from Arizona Public Service. APS splits its design incentive between the design firm and the building owner. This is characterized by the utility as being integrated with LEED program design. (APS 2009)

One advantage of Commercial New Construction projects is that they have a high spillover (or "free driver") rate. As a result of the training and market awareness generated by each large project, other projects adopt more efficient practices and technologies even if they do not participate directly. Xcel's recent analysis suggests that the spillover rate approximately equals the "free rider" rate that results from companies that would practice efficient practices anyway participating in the program to gain the financial benefits. (Xcel 2009)

Comparison of Utility Commercial New Construction Programs

Utility	Nonresidential Program	Savings (% of plan)	Cost per facility	Cost per annual kWh saved
FPL	n/a	None	n/a	n/a
PEF	Green Building New Construction	2%	$1,025	$ 1.56
Gulf	n/a	None	n/a	n/a
TECO	n/a	None	n/a	n/a
JEA	n/a	None	n/a	n/a
OUC	n/a	None	n/a	n/a
FPUC	n/a	None	n/a	n/a
APS - AZ	Non-Residential New Construction and Major Renovations	2%	n/a	39 ¢
DEC	n/a	None	n/a	n/a
Xcel - CO	New Construction	5%	$121,889	27 ¢
IPL - IA	New Construction	8%	$126,415	31 ¢
MA - IA	New Construction	17%	$76,881	13 ¢

Sources: SACE analysis of utility plans and worksheets furnished during discovery; APS 2010a and 2010b; IPL 2008; MA 2008; Xcel 2009 and 2010.

Comments

- Per-project costs are fairly high, but this is because the savings opportunities are large. The services needed to properly design for energy efficiency typically cost $30 – 40,000. (Xcel 2009)
- The basis for the costs in PEF's program is unclear. According to the text of the plan, the "program will offer a capped incentive in the amount of 50% of the registration and certification fees for obtaining a LEED-NC certificate …" (PEF 2010a) However, PEF's calculation of costs suggests that the budget for this program is driven by prescriptive or custom measure incentives.[39]
- While Progress Energy Florida's costs are far lower than the costs of peer utilities, its cost-effectiveness suggests that its costs are at least four times more than other utilities on a per-kWh-saved basis. However, this may be due to either low standards for program participation or an underestimate of actual building energy savings resulting from LEED certification.

[39] Progress Energy Florida's Response to The Southern Alliance for Clean Energy's First Request for Production of Documents, No. 1, *Measure Matrix – Comm – TRC* (Bates No. PEF-DSM-00437), May 13, 2010.

Appendix O: Commercial Lighting

Overview

Commercial lighting measures are a mainstay of major utility-led energy efficiency programs. For example, the Bonneville Power Authority anticipates achieving nearly half of its commercial sector energy savings targets with lighting improvements.[40]

Most utilities with strong energy efficiency programs offer commercial lighting programs. A 2009 review of 80 utility efficiency programs illustrates the wide range of lighting technologies incentivized by utility energy efficiency programs.[41] Of Florida utilities, only PEF and TECO are members of the Council for Energy Efficiency. The survey mentions only PEF's "custom" rebate for ceramic metal halide programs.

Even though federal regulations will begin to phase out current incandescent bulb designs for ***some*** commercial lighting applications, the impact of this will not be fully felt for nearly five years, sometime after the final phase-in date of January 1, 2014. See Appendix I for further discussion. The vast majority of commercial lighting is not affected by these regulations.

Comparison of Utility Commercial Lighting Programs

Utility	Commercial Program	Savings (% of plan)	Cost per project[42]	Cost per annual kWh saved
FPL	Business Lighting	8%	$ 512	13 ¢
PEF	Component of 2 programs[43]	3%	Very high[44]	
Gulf	Building Efficiency	2%	$ 407	25 ¢
TECO	Two lighting programs[45]	15%	$ 3,187	5 ¢
JEA	Energy Efficient Products[46]	42%	$ 22	3 ¢
OUC	Indoor Lighting Retrofit	54%	$34,276	9 ¢
FPUC	Indoor Efficient Lighting Rebate	12%	$1,988	14 ¢
APS - AZ	Component of 2 programs[47]	Measure-level data not available.		
DEC	Component of 2 programs[48]	Measure-level data not available.		
Xcel - CO	Lighting efficiency	34%	$ 59,736	8 ¢
IPL - IA	Component of 2 programs[49]	Measure-level data not available.		
MA - IA	Component of 6 programs[50]	Measure-level data not available.		

Sources: SACE analysis of utility plans and worksheets furnished during discovery; APS 2010a and 2010b; DEC 2010b; IPL 2008; MA 2008; Xcel 2009 and 2010.

[40] Bonneville Power Administration, *Action Plan for Energy Efficiency: 2010-2014*, March 24, 2010.
[41] Consortium for Energy Efficiency, *Commercial Lighting Efficiency Program Summary*, September 2009.
[42] Project units appear to vary among utilities for these measures.
[43] Better Business and Commercial Education Tools programs
[44] We were unable to calculate a credible measure-based estimate for the cost of the lighting measures in the Better Business program due to inadequate documentation. However, for the lighting measure included in Commercial Education Tools, we calculated 66 cents per annual kWh saved and $79 per CFL bulb as the average cost.
[45] Commercial Lighting and Commercial Lighting Occupancy Sensor programs
[46] JEA offers its Energy Efficient Products program to both residential and commercial customers.
[47] Large Existing Facilities and Small Business programs
[48] Smart Saver Non-Residential Prescriptive and Custom programs
[49] Nonresidential Prescriptive Rebates, Custom Rebates, and Performance Contracting programs
[50] Nonresidential Equipment, Nonresidential Custom, Efficiency Bid, Small Commercial Energy Audit, Nonresidential Energy Analysis and Multifamily programs

Comments

- TECO's program reaches less than 1% of customers over ten years for the major measures, and because the programs are so cost-effective, they could be expanded. The cost-effectiveness results for the commercial lighting program support a TRC score of 5.06 and RIM score of 0.99. This indicates that there is substantial value to this program with minimal or no upward pressure on rates under TECO's benefits assumptions. Incentive levels could be increased with little additional pressure on rates since they are less than 5% of the costs in the RIM test. (TECO 2010a)
- Small businesses are a good focal point for commercial lighting programs because they have "not historically completed energy efficiency projects on their own …" (Xcel 2009) For this reason, "free riders" are not considered a significant factor in program design for the small business sector.
- In addition to disregarding concerns about "free riders," utilities often extend more generous subsidies to small businesses. For example, MidAmerican offers small businesses lighting rebates "set at *70 percent of installed equipment costs or three times applicable rebates defined in the Nonresidential Equipment program*, whichever is less." (MA 2008, emphasis added) APS found similarly high incentive levels in five programs it reviewed. (APS 2007)
- APS shifted its Small Business program from an incentive payment to a direct install program in which contractors are paid directly for successful installations of energy efficiency products. APS reported that as a result of this change, program costs dropped from 25 cents to 12 cents per annual kWh saved. (APS 2010a)
- APS also indicates that the direct install program structure allows "more experienced" contractors to reach the point where the utility-paid incentives cover an average of 70 – 85% of total project costs without driving up costs for the utility. (APS 2010a)

Appendix P: Commercial HVAC

Overview

Commercial HVAC system maintenance and replacement programs are an important part of many utilities' portfolios, but three Florida utilities do not propose to make much use of these measures.

Nearly all of the utilities offered similar incentives and proposed or reported similar overall costs. We spot-checked specific incentive levels for equipment among programs in a manner that is similar to the review of pool pump efficiency incentives discussed in Appendix K. Progress Energy Florida's costs are a notable exception to this consistency, for reasons discussed in Appendix T. But its per-system incentive levels were reasonably similar to those of other utilities.

Comparison of Utility Commercial HVAC Programs

Utility	Commercial Program	Savings (% of plan)	Cost per project[51]	Cost per annual kWh saved
FPL	Business HVAC	29%	$ 1,438	29 ¢
PEF	Better Business	< 1%	Very high[52]	
Gulf	Composed of 3 programs[53]	8%	$ 730	29 ¢
TECO	Composed of 5 programs[54]	9%	$ 468	12 ¢
JEA	n/a[55]	None	n/a	n/a
OUC	Composed of 2 programs[56]	< 1%	$ 340	42 ¢
FPUC	Composed of 2 programs [57]	24%	$ 511	9 ¢
APS - AZ	Composed of 2 programs[58]	Measure-level data not available.		
DEC	Composed of 2 programs[59]	Measure-level data not available.		
Xcel - CO	Cooling Efficiency	3%	$ 37,722	26 ¢
IPL - IA	Composed of 2 programs[60]	Measure-level data not available.		
MA - IA	Composed of 6 programs [61]	Measure-level data not available.		

Sources: SACE analysis of utility plans and worksheets furnished during discovery; APS 2010a and 2010b; DEC 2010b; IPL 2008; MA 2008; Xcel 2009 and 2010.

[51] Project units appear to vary among utilities for these measures.
[52] We were unable to calculate a credible measure-based estimate for the cost of the HVAC measures in the Better Business program due to inadequate documentation.
[53] HVAC Retrocommissioning, Building Efficiency and Occupancy Sensor HVAC Control programs
[54] Cooling, Chiller, HVAC Re-commissioning, Electronically Commutated Motor ("ECM") and Energy Recovery Ventilation ("ERV") programs
[55] We did not evaluate JEA's District Chilled Water program because it is only intended to serve 1 customer.
[56] Efficient Electric Heat Pump Rebates and Duct Repair Rebates programs
[57] Heating and Cooling Efficiency Upgrade and Chiller Upgrade programs
[58] Large Existing Facilities and Small Business programs
[59] Smart Saver Non-Residential Prescriptive and Custom programs
[60] Nonresidential Prescriptive Rebates, Custom Rebates, and Performance Contracting programs
[61] Nonresidential Equipment, Nonresidential Custom, Efficiency Bid, Small Commercial Energy Audit, Nonresidential Energy Analysis and Multifamily programs

Comments

- TECO's five HVAC programs reach only 1-5% of customers over ten years. Other than the Energy Recovery Ventilation program, the programs are so cost-effective that they could reasonably be expanded. The cost-effectiveness results for the four more cost-effective HVAC programs have TRC scores of 3.3 – 7.9 and RIM scores of 0.99 – 1.2. In other words, expanding these programs could result in ***downward*** rate pressure and substantially lower overall energy costs for TECO customers. (TECO 2010a)
- The HVAC recommissioning programs offered by Gulf and TECO both appear to be cost-effective and include a range of measures that may be adapted to customer circumstances.
- FPUC's program costs are typical, but the company anticipates achieving greater energy savings than other utilities.
- Xcel Energy Colorado offers a higher rebate than its sister utility offers in Minnesota because of "more stringent code levels and therefore higher minimum qualifying efficiencies in Colorado, requiring customers to make a larger investment for the incremental savings."

Appendix Q: Reasonableness of Costs and Revenue Requirements

There are a number of factors affecting the reasonableness of costs and revenue requirements. As discussed in appendices F through P, the costs suggested by Florida utilities in their program proposals are not always consistent with national experience.

The single largest concern we identified with costs is specific to Progress Energy Florida as discussed in Appendix T. In this section, we discuss several issues that are not adequately covered elsewhere.

Costs may be overstated

The costs and revenue requirements of some Florida utilities are overstated because incentives are estimated at the maximum, rather than likely, level. For example, Gulf Power indicates that it will "utilize the Program Standards to set specific incentive levels …" However, the program budgets and cost-effectiveness evaluations "are based on the maximum incentive levels contemplated …" (Gulf 2010a)

Participation levels may be understated

On the other hand, while utilities are understandably cautious about participation levels, recent experience in the Southeast indicates that the opposite may be the case, particularly where strong outreach programs promote customer awareness. Duke Energy Carolinas found that there has been "more pent up demand than expected – business customers are looking for ways to save money" and "National Account customers were a driving force in the higher than expected participation" due to "Corporate goals tied to energy efficiency." (Duke 2010b)

Incentive levels may be set too low

Several of the utilities reviewed for these comments offer custom incentive, performance contracting, self-direct and other programs that pay a fixed (or variable) rebate amount. For example, Xcel Colorado pays up to 10 cents per annual kWh saved in its Self-Direct program (Xcel 2009) and TECO offers 5.4 cents per annual kWh saved in its Conservation Value program (TECO 2010a). Comparing these programs can be quite complex because of the varying terms and relationships with other utility programs, but in general we would consider offers such as TECO's 5.4 cents per annual kWh saved to be on the low end and potentially worth raising to attract more interest.

For example, Summit Blue recently advised Arizona Public Service that while its custom incentive offer of 11 cents per annual kWh saved is reasonable, its cap of 50% of incremental costs should be raised to 75% of incremental costs. It based these findings on participation activity and a review of incentive structures for twelve other utilities.[62] The recommended change is anticipated to increase market acceptance from 35% to 45%.

[62] Summit Blue Consulting, *APS Custom Incentive Analysis Report*, April 1, 2009.

Appendix R: Mis-Application of the Two-Year Payback Concept

Some of the utilities have maintained the 2-year payback limitation in some or all of their programs. For example, Gulf Power maintains that "a two-year payback represents a reasonable economic criteria [sic] for consideration of energy efficiency investments." (Gulf 2010a)

We did not observe any use of a 2-year payback limitation in the five non-Florida utility programs we reviewed as benchmarks. In some cases, a 1-year simple payback criterion is used but in others the payback period is quite short. In particular, small businesses that lease space require aggressive incentives and program designs in order to achieve high participation levels, as discussed in Appendix O. Arizona Public Service explains this issue:

> Historically, fewer energy efficiency measures are installed in leased space because building owners generally pay for the retrofit, but the renter benefits from the energy savings. This provides little incentive on the part of the owner to invest in energy efficiency. Research has shown that renters are willing to share in the cost of energy efficiency improvements with their building owner when payback periods are less than or equal to the time remaining on their lease. (APS 2007)

In addressing this issue, APS proposes to work directly with building owners to replace inefficient HVAC systems, particularly in multifamily apartment complexes, even if the building owners are not the actual customer of APS. (APS 2007)

Oddly, while some Florida utilities were quite careful strictly to avoid incentivizing any measure to below a 2-year payback period, FPL went so far as to propose "a measure that is not cost-effective to participating customers." (FPL 2010a, p. 3)

Appendix S: Florida Power & Light / FPL

Internally Inconsistent Costs

We identified two ways in which costs provided by FPL appear to be internally inconsistent. First, costs provided by FPL in response to SACE's 1st POD Request No. 2 (FPL 000054) are significantly different than the costs included in the cost-effectiveness evaluation when program costs are compared on a year-to-year basis.

Second, for two residential programs we evaluated, we found significantly different costs when working from measure data provided in response to SACE's 1st POD Request No. 3 (FPL 000043) compared to the costs provided by FPL in response to SACE's 1st POD Request No. 2 (FPL 000054). Note that following the same method of calculation, we were able to use the data in FPL 000043 to calculate the forecast participants as represented in Section VII of FPL's plan.

Comparison of Selected Data from Referenced FPL Data Sets

Selected Program	Program Costs ($ 2010-19)		Energy Savings (kWh, 2010-19)	
	FPL 000043	FPL 000054	FPL 000043	FPL 000054
Residential New Construction	108,250,027	105,007,709	120,141,992	129,047,564
Residential HVAC (3 programs)	759,962,098	743,599,720	997,445,205	1,049,898,718
Non-Residential Lighting	35,355,531	39,060,519	272,190,636	292,366,874
Non-Residential HVAC	288,334,804	304,332,878	950,470,535	1,020,924,536

Source: SACE calculations based on referenced FPL data sets.

Where inconsistent data were provided by FPL, we relied on the data that were most consistent with the data presented in the text of FPL's plan, but did use some of the inconsistent data provided by FPL where the level of detail supported by the alternative data were required for our analysis.

Overview of FPL Program Savings & Costs (2010-19)

	Energy Savings MWh	% of Total	Cost ($000)	Cost (¢/kWh)
Residential Conservation Programs				
Low Income Weatherization	145,948	4%	92,703	64
Home Energy Survey	-	0%	160,412	-
Air-Conditioning	845,553	24%	626,438	74
Duct System Testing & Repair	163,318	5%	95,832	59
Building Envelope	311,666	9%	181,141	58
New Construction (BuildSmart®)	129,048	4%	105,008	81
Air-Conditioning Tune-Up & Maintenance	41,027	1%	21,330	52
Refrigerator Replacement	17,899	1%	19,978	112
Business Conservation Programs				
Energy Evaluation	-	0%	69,540	-
Heating, Ventilating & Air-Conditioning	1,020,925	29%	304,333	30
Lighting	292,367	8%	39,061	13
Refrigeration	117,834	3%	10,722	9
Building Envelope	255,868	7%	183,825	72
Water Heating	35,815	1%	9,519	27
Custom Incentive	29,856	1%	2,334	8
Motors	43,912	1%	968	2
Cogeneration & Small Power Production	-	0%	6,383	-
Conservation Programs	**3,451,035**	**98%**	**1,929,526**	**56**
Residential Demand Response Programs		**0%**		
Load Management (On Call)	1,017	0%	589,503	n/a
Business Demand Response				
On Call	40	0%	41,559	n/a
Commercial/Industrial Demand Reduction	1,063	0%	120,585	n/a
Commercial/Industrial Load Control	-	0%	299,997	n/a
Demand Response Programs	**2,120**	**0%**	**1,051,644**	**n/a**
Residential Renewable Energy Pilot Programs				
Solar Water Heating	33,080	1%	23,108	70
Solar Water Heating (Low Income New Construction)	1,305	0%	5,229	401
Photovoltaic	9,819	0%	12,067	123
Business Renewable Energy Pilot Programs				
Solar Water Heating	958	0%	357	37
Photovoltaic	8,213	0%	1,310	16
Photovoltaics for Schools	714	0%	6,612	926
Unallocated Renewable Energy Pilot Programs			20,135	-
Renewable Energy Pilot Programs	**54,089**	**2%**	**68,818**	**127**
Conservation Research and Development	-		6,011	
Common Expenses	-		192,601	
Residential Programs	**1,699,680**	**48%**	**1,932,749**	**114**
Business Programs	**1,807,564**	**52%**	**1,097,105**	**61**
TOTAL	**3,507,244**		**3,248,601**	**93**

Source: SACE analysis of FPL plan and responses to data requests.

Appendix T: Progress Energy Florida

Possible Overstatement of Plan Costs

For Progress Energy Florida, we were unable to reconcile the total DSM Plan Cost of $4,837,384,543 with the detailed data provided in discovery. We point to two issues with these data.

First, based on year-by-year, program-by-program data we received from Progress Energy, we calculated the total DSM Plan Cost to be $4,522,748,865. While we were only able to link about 93% of PEF's plan costs with specific program budgets. It is likely that the unexplained costs are related, in part at least, to the requested "cost recovery for previously closed programs that have ongoing costs associated with grandfathered participants." (PEF 2010a, p. 22)

The more serious problem is that Progress Energy Florida has applied "escalation values" to the utility program costs, incentive payments, and participant costs at the program level in the cost-effectiveness evaluations. The example "escalation values" below demonstrate that the costs of individual programs are escalated quite dramatically in the latter years of the program in some cases; overall, there is no apparent pattern or explanation for the "escalation values."

Examples of Escalation Values

Year	Residential Home Energy Improvement			Commercial Better Business		
	Utility Program Costs	Incentive Payments	Incentive Payments	Utility Program Costs	Incentive Payments	Incentive Payments
2010	1.31	0.82	0.77	3.35	4.47	2.45
2011	1.52	0.95	0.90	3.39	4.46	2.49
2012	1.82	1.14	1.07	3.33	4.31	2.43
2013	2.17	1.36	1.28	3.43	3.94	2.53
2014	2.33	1.46	1.38	3.38	3.91	2.48
2015	2.81	1.76	1.66	3.75	4.14	2.85
2016	3.39	2.12	2.01	3.95	4.22	3.05
2017	4.11	2.57	2.43	3.95	4.07	3.05
2018	4.58	2.87	2.71	4.10	4.14	3.20
2019	5.14	3.22	3.04	4.20	4.16	3.30

Source: Progress Energy Florida's Response to The Southern Alliance for Clean Energy's First Request for Production of Documents, No. 1, Summary of Measure Matrices for TRC High Goals, "Escalation" worksheet (Bates No. PEF-DSM-00501), May 13, 2010.

The "escalation values" are applied in the cost-effectiveness evaluations used by Progress Energy Florida to generate the results presented in Table III-1 of its Executive Summary. While costs (except revenue losses) are escalated, the benefits (energy savings, avoided costs, etc.) are not escalated. As a result, the "NPV Total Costs" and the "B/C Ratio" for each cost-effectiveness test are worse (more costs, lower ratio) than they would be without the escalation factor.

For example, in the RIM Test evaluation for the Commercial Better Business Program, the "Utility Program Costs" for 2010 are calculated using the following formula:

> =401.913269042968*'http://progressnet/moss/dsmalt/dsmpp/Measure Matrix/Measure Matrices for TRC High Goals/[Summary of Measure Matrices for TRC High Goals.xlsx]Escalation'!O4
>
> Source: PEF 2010c, worksheet "PROGRAM: Better Business – RIM"

where the referenced "escalation value" is 3.35. As a result, rather than utility program costs of $401,913, the cost-effectiveness test uses a value of $1,346,409; about 70% of the costs of this program for this year can be attributed to the "escalation value" and not to the underlying program cost data.

Oddly, the escalation technique is not used for the Business Energy Saver, Commercial Education Tools or Technical Potential programs. We did not find any explanation for the use of the escalation factors and the worksheets do not provide any indication for the source of the escalation factors or any assumptions that might be relevant to their calculation. Using measure-level data provided by Progress Energy, we were able to exactly or approximately reconcile energy savings (kWh) data without applying escalation factors, but cost data could not be reconciled without also applying the escalation factors.

Cost escalation in energy efficiency program development and implementation is not usually what a utility experiences, especially at the rates implicit in the escalated values observed in the PEF proposal. Generally, costs go down as market penetration increases: Economy of scale is a given in many businesses, and energy efficiency appears to demonstrate such economics.

For example, Synapse Energy Economics collected data from fifteen leading energy efficiency programs across the country. For every utility studied, the cost per kWh of energy efficiency programs was lower at higher levels of impact, and unit costs rose when utilities scaled back programs for whatever reason.[63] This suggests that utilities that "dabble" in energy efficiency with pilot programs and the like will find higher costs relative to utilities that make a strong and sustained commitment to building a mature program.

Utilities usually develop economies in energy efficiency program costs due to experience and program adjustment to enhance performance, but also with growth of scale as effective energy efficiency programs are expanded to more participants. Costs typically fall and more energy efficiency is obtained at lower average cost. This is not anticipated in Progress Energy Florida's program proposals.

[63] Takahashi, K. and D. Nichols, *The Sustainability and Costs of Increasing Efficiency Impacts: Evidence from Experience to Date*, 2008 ACEEE Summer Conference, August 2008.

Overview of PEF Program Savings & Costs (2010-19)

	Energy Savings MWh	% of Total	Cost ($000)	Cost (¢/kWh)
Residential Conservation Programs				
Home Energy Check	134,749	4%	52,711	39
Home Energy Improvement	562,633	17%	818,310	145
New Construction	77,569	2%	121,216	156
Neighborhood Energy Saver	84,474	3%	113,591	134
Low Income Weatherization Assistance	11,756	0%	20,356	173
Education	287,380	9%	251,977	88
Technical Potential	1,619,999	49%	1,673,879	103
Business Conservation Programs				
Energy Check	0	0%	46,935	-
Better Business	240,625	7%	208,961	87
New Construction	66,933	2%	79,091	118
Energy Saver	3,383	0%	2,982	88
Education	25,958	1%	12,183	47
Green Building New Construction	29,000	1%	18,278	63
Innovation Incentive	0	0%	0	-
Conservation Programs	**3,144,460**	**94%**	**3,420,471**	**109**
Residential Demand Response Programs				-
Energy Management	0	0%	898,425	-
Business Demand Response Programs		0%		-
Standby Generation	0	0%	2,031	-
Interruptible Service	0	0%	317	-
Curtailable Service	0	0%	100	-
Energy Response	160,919	5%	176,980	110
Demand Response Programs	**160,919**	**5%**	**1,077,853**	**670**
Residential Renewable Energy Programs				-
Low-Income Solar Water Heating Pilot	297	0%	643	216
Solar Water Heating with Energy Management Program	18,617	1%	11,099	60
Solar Photovoltaic Pilot	3,793	0%	4,767	126
Business Renewable Energy Programs				-
Solar Photovoltaic Pilot	4,343	0%	4,731	109
Schools Solar Photovoltaic Pilot	1,436	0%	9,609	669
Renewable Energy Programs	**28,486**	**1%**	**30,848**	**108**
Residential Programs	**2,801,269**	**84%**	**3,966,974**	**142**
Business Programs	**532,596**	**16%**	**562,198**	**106**
TOTAL	**3,333,865**	**100%**	**4,529,172**	**136**

Source: SACE analysis of PEF plan and responses to data requests.

Appendix U: Gulf Power Company

Overview of Gulf Power Program Savings & Costs (2010-19)

	Energy Savings MWh	% of Total	Cost ($000)	Cost (¢/kWh)
Residential Conservation Programs				
Energy Audit & Education	34,335	6%	1,086	3
Community Energy Saver	15,042	3%	8,603	57
Landlord-Renter Custom Incentive	6,017	1%	3,466	58
HVAC Efficiency	329,149	56%	213,485	65
Heat Pump Water Heater	14,693	2%	16,640	113
Ceiling Insulation	2,601	0%	2,552	98
High Performance Window	16,306	3%	11,582	71
Reflective Roof	5,496	1%	4,009	73
Variable Speed Pool Pump	8,835	2%	7,373	83
Self-Install Energy Efficiency	47,886	8%	28,626	60
Refrigerator Recycling	19,105	3%	8,788	46
Expiring measures	-34,335	-6%	0	-
2-Yr Payback measures	12,835	2%	81,425	634
Business Conservation Programs				
Audit	0	0%	0	-
HVAC Retrocommissioning	40,175	7%	9,842	24
Building Efficiency	33,724	6%	16,033	48
HVAC Occupancy Sensor	1,101	0%	383	35
High Efficiency Motors	2,808	0%	983	35
Food Services	1,390	0%	398	29
Custom Incentive	18,530	3%	36,979	200
Conservation Programs	**575,694**	**98%**	**452,253**	**79**
Residential Demand Response Programs				
EnergySelect	8,306	1%	20,646	249
EnergySelect LITE	2,000	0%	4,256	213
Business Demand Response				
Real Time Pricing	0	0%	0	-
Unallocated	0	0%	69,766	-
Demand Response Programs	**10,306**	**2%**	**94,668**	**919**
Residential Renewable Energy Programs				
Solar Thermal Water Heating	1,195	0%	500	42
Solar PV	1,393	0%	1,977	142
Business Renewable Energy Programs				
Solar PV	209	0%	198	95
Solar for Schools	73	0%	1,075	1,477
Renewable Energy Programs	**2,869**	**0%**	**3,750**	**131**
Administrative cost	0	0%	752	-
Residential Programs	**490,858**	**83%**	**415,014**	**85**
Business Programs	**98,010**	**17%**	**135,657**	**138**
TOTAL	**588,868**	**100%**	**551,422**	**94**

Source: SACE analysis of Gulf plan and responses to data requests.

Appendix V: Tampa Electric Company (TECO)

Overview of TECO Program Savings & Costs (2010-19)

	Energy Savings		Cost	Cost
	MWh	% of Total	($000)	(¢/kWh)
Residential Conservation Programs				
Walk-Through Audit (Free)	57,232	14%	20,523	36
On-Line Energy Audit	12,028	3%	2,200	18
Computer-Assisted Energy Audit	6	0%	3	55
Phone Assisted Audit	257	0%	29	11
Heating and Cooling	27,476	7%	8,729	32
Electronically Commutated Motor	6,262	2%	2,457	39
HVAC Re-Commissioning	25,080	6%	5,757	23
Duct Repair	26,572	7%	25,857	97
Building Envelope	17,942	4%	13,943	78
New Construction	5,618	1%	3,275	58
Neighborhood Weatherization and Agency Outreach	19,281	5%	5,494	28
Energy Education Outreach	9,033	2%	2,870	32
Business Conservation Programs				
Audit (Free)	10,051	2%	4,081	41
Comprehensive Audit (Paid)	8	0%	9	113
Duct Repair	53,147	13%	4,425	8
Building Envelope	1,306	0%	709	54
Energy Efficient Motors	462	0%	53	12
Cooling	7,463	2%	1,275	17
Chiller	10,143	2%	889	9
Lighting	59,580	15%	2,782	5
Lighting Occupancy Sensor	2,101	1%	756	36
Water Heating	100	0%	25	25
Conservation Value	6,006	1%	1,131	19
HVAC Re-commissioning	7,756	2%	785	10
Electronically Commutated Motor	9,175	2%	555	6
Cool Roof	9,007	2%	2,545	28
Energy Recovery Ventilation	1,008	0%	606	60
Refrigeration (Anti-Condensate Controls)	242	0%	181	75
Conservation Programs	**384,341**	**94%**	**111,944**	**29**
Residential Demand Response Programs				
Energy Planner – Price Responsive Load Management	16,636	4%	63,247	380
Business Demand Response				
Load Management	0	0%	73	-
Demand Response	397	0%	516	130
Standby Generator	1,188	0%	714	60
Cogeneration/Qualified Facilities	0	0%	0	-
Industrial Load Management	0	0%	0	-
Demand Response Programs	**18,221**	**4%**	**64,551**	**354**

	Energy Savings		Cost	Cost
	MWh	% of Total	($000)	(¢/kWh)
Renewable Energy Systems Initiative				
Residential Renewable Energy Programs				
Solar Water Heating	1,952	0%	936	48
Solar Photovoltaic	2,507	1%	3,521	140
Business Renewable Energy Programs				
Solar Photovoltaic	1,668	0%	2,348	141
School Photovoltaic	83	0%	851	1,025
Renewable Energy Programs	**6,202**	**2%**	**7,655**	**123**
Conservation Research & Development	0	0%	1,000	-
Advertising	0	0%	45,028	-
Residential Programs	**227,882**	**56%**	**158,840**	**70**
Business Programs	**180,890**	**44%**	**25,310**	**14**
TOTAL	**408,764**	**100%**	**230,178**	**56**

Source: SACE analysis of TECO plan and responses to data requests.

Appendix W: JEA

Overview of JEA Program Savings & Costs (2010-19)

	Energy Savings		Cost	Cost
	MWh	% of Total	($000)	(¢/kWh)
Residential Conservation Programs				
Energy Audit	5,830	3%	2,878	49
Energy Efficient Products	76,248	36%	2,775	4
Green Built Homes of Florida (new const.)	7,364	4%	1,383	19
Neighborhood Efficiency (income qualified)	11,482	5%	2,688	23
Business Conservation Programs				
Energy Audit	2,305	1%	1,066	46
Energy Efficient Products	97,043	46%	3,532	4
District Chilled Water	874	0%	235	27
Conservation Programs	**201,145**	**96%**	**14,556**	**7**
Demand Response Programs	**0**	**0%**	**0**	**-**
Residential Renewable Energy Programs				
Solar Water Heating	6,044	3%	2,500	41
Solar Net Metering	2,334	1%	99	4
Business Renewable Energy Programs				
Solar Net Metering	833	0%	52	6
Renewable Energy Programs	**9,210**	**4%**	**2,651**	**29**
Residential Programs	**109,301**	**52%**	**12,322**	**11**
Business Programs	**101,055**	**48%**	**4,885**	**5**
TOTAL	**210,356**	**100%**	**17,207**	**8**

Source: SACE analysis of JEA plan and responses to data requests.

Appendix X: Orlando Utilities Commission

Overview of OUC Program Savings & Costs (2010-19)

	Energy Savings		Cost	Cost
	MWh	% of Total	($000)	(¢/kWh)
Residential Conservation Programs				
Home Energy Surveys	12,959	23%	9,204	71
Duct Repair Rebates	429	1%	365	85
Ceiling Insulation Rebates	1,073	2%	614	57
Window Film/Solar Screen Rebates	100	0%	124	124
High Performance Windows Rebates	851	2%	550	65
Caulking and Weather Stripping Rebates	9	0%	20	226
Wall Insulation Rebates	4	0%	22	595
Cool/Reflective Roof Rebates	93	0%	51	55
Home Energy Fix-Up	135	0%	368	273
Billed Solution Insulation	205	0%	124	60
Efficient Electric Heat Pump Rebates	6,075	11%	3,406	56
Gold Ring Home	82	0%	76	93
Compact Fluorescent Lighting	1,745	3%	99	6
Business Conservation Programs				
Energy Audits	2,187	4%	1,596	73
Indoor Lighting Retrofit	30,244	54%	2,742	9
Efficient Electric Heat Pump Rebates	194	0%	79	41
Duct Repair Rebates	39	0%	20	51
Window Film/Solar Screen Rebates	5	0%	10	187
Ceiling Insulation Rebates	41	0%	12	30
Cool/Reflective Roof Rebates	0	0%	0	-
Conservation Programs	**56,470**	**100%**	**19,482**	**34**
Demand Response Programs	**-**	**-**	**-**	**-**
Renewable Energy Programs	**-**	**-**	**-**	**-**
Residential Programs	**23,760**	**42%**	**15,023**	**63**
Business Programs	**32,710**	**58%**	**4,459**	**14**
TOTAL	**56,470**	**100%**	**19,482**	**34**

Source: SACE analysis of OUC plan and responses to data requests.

Appendix Y: Florida Public Utilities Company

Overview of FPUC Program Savings & Costs (2010-19)

	Energy Savings		Cost	Cost
	MWh	% of Total	($000)	(¢/kWh)
Residential Conservation Programs				
Energy Survey Program	3,218	18%	1,316	41
Heating & Cooling Efficiency Upgrade	5,936	34%	591	10
Ceiling Insulation Upgrade	470	3%	217	46
Business Conservation Programs				
Energy Survey	975	6%	218	22
Indoor Efficient Lighting Rebate	2,044	12%	277	14
Heating & Cooling Efficiency Upgrade	1,979	11%	197	10
Ceiling Insulation Upgrade	188	1%	87	46
Window Film Installation	461	3%	54	12
Chiller Upgrade	2,268	13%	195	9
Conservation Programs	17,539	100%	3,152	18
Demand Response Programs	**0**	**0%**	**0**	**-**
Renewable Energy Programs	**n/a**	**0%**	**236**	**-**
Conservation Demo. and Dev.	0	0%	750	-
Residential Programs	**9,624**	**55%**	**2,124**	**22**
Business Programs	**7,914**	**45%**	**1,028**	**13**
TOTAL	**17,539**	**100%**	**4,138**	**24**

Source: SACE analysis of FPUC plan and responses to data requests.

Appendix Z: Utility Plan and Progress Report References

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OUC 2010: Orlando Utilities Commission, *2010 Demand-Side Management Plan*, Florida Public Service Commission Docket No. 100161-EG, March 30, 2010.

TECO 2010a: Tampa Electric Company, *Ten-Year DSM Plan 2010-2019*, Florida Public Service Commission Docket No. 100159-EG, March 30, 2010.

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