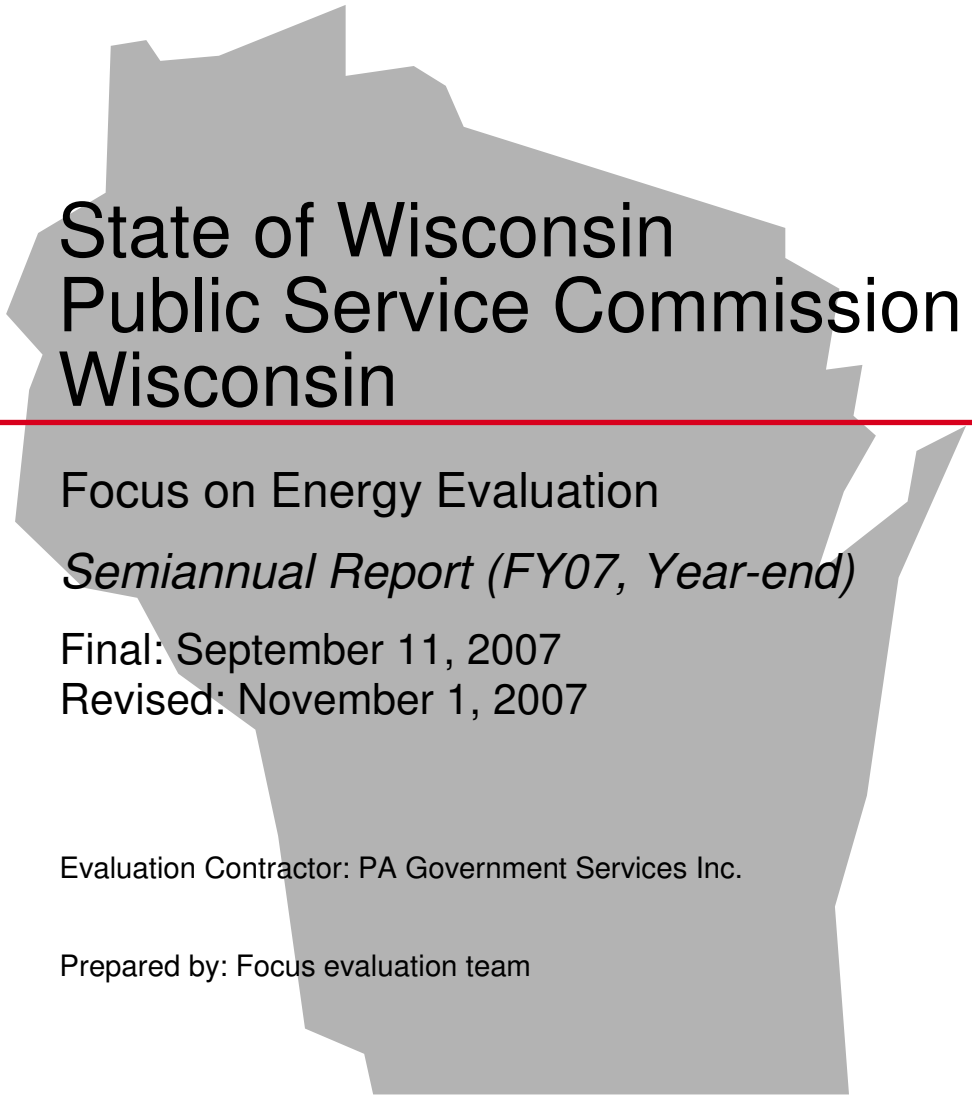
PA Consulting Group



State of Wisconsin Public Service Commission of Wisconsin

Focus on Energy Evaluation

Semiannual Report (FY07, Year-end)

Final: September 11, 2007
Revised: November 1, 2007

Evaluation Contractor: PA Government Services Inc.

Prepared by: Focus evaluation team

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The power is within you.

State of Wisconsin Public Service Commission of Wisconsin

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[1] Table 3-11, Verified Gross Program Savings Versus Program Targets, has been revised.

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1. INTRODUCTION

The purpose of this document is to present an overview of all Focus on Energy (Focus) impacts achieved for the previous two quarters and the program to date. Focus on Energy has had a number of impacts on the state of Wisconsin. The most important are energy impacts—the energy savings realized through the implementation of energy conservation measures. Other impacts that result from the program are: (1) environmental benefits (the most prevalent of which are displaced generation emissions); (2) other non-energy benefits driven by increased health, safety, and comfort; and (3) the economic benefits realized as a result of savings on energy bills, stimulation of economic development, and the creation of jobs. Another significant element provided by Focus on Energy, beyond the implementation of energy efficiency measures, is encouragement to various members of the marketplace—manufacturers, distributors, retailers, building contractors, trade allies, and consumers—to "raise the bar" for practices and standards related to energy efficiency technologies.

The program administrators for Focus must maintain a *program tracking database* that includes all of the energy efficiency measures and actions taken within the program. The term "tracked" is used to signify that these savings result from program efforts directly counted (or tracked) by program administrators. This is the fundamental foundation for a program-based evaluation of energy impacts. The table below provides definitions for each of the various tracked savings impacts incorporated in the Focus impact evaluation system. Currently, *the verified gross energy savings* is being used for publicly reported impacts, while the *verified net energy savings* are used for the economic and benefit-cost analyses.

1.1 TRACKED ENERGY IMPACTS

The numbers in the tracked energy impacts tables presented in this report are annual energy savings—the energy saved by an installed conservation measure over 12 months. The annual energy impacts reported for a given time period, such as a quarter, is the sum of the annual energy savings for all of the energy conservation measures installed in that quarter. The energy conservation measures installed typically last for a number of years, so their lifetime energy impact would be calculated by multiplying the annual energy savings by the number of years that energy conservation measure is expected to be in operation.

The term "tracked" is used to signify that these savings result from Focus efforts directly counted (or tracked) by program administrators. The table below provides definitions for each of the various tracked savings impacts referred to throughout this report. Currently, the verified gross energy savings are being used for publicly reported impacts, while the net energy savings are used for the economic and benefit-cost analyses.

Table 1-1. Tracked Energy Impacts

Gross Reported Savings	Energy savings as reported by the program administrator, unverified by an independent evaluation.
Verified Gross Savings	Energy savings verified by an independent evaluation based on reviews of the number and types of implemented improvements, and the engineering calculations used to estimate the energy saved.
Verified Net Savings	Energy savings that can confidently be attributed to Focus efforts. Evaluators make adjustments for participants who were not influenced by Focus.

1.2 NONTRACKED ENERGY IMPACTS

For purposes of clarity, *nontracked energy savings* can be distinguished from *tracked energy savings* in that they are not directly counted (tracked) by program sponsors. Nontracked energy savings are likely to consist of a combination of savings resulting from participant spillover (e.g., participants who, after an initial program experience, go on to adopt more energy saving products or practices without program assistance), market effects (e.g., changes in "marketplace" practices, services, and promotional efforts which induce businesses and consumers to buy energy saving products and services without direct program assistance), and unclaimed rewards (e.g., people who intend to submit the paperwork in order to claim rewards but fail to do so). Nontracked energy savings should be attributed to the program if it can be demonstrated that these impacts were the result of program initiatives or that program initiatives were at least a key driver.

Quantifying nontracked savings is important when program initiatives are designed to create impacts beyond what the program can capture in a tracking database. The savings can be, for example, a direct extension of steps toward verification of *net* energy savings via the gathering of data that document the effects of a program on a specific market. An example from Focus is the use of CFL sales tracking data to estimate changes in product market share that can be confidently attributed to the presence of a program explicitly seeking to influence the CFL market in a specific geography.

1.3 SUPPORTING INFORMATION

Because this document is an overview, significant amounts of supporting information are not provided here. This makes it incumbent on the reader to seek out supporting information if they would like to better understand specific elements of this report. Supporting information can be found in the various reports listed in Table 1-2. An effort has been made to reference the appropriate evaluation reports in the relevant places throughout this report. The table below provides a list of all of the evaluation reports (and other deliverables) submitted during the last two quarters of FY07.

Table 1-2. Focus Statewide Evaluation Deliverables
FY07 Year-end (January 1–June 30, 2007)

Program Area	Program	Document Title	Draft Report Date	Final Report Date
Administration	Administration - General	Schedule of Evaluation Deliverables	Monthly updates	Ongoing task
Administration	Administration - General	Focus Schedule of Survey Activities	Monthly updates	Ongoing task
Business Programs	Business Program - General	Business Programs Impact Evaluation Report - Fiscal Year 2006	26-Dec-06	02-Mar-07
Business Programs	Business Program - General	Final Deemed Savings for FY08 - Data	07-Mar-07	13-Apr-07
Business Programs	Business Program - General	Final Deemed Savings for FY08 - Memo	07-Mar-07	13-Apr-07
Business Programs	Business Program - General	Business Programs End-use Specific Attribution Factors - Fiscal Year 2006	23-Mar-07	20-Apr-07
Crosscutting functions	Benefit Costs	Low-income Interim Benefit-Cost Analysis	21-Dec-06	26-Feb-07
Crosscutting functions	Benefit Costs	Interim Benefit-Cost Analysis FY07 Evaluation Report	21-Dec-06	26-Feb-07
Crosscutting functions	Crosscutting - General	Interim Benefit-Cost Analysis FY07 Evaluation Report	21-Dec-06	26-Feb-07
Crosscutting functions	Crosscutting - General	Evaluation Monthly Progress Report December 2006	15-Jan-07	15-Jan-07
Crosscutting functions	Crosscutting - General	Evaluation's Quarterly Performance Report October - December 2006	22-Jan-07	22-Jan-07
Crosscutting functions	Crosscutting - General	Evaluation Monthly Progress Report January 2007	19-Feb-07	19-Feb-07
Crosscutting functions	Crosscutting - General	Evaluation Monthly Progress Report February 2007	19-Mar-07	19-Mar-07
Crosscutting functions	Crosscutting - General	Evaluation Monthly Progress Report March 2007	12-Apr-07	12-Apr-07
Crosscutting functions	Crosscutting - General	Evaluation's Quarterly Performance Report January - March 2007	16-Apr-07	16-Apr-07
Crosscutting functions	Crosscutting - General	Evaluation Monthly Progress Report April 2007	18-May-07	18-May-07
Crosscutting functions	Crosscutting - General	Evaluation Monthly Progress Report May 2007	18-Jun-07	18-Jun-07
Crosscutting functions	Crosscutting - General (Energy Savings)	Public Benefits Evaluation Semiannual Report FY07 Mid-year	12-Mar-07	10-May-07
Crosscutting functions	Crosscutting - General (Energy Savings)	Public Benefits Evaluation Semiannual Summary Report FY07 Mid-year - Draft	13-Mar-07	14-May-07

Program Area	Program	Document Title	Draft Report Date	Final Report Date
Crosscutting functions	Crosscutting - General (Energy Savings)	Response to Review Comments Semiannual Reports FY07 Mid-year	10-May-07	10-May-07
Crosscutting functions	Economic Benefits	FY07 Low-income Weatherization Assistance Program Evaluation Economic Development Benefits	26-Dec-06	23-Feb-07
Crosscutting functions	Economic Benefits	FY07 Economic Impacts Report	26-Dec-06	23-Feb-07
Crosscutting functions	Scopes of Work	Detailed Evaluation Plans for FY08	15-Jun-07	23-Jul-07
Residential	ENERGY STAR Products	Comprehensive CFL Market Effects Study	12-Jun-07	30-Jul-07
Residential	ENERGY STAR Products	FY06 Net-to-Gross Savings Adjustments for ENERGY STAR Qualified Clothes Washers - Draft	18-Jun-07	25-Jul-07
Residential	Home Performance with ENERGY STAR	Home Performance with ENERGY STAR Program Net Analysis - Draft	21-Jun-07	

2. FOCUS IMPACTS

This chapter describes Focus impact areas:

- Evaluated tracked energy impacts
- Evaluated nontracked energy impacts
- Market effects
- Economic impacts
- Environmental impacts
- Non-energy benefits
- Benefit-cost analysis.

Data for the energy impacts tables throughout this report are derived from data downloaded from WECC's tracking databases on July 26, 2007.

2.1 VERIFIED TRACKED ENERGY IMPACTS

Table 2-1a presents a summary of the annual kWh and therms saved with dollar values along with number of participants. Table 2-1b shows the gross, verified gross, and net energy impacts of the Business, Residential, and Renewable Energy Program areas for energy efficiency measures implemented from July 1, 2001, through June 30, 2007, (program to date) as documented in their respective tracking systems (Tracked Energy Impacts).

Please note: The gross impacts now reflect the energy impact values from the program administrator's tracking database.

Table 2-1a. All Programs: Tracked Energy Impacts Summary (July 1, 2001–June 30, 2007)

	Annual kWh Saved	Annual kW Saved	Annual Therms Saved	Annual Dollar Value of Energy Saved	Number of Participants
FY07 (July 1, 2006–June 30, 2007)					
Total Saved	**248,727,112**	**42,051**	**15,561,780**	**$36,955,232**	
Business[2]	157,983,071	33,635	13,319,734	$25,426,378	12,828
Residential	81,365,729	6,729	1,524,927	$10,253,836	214,813
Renewable	9,378,311	1,688	717,119	$1,275,018	122
Program to Date (July 1, 2001–June 30, 2007)					
Total Saved	**1,190,178,729**	**204,823**	**63,040,162**	**$164,581,556**	
Business	697,211,767	134,853	50,397,945	$101,222,449	54,130
Residential	444,433,792	62,323	9,299,435	$57,132,490	834,121
Renewable	48,533,170	7,647	3,342,782	$6,226,617	188
FY06 (July 1, 2005–June 30, 2006)					
Total Saved	**218,463,820**	**41,544**	**12,996,443**	**$31,719,288**	
Business	131,761,691	28,280	9,418,597	$19,432,918	13,056
Residential	73,660,113	11,390	1,511,352	$9,434,407	227,051
Renewable	13,042,016	1,874	2,066,494	$2,851,963	93
FY05 (July 1, 2004–June 30, 2005)					
Total Saved	**215,051,256**	**35,798**	**9,116,439**	**$27,166,740**	
Business	110,720,360	20,902	7,107,503	$15,005,106	13,266
Residential	82,421,186	11,635	1,665,313	$10,526,628	208,021
Renewable	21,909,710	3,261	343,622	$1,635,006	69
FY04 (July 1, 2003–June 30, 2004)					
Total Saved	**228,988,044**	**37,687**	**14,491,166**	**$33,940,588**	
Business	137,366,308	23,540	12,615,132	$22,264,222	11,757
Residential	91,137,585	13,927	1,662,200	$11,432,140	213,019
Renewable	484,151	220	213,834	$244,227	57
FY03 (July 1, 2002–June 30, 2003)					
Total Saved	**222,389,337**	**35,980**	**8,187,450**	**$27,100,628**	
Business	128,848,179	21,460	6,196,249	$15,205,928	6,387
Residential	89,822,721	13,917	1,989,489	$11,674,327	156,465
Renewable	3,718,437	604	1,713	$220,373	26
FY02 (July 1, 2001–June 30, 2002)					
Total Saved	**56,559,160**	**11,761**	**2,686,883**	**$7,699,081**	
Business	30,532,158	7,036	1,740,729	$3,887,897	1,165
Residential	26,026,457	4,725	946,154	$3,811,152	52,484
Renewable	545	0	0	$32	1

Note: Based on verified gross savings data. As discussed in subsection 2.2, this table does not include energy savings attributable to the Focus effort that are not directly "tracked" by program administrators.

[2] The findings of the *Comprehensive CFL Market Effects Study* report are reflected in the residential program impacts in this report but are not reflected in the business programs impacts. These findings will be integrated into the program impacts reported for business programs in subsequent reports and are expected to reduce the net savings reported for FY07.

Table 2-1b. All Programs: Tracked Energy Impacts
Program to Date (July 1, 2001–June 30, 2007)

	Annual kWh Saved			kW Reduction			Annual Therms Saved		
	Gross	Verified Gross	Verified Net	Gross	Verified Gross	Verified Net	Gross	Verified Gross	Verified Net
FY07 (July 1, 2006–June 30, 2007)									
Total	**260,724,482**	**248,727,112**	**180,297,395**	**43,503**	**42,051**	**28,528**	**15,915,794**	**15,561,780**	**7,654,615**
Business Programs	157,599,656	157,983,071	109,411,491	33,676	33,635	22,285	13,660,059	13,319,734	6,073,457
Residential Programs	94,251,340	81,365,729	69,037,703	8,288	6,729	5,838	1,567,110	1,524,927	1,348,874
Renewable Energy Program	8,873,486	9,378,311	1,848,201	1,539	1,688	405	688,625	717,119	232,283
Program-to-Date (July 1, 2001–June 30, 2007)									
Total	**1,343,551,243**	**1,190,178,729**	**853,685,742**	**222,030**	**204,823**	**140,342**	**65,541,424**	**63,040,162**	**38,682,036**
Business Programs	750,766,716	697,211,767	418,275,235	148,138	134,853	79,437	52,173,267	50,397,945	28,948,300
Residential Programs	544,777,704	444,433,792	423,500,678	66,170	62,323	58,456	10,049,986	9,299,435	8,752,753
Renewable Energy Program	48,006,822	48,533,170	11,909,830	7,722	7,647	2,448	3,318,171	3,342,782	980,983
FY06 (July 1, 2005–June 30, 2006)									
Total	**234,295,086**	**218,463,820**	**165,571,187**	**43,557**	**41,544**	**30,523**	**13,607,643**	**12,996,443**	**6,181,104**
Business Programs	131,335,639	131,761,691	91,617,242	28,223	28,280	19,021	9,674,444	9,418,597	4,365,774
Residential Programs	90,193,805	73,660,113	71,603,125	13,418	11,390	11,115	1,859,474	1,511,352	1,356,045
Renewable Energy Program	12,765,642	13,042,016	2,350,819	1,916	1,874	386	2,073,725	2,066,494	459,285
FY05 (July 1, 2004–June 30, 2005)									
Total	**279,053,423**	**215,051,256**	**153,175,700**	**41,229**	**35,798**	**22,774**	**9,760,150**	**9,116,439**	**5,157,893**
Business Programs	143,889,231	110,720,360	55,862,046	27,125	20,902	9,970	7,186,658	7,107,503	3,464,783
Residential Programs	112,972,649	82,421,186	93,057,316	10,761	11,635	11,819	2,126,300	1,665,313	1,604,834
Renewable Energy Program	22,191,543	21,909,710	4,256,338	3,343	3,261	984	447,192	343,622	88,276
FY04 (July 1, 2003–June 30, 2004)									
Total	**282,891,465**	**228,988,044**	**169,566,048**	**44,453**	**37,687**	**26,949**	**14,566,455**	**14,491,166**	**12,432,031**
Business Programs	156,479,941	137,366,308	79,938,941	28,608	23,540	13,185	12,633,959	12,615,132	10,615,984
Residential Programs	125,895,029	91,137,585	89,178,126	15,628	13,927	13,569	1,825,553	1,662,200	1,616,293
Renewable Energy Program	516,495	484,151	448,980	217	220	195	106,943	213,834	199,754
FY03 (July 1, 2002–June 30, 2003)									
Total	**231,889,263**	**222,389,337**	**145,962,575**	**38,300**	**35,980**	**23,355**	**7,994,061**	**8,187,450**	**5,610,102**
Business Programs	130,771,207	128,848,179	62,681,021	23,509	21,460	10,580	6,257,606	6,196,249	3,642,577
Residential Programs	97,458,936	89,822,721	80,276,502	14,084	13,917	12,297	1,734,769	1,989,489	1,966,140
Renewable Energy Program	3,659,120	3,718,437	3,005,052	707	604	478	1,686	1,713	1,385
FY02 (July 1, 2001–June 30, 2002)									
Total	**54,697,524**	**56,559,160**	**39,112,839**	**10,988**	**11,761**	**8,215**	**3,697,321**	**2,686,883**	**1,646,292**
Business Programs	30,691,043	30,532,158	18,764,493	6,997	7,036	4,397	2,760,541	1,740,729	785,725
Residential Programs	24,005,945	26,026,457	20,347,905	3,991	4,725	3,818	936,780	946,154	860,567
Renewable Energy Program	536	545	440	0	0	0	0	0	0

Note: As discussed in subsection 2.2 this table does not include energy savings attributable to the Focus effort that are not directly "tracked" by program administrators.

Figure 2-1. Electric Energy Impacts by Measure Category
Business Programs
Program to Date (July 1, 2001–June 30, 2007)

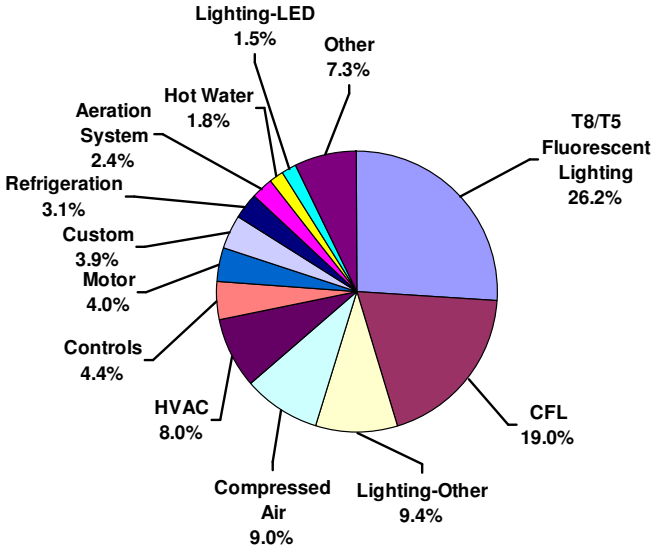


Figure 2-2. Gas Energy Impacts by Measure Category
Business Programs
Program to Date (July 1, 2001–June 30, 2007)

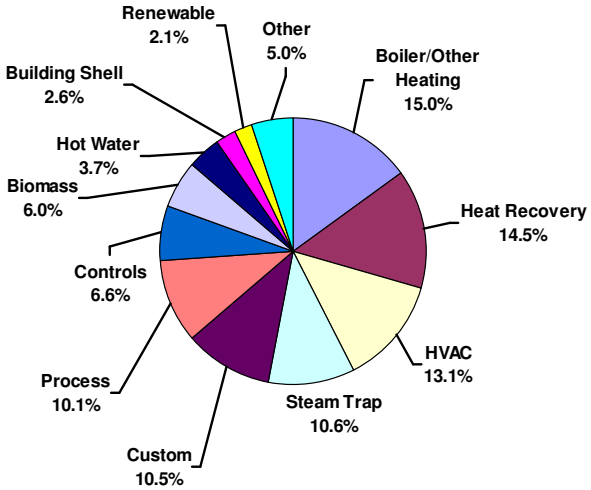


Table 2-2. Electric Energy Impacts by Measure Category
Business Programs
Program to Date (July 1, 2001–June 30, 2007)

Measure Category	Verified kWh	Percent of Total
T8/T5 Fluorescent Lighting	182,404,846	26.2%
CFL	132,352,191	19.0%
Lighting-Other	65,877,256	9.4%
Compressed Air	62,560,890	9.0%
HVAC	55,840,508	8.0%
Controls	31,014,694	4.4%
Motor	27,893,862	4.0%
Custom	27,488,114	3.9%
Refrigeration	21,384,693	3.1%
Aeration System	16,960,952	2.4%
Hot Water	12,210,660	1.8%
Lighting-LED	10,197,697	1.5%

Table 2-3. Gas Energy Impacts by Measure Category
Business Programs
Program to Date (July 1, 2001–June 30, 2007)

Measure Category	Verified Therms	Percent of Total
Boiler/Other Heating	7,553,247	15.0%
Heat Recovery	7,321,838	14.5%
HVAC	6,592,070	13.1%
Steam Trap	5,336,535	10.6%
Custom	5,300,715	10.5%
Process	5,098,089	10.1%
Controls	3,344,835	6.6%
Biomass	3,041,638	6.0%
Hot Water	1,881,095	3.7%
Building Shell	1,324,062	2.6%
Renewable	1,065,139	2.1%

Figure 2-3. Electric Energy Impacts by Measure Category
Residential Programs
Program to Date (July 1, 2001–June 30, 2007)

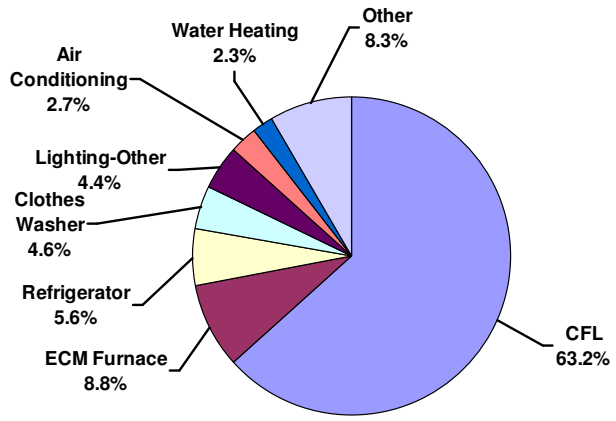


Figure 2-4. Gas Energy Impacts by Measure Category
Residential Programs
Program to Date (July 1, 2001–June 30, 2007)

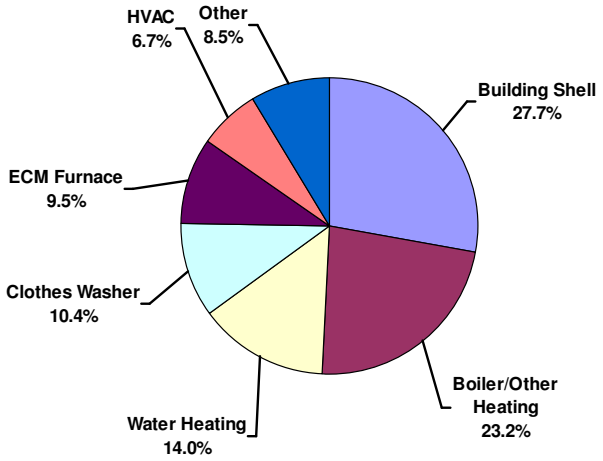


Table 2-4. Electric Energy Impacts by Measure Category - Residential Programs
Program to Date (July 1, 2001–June 30, 2007)

Measure Category	Verified kWh	Percent of Total
CFL	280,981,389	63.2%
ECM Furnace	39,230,704	8.8%
Refrigerator	24,968,013	5.6%
Clothes Washer	20,516,383	4.6%
Lighting-Other	19,358,072	4.4%
Air Conditioning	11,942,404	2.7%
Water Heating	10,351,373	2.3%

Table 2-5. Gas Energy Impacts by Measure Category - Residential Programs
Program to Date (July 1, 2001–December 31, 2006)

Measure Category	Verified Therms	Percent of Total
Building Shell	2,384,910	27.7%
Boiler/Other Heating	1,992,784	23.2%
Water Heating	1,208,766	14.0%
Clothes Washer	896,229	10.4%
ECM Furnace	817,256	9.5%
HVAC	576,260	6.7%

The figures above summarize the distribution of energy impacts by measure category and fuel type for Business Programs and Residential program areas. The accompanying tables present corresponding verified gross impact values.

2.2 VERIFIED NONTRACKED ENERGY IMPACTS

As the Focus program progresses, the evaluation team will seek to also quantify energy savings attributable to the Focus effort that are not directly "tracked" by program administrators, for example; participants who, after an initial program experience, go on to

adopt more energy saving products or practices without program assistance often referred to as spillover, changes in marketplace practices, services, and promotional efforts which induce businesses and consumers to buy energy saving products and services without direct program assistance often referred to as market effects, and unclaimed rewards, people who intend to submit the paperwork in order to claim rewards but fail to do so.

Presently, the majority of the "nontracked" energy savings quantified as attributable to Focus on Energy are related to the ENERGY STAR® Products program compact fluorescent light bulb (CFL) initiative in the residential and business sector (in the business sector the program is referred to as CFL-Participants). Also, spillover savings have been quantified for the rest of the business sector participants, referred to in the table as "Non-CFL Participants."

In the business sector the results for the "CFL participants – To Date" are presented as a range. The report providing these estimates characterized the lower estimate as a "robust" estimate at about 1.1 million kWh and 298 kW and the higher estimate as a "basic" estimate of about 16.2 million kWh over 4,600 kW.

Table 2-6. Nontracked Energy Impacts

Program Area (Sector)	Program		Annual kWh Saved	kW Reduction	Annual Therms Saved
Residential	ENERGY STAR Products - CFLs FY02		14,964,840	453	0
Residential	ENERGY STAR Products - CFLs FY02		2,302,014	70	0
Business	CFL Participants – through June 30, 2006	Robust	1,108,813	298	0
		Basic	16,196,526	4,609	0
Business	Non-CFL Participants – through June 30, 2006		629,248	452	845
	Total	Robust	**19,005,005**	**1,273**	**845**
		Basic	**34,092628**	**5,584**	**845**

Notes: FY03 is only through December 31, 2002, because nontracked sales information is not available for all of fiscal year 2003. Savings are not adjusted for installation rates of CFLs.

For the business programs, nontracked impacts are not broken out by program. Instead, they are categorized and "CFL Participants" and "Non-CFL Participants." The "CFL Participants" are businesses in the Agricultural and Commercial programs that have received rewards through the ENERGY STAR Products program, which accounts for approximately 20% of the overall business programs savings. "Non-CFL Participants" are the business sector participants that have received benefits and services from Focus on energy through initiatives other than ENERGY STAR Products program.

2.3 MARKET EFFECTS

One of the objectives of Focus is to be able to translate market effects into energy impacts attributable to program activities or specific market interventions. As these impacts are quantified, they will be reported in Table 2-6 above. Translation into energy impacts is important to allow inclusion of impacts of program-induced market effects into long-term energy resource planning and for appropriate evaluation of the benefit-cost ratio of market transformation-oriented programs or programs with significant market transformation components. While a relatively high level of uncertainty is inherent in estimating the energy impacts of market transformation-oriented programs, the uncertainty can be managed. Consistent measurement of key market effects and/or their indicators over time will allow for significant reduction of the uncertainty.

Ultimately, for the concept of market transformation to be proven and the potential significant benefits realized, it is critical for policy makers to provide consistent and sound policy objectives, administrators to use discipline in designing their programs with clear program logic models, and evaluators to consistently provide appropriate feedback through implementation of sound research and policy makers and administrators using that feedback (along with other sources of information) to inform policy changes and refine their program logic models.

Both market indicators and market effects can be translated into energy impacts attributable to the program. Market indicators (for example, POS data) provide value because (1) changes in indicators can typically be measured earlier after an intervention than can changes in market effects; (2) indicators can provide insights into drivers of changes in market effects; and (3) because indicators that are typical pre-cursors to actual purchase behavior represent important stages in program logic—and therefore facilitate assigning attribution to the program.

The length of time it takes before measurable changes can be observed in either market indicators or market effects metrics can vary dramatically, depending on the market actors targeted by the intervention (changes at the manufacturer level can have a dramatic impact sooner); the size of the intervention; the size of the market; the readiness of the market for a product; etc. Typically, market indicators are more likely to be measurable in the short term, but can evaporate after a year of program activity. Market effects (for example, manufacturer sales data), involve a much longer time span and are unlikely to be measurable until at least a year of program activity. Market effects that are sizable enough to be translated into energy impacts should not be expected until at least three to five years of program activity.

Much of the Focus evaluation efforts to date have been focused on review of market indicators, including (but not limited to) those market indicators that have been included as contract metrics each year for the program administrators. However, in FY07, the residential evaluation team—in coordination with the business program evaluation team—established a comprehensive system for collecting retail-based CFL sales information which addresses the limitations of the former POS approach. A *uniform approach* to program attribution for all sectors touched by the retail-based CFL initiative (i.e., residential, commercial, agricultural, and multifamily). The system provides a representative picture of Wisconsin retail-based CFL sales by including both participating and nonparticipating retailers. The system attempts to include a census of retailers who are responsible for the bulk of rewarded CFL sales, a statewide representative sample of the remaining participating retailers, and, a statewide representative sample of nonparticipating retailers. The *Comprehensive CFL Market Effects Study* report presents the initial findings of this effort. The findings of this report are reflected in the residential program impacts in this report, and will be integrated into the program impacts reported for the Business Programs in subsequent reports.

2.4 ECONOMIC IMPACTS[i]

One of the goals of Wisconsin Focus on Energy (Focus) programs is to support economic development. In general, economic development is a process of enhancing the state's economy by supporting the growth, retention, and attraction of business activity in the state. By strengthening and diversifying the state's economic base, Wisconsin residents can enjoy better job opportunities, higher incomes, and higher living standards. Economic prosperity can also increase revenue for state and local government. In an era of global economic

change and uncertainty, it is particularly important to see that programs such as Focus are indeed addressing these economic development goals.

Focus directly affects participating business and residential customers' energy costs. Decreasing energy costs through increased efficiency and conservation can make business operations more profitable and can also leave more money in families' pockets (to spend on other desired purchases). By lowering costs of doing business, it also makes Wisconsin a more competitive location for additional business attraction, investment, and expansion.

Focus also creates other direct and indirect impacts throughout Wisconsin's economy. Wisconsin businesses are major manufacturers of heating and air conditioning equipment, motors, and controls. Focus stimulates sales for these industries in Wisconsin, as well as the development of solar, wind, and biomass energy production within the state. At the same time as it is increasing the flow of dollars staying within Wisconsin, it is also reducing the outflow of money from the state associated with importation of coal and natural gas.

There are also cost effects. When customers make energy-efficiency purchases that they might not have made, they are also spending some of their own money, because Focus pays only part of the extra cost of buying energy-efficient equipment. The Public Benefits charge that funds Focus is a cost to customers, although not a new one, since customers have paid the cost of demand-side management programs through utility rates for a number of years.

To analyze the economic development impacts of the Focus on Energy programs, the following three steps were performed for two funding scenarios (low and high):

(1) Document Direct Effects. The first step is to track the net direct effects of the program. These are changes in program-related spending by Focus and program participants, household, and business savings in energy costs, and spending on new equipment. Here, careful attention is given to establishing net changes *compared to what would otherwise be expected to occur without the program*.

(2) Apply the Economic Model. The second step is to apply the REMI economic model of Wisconsin. This is a tool used to trace how the direct effects (from step 1) lead to changes in household and business costs, spending and sales patterns in the state. In our analysis, we apply the Wisconsin statewide REMI model to track impacts including:

1. Lower business operating costs
2. Lower household living costs
3. Reduced outflow of dollars to purchase out-of-state coal and natural gas
4. Increase in dollars going to equipment manufacturers and installers in Wisconsin
5. Emissions benefits from NO_x and SO_x reductions (monetized)
6. Non-energy benefits (monetized)
7. Indirect effects on orders for business suppliers and induced effects of workers re-spending their income within Wisconsin.

Results of the REMI model represent changes in the state economy over time. The key indicators of change in the state's economy are changes in business sales, jobs, personal income, and value added (gross regional product) in Wisconsin.

(3) Analyze Policy Implications. The third and final step in the analysis process is to apply results of the economic model (from step 2) to assess how the forecast program impacts translate into economic development changes. These include:

1. Diversified business growth
2. Expanded mix of those jobs available to Wisconsin residents
3. Shifts in the nature and size of impacts occurring over time
4. Shifts in the competitiveness of Wisconsin as a place to live and to locate a business
5. Changes in the incidence of economic impacts, in terms of urban and rural locations.

This general approach for conducting economic impact analysis, using a regional economic model, has been proven in use around the country including studies of the economic impacts of energy programs and policies in over 20 states.

Summary of Economic Analysis Results

The REMI economic model generated estimates of economic impacts of Focus on Energy from its inception in 2002 through 2026. Program funding will continue through 2012 after which measure-related savings persist with some decay and market transformation effects begin to take hold. Since a key feature of Focus programs is energy cost savings for households and businesses, and since those savings continue over the lifetime of installed equipment, it is necessary to measure economic impacts over a period of time. This analysis examined Focus programs assuming a ten-year implementation span. However, some economic impacts will continue for an additional 15 years beyond any active program period.

Tables 2.7a and 2.7b summarize the economic analysis results for all Focus programs combined—including Residential, Renewables, and Business programs for low and high funding scenarios. The tables show the projected economic impacts for selected years and periods. They also show how program impacts accumulate over a 25 year interval. These economic impacts are presented in terms of (1) the number of job years created for Wisconsin residents, (2) the sales generated for Wisconsin businesses, (3) the value added portion of those sales, and (4) disposable income generated for Wisconsin residents.

The tables also summarize impacts when both the Residential and Business programs include expected “market effects” beyond what the program instigates in terms of increases in household and business purchases of energy efficient products, adoption of energy efficient practices, and the ensuing energy savings. These are effects in the economy without formal program participation. Market effects reflect the behavior of customers, retailers, wholesalers, and manufacturers who are influenced by Focus programs to take additional actions on their own to increase the supply and use of energy-efficient equipment *that they would not have done without the existence of the program.*

Altogether, the analysis found that Focus leads to significant economic development benefits for Wisconsin’s economy. Even without counting market effects, the first year of program operation (fiscal year 2002) resulted in a variety of household and business cost savings and spending changes that altogether support over 351 jobs in the state, and that impact grows to 1,417 jobs by the fifth year of program operation (fiscal year 2006). The disposable income generated in Wisconsin from program-generated savings and this additional business activity represents $12 million in the first year, and grows to $85 million by the fifth year of program

operation. The impacts inclusive of market effects also grow over time, adding a small impact in the first five years, but then adding roughly 2.9–4.0 percent to jobs and income over the 25 year analysis interval.

Tables 2.7a and 2.7b. Economic Development Impacts for all Focus on Energy Programs, Low and High Funding Scenarios

Low Funding Scenario (mil. $ 2006)	Year 1	Year 5	Year 10	Sum 10 Years	Sum 25 Years
Impact without Market Effects					
Jobs (job year for Sums)	351	1,417	3,216	16,711	60,496
Sales generated	$39	$181	$444	$2,208	$8,984
GRP (Value-added)	$26	$104	$265	$1,310	$5,415
Disposable income generated	$12	$85	$213	$1,014	$4,195
Impact with Market Effects*					
Jobs (job year for Sums)	351	1,418	3,218	16,716	62,296
Sales generated	$39	$181	$444	$2,209	$9,261
GRP (Value-added)	$26	$104	$266	$1,310	$5,575
Disposable income generated	$12	$85	$213	$1,014	$4,366
*note: Renewable program has no built in market effect projections					

High Funding Scenario (mil. $ 2006)	Year 1	Year 5	Year 10	Sum 10 Years	Sum 25 Years
Impact without Market Effects					
Jobs (job year for Sums)	351	1,417	3,934	18,229	73,233
Sales generated	$39	$181	$549	$2,438	$10,863
GRP (Value-added)	$26	$104	$316	$1,411	$6,637
Disposable income generated	$12	$85	$257	$1,097	$5,095
Impact with Market Effects*					
Jobs (job year for Sums)	351	1,418	3,949	18,275	77,741
Sales generated	$39	$181	$551	$2,445	$11,598
GRP (Value-added)	$26	$104	$318	$1,415	$7,060
Disposable income generated	$12	$85	$258	$1,100	$5,468
*note: Renewable program has no built in market effect projections					

Who benefits? To assess the diversity of economic development benefits, the REMI economic model was applied to show the breakdown of economic growth impacts by industry sector and occupation category. The comparison of job impacts by industry shows that Focus programs provide widespread benefits among all sectors of the economy. While many of the program participants are manufacturing and commercial businesses, many of the spillover economic benefits accrue to wholesalers, retailers, and service providers that provide goods and services to participating businesses, or that benefit from the re-spending of additional household income within the state. A further analysis shows that the program economic benefits are concentrated on those industries that offer growth for the state economy.

A further breakdown of job impacts by occupation shows that the types of additional jobs created or supported by Focus programs span a wide range of skill-levels among both blue-collar and white-collar categories. In addition, the impacts are widely distributed among urban

and rural areas, with urban areas having proportionally greater participation in the residential programs while the semi-urban and rural areas have had proportionally greater participation in the industrial programs.

2.5 ENVIRONMENTAL IMPACTS

Evaluators also estimated emission factors or rates for the electric generating plants serving Wisconsin (Table 2-8)[ii] and used these data to estimate displaced emissions associated with the Focus programs (Table 2-9). The evaluation team estimated the generation emissions rates shown in Table 2-8 using hourly measured emissions data from EPA data in a model developed by the evaluation team to estimate emissions rates for NO_x, SO_x, CO_2, and mercury for the power plants supplying Wisconsin. Emissions factors from reduced use of natural gas at the customer site (the "On-site Therms" column in Table 2-8) were also taken from EPA data. There are also very small amounts of NO_x and SO_x in natural gas but they are not large enough to significantly affect the emissions numbers.

The figures in Table 2-8 were updated from the previous semi-annual report submitted on September 27, 2006. The results are now based on EPA data from 2005 rather than 2000. Under the same assumption of a single marginal unit, emission factors for NO_x, SO_2, and mercury have declined significantly. The emission factor for CO_2 increased somewhat.

One predominant factor in the per-MWh decrease in emissions of NO_x, SO_2, and mercury appears to be the significant reduction in the use of coal as a fuel. In 2000, coal accounted for 96.5% of the energy production in Wisconsin monitored by the EPA (i.e. excluding hydroelectric and nuclear power). By 2005 coal accounted for only 87.3%, the difference primarily made up by pipeline natural gas, both a cleaner fuel and a fuel burning in newer, cleaner plants. Thus, fewer coal burning plants and more natural gas burning plants were marginal units in 2005.

Table 2-8. Electrical Generation from Wisconsin Plants Monitored by the EPA (Excludes Hydro and Nuclear)

Fuel	2000 GWH	2000 Percent	2005 GWH	2005 Percent
Coal	42,276	96.5%	36,650	87.3%
Natural Gas	106	0.2%	168	0.3%
Pipeline Natural Gas	384	0.9%	4,947	11.8%
Diesel	834	1.9%	0	0.0%
Oil	208	0.5%	0	0.0%
Wood	0	0.0%	205	0.5%
Total	**43,809**	**100.0%**	**41,970**	**100.0%**

Source: Environmental Protection Agency, Office of Air and Radiation, "Acid Rain Hourly Emissions Data" for 2005.

Also, in the period between 2000 and 2005, the per-MWh emission of NO_x from coal-burning plants decreased significantly and to a lesser degree decreased for SO_2 as well. We note, parenthetically, that the emission factors for pipeline natural gas also declined sharply for NO_x and SO_2. We believe this reflects the introduction of newer, more efficient gas-burning plants.

The following table shows emissions factors by fuel type for 2000 and 2005 *on all units*. (Note that the basis is therefore different than for Table 2-8, which represents only marginal plants.)

Table 2-9. Emissions Factors by Fuel Type, 2000 and 2005, for Wisconsin Plants Monitored by the EPA (Excludes Hydro and Nuclear)

	NO_x (lbs/MWH)		SO_2 (lbs/MWH)		CO_2 (1000 lbs/MWH)		Hg (lbs/GWH)	
Fuel	**2000**	**2005**	**2000**	**2005**	**2000**	**2005**	**2000**	**2005**
Coal	6.00	4.81	11.57	11.24	1.25	1.32	0.06	0.06
Natural Gas	4.07	3.58	0.61	0.11	1.04	0.80	0.00	0.00
Pipeline Natural Gas	2.01	0.81	0.07	0.02	1.34	0.80	0.00	0.00
Diesel	1.68		0.10		0.92		0.01	
Oil	3.53		0.18		2.00		0.02	
Wood		6.73		4.85		1.57		0.00
Total	**5.64**	**4.15**	**10.48**	**8.67**	**1.25**	**1.22**	**0.06**	**0.04**

In general, the emissions produced per MWh of electricity generated, went down from 2000 to 2005, with the exception of the CO_2 in coal fired generators, which increased from 1,250 pounds per MWh in 2000 to 1,320 pounds per MWh in 2005.

Table 2-10. Emissions Rates

Emissions	Generation Lbs/MWh	On-site Therms Lbs/Therm
NO_x	1.9	.01
SO_x	3.7	.00006
Mercury (Lbs/GWh)	0.0154	
CO_2	1,692	11.708

Sources: Generation factors from *Estimating Seasonal and Peak Environmental Emissions Factors*. Jeff Erickson with Carmen Best, David Sumi, Bryan Ward, Bryan Zent, and Karl Hausker; PA Government Services Inc. Report for the Wisconsin Department of Administration, Division of Energy. Focus on Energy statewide evaluation. May 2004.
Therm factors from EPA data (EPA's *E-Grid 2000 database* with data for the MAIN and MAPP NERC regions from 1998). Update based on memo from Eric Rambo and Bryan Ward dated January 5, 2007.

Using the marginal cost emission rates and evaluation-verified gross electricity savings estimates,[iii] the Focus programs together potentially displaced 2,871,101 pounds of NO_x; 4,700,275 pounds of SO_x; over 2,731 million pounds of CO_2; and over 18.2 pounds of mercury from inception to June 30, 2007 (Table 2-11).

Table 2-11. Emissions Displaced Annually
Program to Date (July 1, 2001–June 30, 2007)

	Verified Gross		Emissions Reductions (Pounds)*			
Program	**MWh**	**Therms**	**NO_x**	**SO_2**	**CO_2**	**Mercury**
Agriculture	54,471	1,271,944	116,215	216,327	107,057,215	0.839
Channel EHCI	1,084	545,129	7,510	4,335	8,216,126	0.017
Channel Lighting	92,140	4,947	175,116	365,798	155,959,398	1.419
Commercial	163,864	6,560,920	376,951	650,934	354,073,288	2.524
Industrial	295,926	31,106,067	873,321	1,176,694	864,897,088	4.557
Schools & Government	89,726	10,908,938	279,569	356,867	279,538,329	1.382
Total Business Programs	**697,212**	**50,397,945**	**1,828,682**	**2,770,955**	**1,769,741,444**	**10.737**
Apt and Condos Efficiency Services	51,965	3,973,739	138,471	206,540	134,449,418	0.800
Efficient Heating & Cooling Initiative	19,883	549,164	43,270	78,969	40,072,059	0.306
ENERGY STAR Reward	331,899	1,169,933	642,308	1,317,710	575,270,952	5.111
Home Performance with ENERGY STAR	37,093	2,333,234	93,809	147,400	90,079,177	0.571
Targeted Home Performance	1,655	442,401	7,568	6,597	7,979,826	0.025
Wisconsin ENERGY STAR Homes	1,938	830,964	11,992	7,744	13,008,330	0.030
Total Residential Programs	**444,434**	**9,299,435**	**937,419**	**1,764,960**	**860,859,762**	**6.844**
Total Renewable Energy Program	**41,361**	**2,641,542**	**105,001**	**164,360**	**100,909,345**	**0.637**
GRAND TOTALS	**1,183,006**	**62,338,921**	**2,871,101**	**4,700,275**	**2,731,510,551**	**18.218**

* Emission reductions are calculated using the marginal cost emission rates.

** Wisconsin's investor-owned utilities are included in the federal SO_2 regulatory structure of the Clean Air Act (acid rain provisions). In this cap-and-trade system SO_2 emissions cannot be considered reduced or avoided unless EPA lowers the SO_2 cap.

The Department of Natural Resources (DNR) has developed an emissions registry to track emissions reductions in Wisconsin. The ongoing reporting of emissions reductions associated with Focus programs' energy impacts has been the basis for the Division of Energy's entries to DNR's *Voluntary Emissions Reduction Registry (http://www.dnr.state.wi.us/org/aw/air/registry/index.html*). For purposes of this Registry, the Focus evaluator serves as the independent third-party verification organization for a residential program offered through Wisconsin's Focus on Energy. The program, ENERGY STAR® Products, promotes the installation of energy-efficient appliances, lighting, and windows. Drawing upon the evaluation activities conducted over the past four years, the emissions savings from the Energy Saver compact fluorescent lightbulb portion of the program were verified for the Registry. The calculations, assumptions, and research activity backup that supports the registered reductions in emissions associated with the evaluated energy impacts of the program are cited and available on the state's DNR website.

2.6 NON-ENERGY BENEFITS

Table 2-12 shows the total value of non-energy benefits (NEBs) for each program area. The NEBs reported are based on the reports that were completed for each program area.[3] NEBs values are calculated using the same approach utilized by the recently completed benefit cost analysis. However, they are a combination of one-time savings and ongoing savings, so it is not straightforward to turn these values into lifetime benefits. This will be addressed in the next semi-annual report.

Table 2-12. Value of Non-Energy Benefits by Program Area
Program to Date (July 1, 2001–June 30, 2007)

Program Area	Value of Non-energy Benefits	
	FY07 as of June 30, 2007	Program to Date as of June 30, 2007
Business Programs	$4.4 million	$17.9 million
Example Benefits from Business Programs: • Maintenance employee morale • Equipment life • Productivity • Waste generation • Defects and errors • Sales • Non-energy costs • Personnel needs • Injuries and illnesses.		
Residential Programs	$4.5 million	$34.6 million
Example Benefits from Residential Programs: • Increased safety resulting from a reduction of gasses such as carbon monoxide due to the installation of a new high-efficiency furnace • Fewer illnesses resulting from elimination of mold problems due to proper air sealing, insulating and ventilation of a home • Reduced repair and maintenance expense due to having newer, higher quality equipment • Increased property values resulting from installation of new equipment • Reduced water and sewer bill from installation of a horizontal-axis washing machine, which uses much less water than conventional washing machine		
Renewable Energy Programs	$163,128	$726,902
Example Benefits from Renewable Energy Programs: • Greater diversity of primary in-state energy supplies • Use of wastes as a fuel instead of disposal • Increased ability to handle energy emergencies or generation short-falls • Increased sales of renewable energy by-products.		

[3] *Non-energy Benefits Cross-cutting Report. Year 1 Efforts.* Jeff Riggert, Nick Hall, and Tom Talerico, TecMRKT Works, December 4, 2002.

Non-energy Benefits to Implementing Partners from the Wisconsin Focus on Energy Program. Nick Hall and Johna Roth, TecMarket Works, October 20, 2003.

A Qualitative Program Effects Status Study. Nick Hall, TecMarket Works. January 17, 2005.

2.7 HISTORICAL SIMPLE B/C AND COST OF CONSERVED ENERGY (CCE)

This section of the *Semiannual Report* presents the simple benefit-cost test and cost of conserved energy results for the first half of this fiscal year and for the program to date, along with information on the key input assumptions for the analysis. This is different from the next section, which presents results from the recently completed benefit cost analysis covering a ten year program horizon. The numbers presented in this section are based on the program activities through June 30, 2007. However, the inputs and methodology applied are consistent.

The simple benefit-cost test is based on the Total Resource Cost (TRC) test, a commonly used test of program cost effectiveness. The test compares program and participant costs against the avoided costs of supplying the conserved energy. The methodology and inputs used for this test are consistent with the recently completed benefit cost reports, which is covered in greater detail in section 2.8 below.

The methodology for calculating the cost of conserved energy was outlined in a memo report issued by the evaluation team (*Cost of Conserved Energy (CCE): Potential Calculations for Focus on Energy*, October 31, 2005). The specification and calculation of CCE originated with the desire to compare energy conservation measures, specific technologies, energy efficiency (EE) programs, or entire program portfolios to the relative cost of achieving a specific unit of energy savings (i.e., $/kWh). A key potential benefit of the CCE approach is to give equal weight to both energy *supply* and energy *demand* options. Thus, cost of conserved energy curves were developed about two decades ago to place energy efficiency cost estimates at a level comparable to that for supply-side options (Meier, 1982). Much of the early development of CCE curves was conducted at the Lawrence Berkeley National Lab. Recent development work has been sponsored by the California Energy Commission (CEC)[4] .

Based on reporting by ACEEE, CCE results have been calculated and reported by six other public benefits states. They are California, Connecticut, Massachusetts, New Jersey, New York, and Vermont.

The cost of conserved energy has several inputs in common with the simple benefit-cost test. For example, the discount rate and the expected life of the savings resulting from the program(s) and the results of the two tests are presented together in the tables below.

It should be noted that one of the key assumptions for calculating the cost of conserved energy for programs that result in both electric and gas savings is the allocation of program costs (a known value) to the attributed savings, i.e. what proportion of the program costs were required to generate the electric savings and what proportion of the program costs were required to generate the gas savings? In tables 2-14 and 2-15 below, the allocation of program costs is indicated in the column "% Electric." The methodology for attributing program costs is based on a three-step process that is based on the value of incentive dollars paid to realize the energy savings, where this is known. A number of incentives, however, are related to measures that realize electric and gas savings. And, other incentives are paid for

[4] See Sathaye, Jayant, and Scott Murtishaw. 2004. *Market Failures, Consumer Preferences, and Transaction Costs in Energy Efficiency Purchase Decisions.* Lawrence Berkeley National Laboratory for the California Energy Commission, PIER Energy-Related Environmental Research. CEC-500-2005-202.

measures/activities for which no energy savings is directly related. For these the program cost allocation is based on the value of the energy savings realized by the program.

Discussion regarding adjustments to this methodology, or alternative methodologies, is encouraged.

2.7.1 Key Inputs:

Discount rate: 5%

Table 2-13. Utility Avoided Costs

Sector	kW	kWh	Therms
Schools/Government	$104.00	$0.056	$0.917
Commercial/Agriculture			$0.987
Industrial			$0.878
Residential			$1.061

Details on measure life and the basis for incremental costs is presented by program and b/c measure category in Appendix C of this report.

2.7.2 Definitions for Each of the Columns in Tables 2-14 and 2-15

Value of Energy Savings. The present value of the utility avoided costs over the life of the measures installed through the program. This is comparable to the "documentable savings" referred to in the next section.

Value of Avoided Emissions. The present value of the utility avoided costs over the life of the measures installed through the program. This is comparable to the "externalities" referred to in the next section.

Program Costs. Program spending less incentives, but including program administrative costs

Incremental Costs. The costs of a measure over and above a standard efficiency measure. For the renewables program area, it is the full project costs. The NTG ratio is applied to these costs to obtain the value to be included in the simple b/c formula.

Simple B/C. The simple benefit-cost ratio

CCE kWh. The cost of conserved energy for each kilowatt hour saved

CCE Therms. The cost of conserved energy for each therm saved

Elec %. The proportion of the program cost that are allocated to electricity savings

NTG kWh. The net-to-gross ratio for the electric energy savings

NTG Therms. The net-to-gross ratio for the gas energy savings

The business program area has the simple b/c ratio for the first half of fiscal year 2007 and program to date at 2.8 and 3.2 respectively. For the residential program area the simple b/c is

1.1 and 1.4 respectively. And, for the renewables program areas the simple b/c is 1.0 and 0.2 respectively. The results of the simple b/c test indicate that the benefits outweigh the costs of the Focus on Energy across all for the business and residential program areas. The renewables program area is just at the margin program-to-date, and so far in fiscal year 2007, the costs outweigh the benefits.

Table 2-14. Simple Benefit-Cost and Cost of Conserved Energy Fiscal Year 2007
FY07 (July 1, 2006–June 30, 2007)

Program Area	Value of Energy Savings	Value of Avoided Emissions	Program Costs	Incremental Costs	Simple B/C	CCE kWh	CCE Therms	Elec %	NTG kWh	NTG Therms
Business	$95,557	$1,642	$8,961	$36,919	2.8	$0.025	$0.165	65%	69%	44%
Renewables	$2,430	$28	$1,319	$5,424	1.1	$0.164	$0.099	95%	18%	22%
Residential	$30,348	$878	$7,804	$31,463	1.0	$0.052	$0.982	62%	73%	86%
Total	$128,335	$2,548	$18,083	$73,806	1.9	$0.034	$0.272	66%	69%	48%

*Dollar values, with the exception of the CCE values, are denominated in thousands (000)

Table 2-15. Simple Benefit-Cost and Cost of Conserved Energy Program to Date
Program to Date (July 1, 2001–June 30, 2007)

Program Area	Value of Energy Savings	Value of Avoided Emissions	Program Costs	Incremental Costs	Simple B/C	CCE kWh	CCE Therms	Elec %	NTG kWh	NTG Therms
Business	$456,764	$7,713	$61,834	$152,275	3.2	$0.025	$0.187	62%	56%	55%
Renewables	$12,586	$133	$7,786	$22,886	1.1	$0.148	$0.100	95%	18%	22%
Residential	$219,151	$4,814	$53,190	$151,356	1.3	$0.048	$0.905	63%	79%	84%
Total	$688,501	$12,660	$122,809	$326,517	2.1	$0.035	$0.305	64%	64%	58%

*Dollar values, with the exception of the CCE values, are denominated in thousands (000)

2.8 BENEFIT-COST ANALYSIS[iv]

The analysis takes a societal perspective to counting Focus benefits and costs. The "simple" BC test (results presented below in Table 2-18) is somewhat conservative. It counts as benefits only the avoided costs of well documented energy savings. These avoided costs include the value of avoided emissions for which active offset markets currently exist. The simple test is comparable to Total Resource Cost or Societal tests typically done in other states.

The "expanded" test used is intended to be more realistic by including a broader range of effects (Table 2-19). However, including this broader set of effects requires using estimates that have somewhat less empirical certainty and that are not necessarily counted in other jurisdictions.

Costs in both tests are program spending, excluding incentive payments, and customer incremental costs for measures attributable to the programs.

The expanded BC test expands upon the simple test in several ways.

- Market effects are counted that are considered reasonably likely, but have not been rigorously or precisely quantified in impact analysis to date.

- Non-energy benefits (and costs) are included for all programs.
- Avoided emissions externality costs for expected future emissions offset markets are counted as a benefit.
- Benefits are valued in terms of their net impact on the economy, as determined from the economic impact analysis. The net economic impacts take into account the economic ripple effects on the Wisconsin economy of energy savings and associated non-energy and emissions effects.

Spending Scenarios. For this long-term analysis, conducted in the middle of the life of the program, it is necessary to establish meaningful assumptions of the levels and duration of future program spending. Two spending scenarios are considered.

- The low-funding version of the analysis assumes that spending levels will be similar to those observed in the first five program years. This version indicates the cost-effectiveness of the program as it has existed to date, but assumes a longer total program life. The low-funding scenario provides a minimum realistic benefit-cost assessment.
- The high-funding version assumes that spending rises based on the currently legislated funding levels for the remaining years. Under this scenario, we also count additional market effects that are reasonably likely under increased funding but have not been documented for the programs so far. Thus, the high-funding scenario provides a measure of likely cost-effectiveness of the programs as they could proceed under current funding plans.

Benefit-Cost Analysis Results. In terms of benefit-cost ratios, the low- and high-funding scenarios gave very similar results for Focus as a whole, as well as for the Business and Residential program areas and individual programs. We present the high-funding results as representing a more likely future path for the programs. The consistency with the low-funding results reduces possible concern that the cost-effectiveness would be overstated if future funding turns out to be less than currently planned.

Focus as a whole is projected to have positive net benefits for the state for all forms of the benefit-cost comparison conducted. For the expanded test, high-funding assumption, the projected net present value of 10 years of program operations over a 25-year horizon is a net benefit of $4.4 billion. The benefit-cost ratio for Focus as a whole is 5.3. Under the more conservative simple test, net benefits are $1.4 billion, with a benefit-cost ratio of 2.4.

Table 2-16. Benefits and Costs by Program Area
25-Year Net Present Value ($000,000), Simple BC Test, High Funding

Program Area	Benefits	Costs	Net Benefits	BC Ratio
Residential	$785	$469	$316	1.7
Business	$1,499	$483	$1,016	3.1
Renewables	$94	$56	$38	1.7
Total	$2,377	$1,008	$1,369	2.4

Table 2-17. Benefits and Costs by Program Area
25-Year Net Present Value ($000,000), Expanded BC Test, High Funding

Program Area	Benefits	Costs	Net Benefits	BC Ratio
Residential	$1,418	$469	$950	3.0
Business	$3,577	$483	$3,094	7.4
Renewables	$366	$56	$310	6.5
Total	$5,361	$1,008	$4,353	5.3

The Residential Portfolio has projected benefits substantially above the program costs. The net benefit is estimated at $0.3 billion using the simple test and $1 billion with the expanded test. The benefit-cost ratio is 1.7 using the simple test and 3.0 using the expanded test. A large fraction of the program area achievement comes from compact fluorescent bulbs, both through direct savings tracked by the program and through market effects savings. The ENERGY STAR® Products (ESP) Program, which is dominated by the CFL effort, has the highest simple BC ratio of any of the Residential Programs.

The Business Program area has net benefits of $1 billion and a benefit-cost ratio of 3.1 under the simple test and $3.1 billion and 7.4 under the expanded test. These BC ratios represent improvements compared to the findings from the Initial BC report. Contributors to this improvement include increased attribution levels based on the most recent impact report, some projected added market effects savings, and, for the expanded BC analysis, the inclusion of non-energy benefits. (The increased attribution stems largely from the change in attribution method for CFLs, applying the same analysis as has been used in the past for the Residential CFLs.)

All four Business Program sectors had benefit-cost ratios above 2.0 even under the simple test. The Industrial sector, which accounts for roughly half of all Business Programs documentable savings, had a simple BC ratio of 3.8.

For the Renewables program, the Low scenario appears to represent a more realistic estimate of the overall BC ratio than does the High scenario. Under this scenario, the BC ratio is 1.2 using the simple test, and 3.9 using the expanded test. Thus, even under the most conservative analysis, the program is cost-effective.

2.9 COMPARISONS OF FOCUS ENERGY IMPACTS AND ACHIEVABLE POTENTIAL

As part of an effort to present additional information at the measure and market levels, this section supplements the energy impacts results reported at the technology-specific level with comparisons to *achievable potential* in Wisconsin. The intent of these comparisons is to provide some insights regarding the present selection of markets promoted in Focus. The results for achievable potential are taken from the study on *Energy Efficiency and Customer-Sited Renewable Energy: Achievable Potential in Wisconsin 2006–2015*, prepared by the Energy Center of Wisconsin (ECW) on behalf of The Governor's Taskforce on Energy Efficiency and Renewables (November 2005). In the following discussion, the ECW's report is referred to as the Potential Study. Prior to presenting the comparison results in tables, the methods used are summarized.

2.9.1 "Mapping" Focus Measure Categories to Potential Study Markets

The ECW Potential Study produced results for 36 markets (15 C&I, 15 residential, and 6 renewable). To compare to Focus impacts, some of these markets have been combined and others have been added to provide information about the types of markets that had significant activity in Focus but were not included in the Potential Study, e.g., energy-efficient refrigerators and freezers in the residential sector (see Tables 2-18 through 2-23).

To make comparisons between potential savings and achieved savings, the first step was to "map" or assign the measures installed through Focus to the Potential Study markets. The evaluation team made the initial assignments last year with some review by ECW's author of the Potential Study report. Subsequently there was collaboration between the program administrators and representatives from ECW and the evaluation team to review the assignments. This has resulted over time in a number of changes being made to the assignments of Focus measures for both the residential and the commercial and industrial markets. Changes in the evaluation reporting database have now made it easier to specify market assignments at the measure level, where for the commercial and industrial sectors assignments were made at the program/measure category level. Therefore, another review of the assignments of measures to markets may be worthwhile. Meetings for this purpose, including PSC and program implementers will be held in fall 2007, once the measure lists for inclusion in the PSC tracking system for business programs has been established.

2.9.2 Markets with No Identified Potential

The Potential Study estimates the potential in the 30 C&I and residential markets "to save electric energy, electric demand, and natural gas at or below current utility avoided costs" (Volume I, page 9). The markets included were not exhaustive, therefore, it should be noted that there could be markets which were not included in the study that could provide additional potential for energy savings.

In Tables 2-18 through 2-23 a value of -1 indicates that there are negative savings resulting from measures implemented in that market, e.g. C&I Lighting Remodeling and Replacement and Retrofit market results in significant electric savings, but results in additional consumption of therms, because the efficient lighting does not give off as much heat.

Where there are no Focus energy impacts noted for markets it is because current Focus programs do not capture energy savings from the market. Note that this can be affected by the Potential Study's definitions of markets, and the mapping task of assigning Focus measure categories to markets.

2.9.3 Values Used to Represent Energy Savings Potential

The estimated values for market-specific energy efficiency potential have "considerable variation in the magnitude of these contributions, depending on the resource and sector in question" (Volume I, page 14). The Potential Study used 90% probability boundaries for each market's estimates. The point estimate used in the comparison tables in this report represents the upper boundary of the average annual incremental impact (referred to in the tables as "high" potential). Also, the Potential Study used both a 5-year and 10-year horizon for estimating the incremental impacts. The point estimate is based on the 5-year horizon values.

All tables use Focus net energy impacts for fiscal year 2007 (July 1, 2006, through June 30, 2007). A full year of Focus program results makes comparisons to the Potential Study's annual incremental potentials easier.

In the results provided in Tables 2-18 through 2-23, the percent of potential achieved is color-coded as follows: red signifies that the Focus net savings are at least 66% of the estimated annual achievable potential (or have exceeded it); yellow indicates that the Focus savings are realizing 33–66% of the achievable potential; and, green identifies Potential Study markets for which Focus is realizing less than 33% of the achievable potential. The intent of this scheme is to assist the reader in interpreting the many comparisons.

A. COMMERCIAL & INDUSTRIAL MARKETS

Table 2-18 provides the comparison results for electric C&I markets. As shown in the table, and summarized in the Potential Study report (Volume I, page 14), "Lighting, industrial process improvements, commercial new construction and industrial pump system improvements dominate the C&I sector contribution to overall potential." A close convergence can be seen between achievable potential and actual net Focus kWh impacts for the most important end-use—lighting. The Potential Study indicates that lighting markets account for about 46 percent of achievable potential. At this end-use level, Focus measures assigned to the two lighting markets (specified in the Potential Study) contributed about 58 percent of Focus kWh savings. Focus is therefore achieving almost 68 percent of the kWh potential.

For another important Potential Study market, Industrial Pump System Improvements, we find that Focus is capturing only about 1 percent of its net kWh savings from this measure, or just over 3 percent of the annual potential. For the Industrial Compressed Air System Improvements market, Focus is realizing over 80 percent of the annual potential, and just over 8 percent of program kWh savings in C&I markets.

Table 2-18. Comparisons of Focus Electric Energy Impacts (Net, FY07) and Achievable Potential—Commercial & Industrial Markets

Market ID	Market	Annual kWh Potential - High	% of kWh Potential - High	Net kWh Savings	% of kWh Savings	% of kWh Potential Achieved
1.01	High Performance New Buildings	15,636,000	7.7%	0	0.0%	0.0%
2.01	Commercial Unitary HVAC Replacement and System Improvements	2,103,000	1.0%	1,305,569	1.2%	62.1%
3.00	C&I Lighting Remodeling and Replacement and Retrofit	93,898,000	46.4%	63,684,998	58.2%	67.8%
4.01	Commercial Boiler Replacement and Systems Improvements	0	0.0%	26,268	0.0%	
6.01	Commercial Chiller Replacement and System Improvements	3,028,000	1.5%	4,086,222	3.7%	134.9%
7.01	Commercial Ventilation System Improvements	5,893,000	2.9%	1,521,368	1.4%	25.8%
8.01	Commercial Refrigeration System Improvements	6,486,000	3.2%	1,836,650	1.7%	28.3%
9.01	Industrial Motors: New, Replacement and Repair Market	3,096,000	1.5%	2,277,227	2.1%	73.6%
10.01	Industrial Compressed Air Systems Improvements	10,988,000	5.4%	8,821,596	8.1%	80.3%
11.01	Industrial Fan and Blower Systems Improvement	4,809,000	2.4%	0	0.0%	0.0%
12.01	Industrial Pump Systems Improvement	30,055,000	14.8%	1,016,867	0.9%	3.4%
13.01	Manufacturing Process Upgrades	10,154,000	5.0%	5,606,399	5.1%	55.2%
14.01	Municipal Water and Wastewater	4,449,000	2.2%	0	0.0%	0.0%
15.01	Agriculture Energy Efficiency	11,843,000	5.9%	7,748,707	7.1%	65.4%
70.00	Commercial Pumps			185,384	0.2%	
71.00	HVAC-Other			572,692	0.5%	
72.00	Turn Off/Disconnect			57,920	0.1%	
73.00	Waste Water Treatment			2,017,642	1.8%	
99.02	Savings not Mapped to Market			8,645,981	7.9%	
	TOTALS	**202,438,000**	**100.0%**	**109,411,491**	**100.0%**	**54.0%**

Table 2-19 shows natural gas savings and potential for C&I markets. The Potential Study estimates that over 79 percent of the achievable potential is represented by Manufacturing Process Upgrades. For FY07, about 44 percent of Focus savings were obtained from these process upgrades, which represented realizing 62 percent of the annual potential. Another important contribution to Focus therm savings was in the market category of Commercial Boiler Replacement and Systems Improvements (about 26 percent of therm savings), while the Potential Study suggests that about 7 percent of annual therm savings potential is achievable in this market. Other sets of measures that Focus is exploiting involve Commercial Unitary HVAC Replacement and System Improvements and Agricultural upgrades.

Table 2-19. Comparisons of Focus Gas Energy Impacts (Net, FY07) and Achievable Potential—Commercial & Industrial Markets

Market ID	Market	Annual Therm Potential - High	% of Therm Potential - High	Net Therm Savings	% of Therm Savings	% of Therm Potential Achieved
1.01	High Performance New Buildings	562,000	10.5%	0	0.0%	0.0%
2.01	Commercial Unitary HVAC Replacement and System Improvements	0	0.0%	210,462	3.6%	
3	C&I Lighting Remodelling and Replacement and Retrofit	-1	0.0%	1,686	0.0%	
4.01	Commercial Boiler Replacement and Systems Improvements	390,000	7.3%	1,538,591	26.1%	394.5%
6.01	Commercial Chiller Replacement and System Improvements	0	0.0%	632	0.0%	
7.01	Commercial Ventilation System Improvements	97,000	1.8%	33,663	0.6%	34.7%
8.01	Commercial Refrigeration System Improvements	0	0.0%	2,277	0.0%	
10.01	Industrial Compressed Air Systems Improvements	0	0.0%	18,472	0.3%	
13.01	Manufacturing Process Upgrades	4,229,000	79.2%	2,622,765	44.5%	62.0%
15.01	Agriculture Energy Efficiency	65,000	1.2%	437,534	7.4%	673.1%
70	Commercial Pumps			241	0.0%	
71	HVAC-Other			102,396	1.7%	
99.02	Savings not Mapped to Market			923,188	15.7%	
	TOTALS	**5,342,999**	**100.0%**	**5,891,906**	**100.0%**	**110.3%**

B. RESIDENTIAL MARKETS

Table 2-20 presents comparisons of Focus energy impacts and achievable potential for residential electric markets. For electric energy savings, we again see lighting—specifically Incentives for CFLs—as the dominant market for energy savings, accounting for 55 percent of annual achievable potential. Focus savings are approaching this potential with over 74 percent of FY07 energy savings attributable to incentivized CFLs. This indicates that Focus is realizing over 43 percent of the annual potential. The market with the second largest potential, Retailer Promotion of ENERGY STAR Consumer Electronics (14.7 percent of total kWh achievable potential), is not currently a market that Focus programs are targeting for savings.

As shown in Table 2-21, the market cited by the Potential Study as having the greatest achievable potential for residential natural gas therm savings is Incentives for Energy Efficient New Home Construction, estimated to contribute over 58 percent of total annual therm potential. Based on assignments of Focus measures to Potential Study markets, about 11 percent of FY07 therm savings are attributable to new home construction measures. In addition, Focus is accomplishing significant therm savings with Shell Improvements including Remodeling, where nearly 15 percent of FY07 savings were realized (about 10 percent of the estimated annual potential).

Also with respect to residential natural gas, Focus is capturing significant therm savings from multi-family buildings. About 14 percent of FY07 therm savings are attributable to Multi-family Heating System Replacements (versus estimated achievable potential of 2.2 percent of total potential). However, the Potential Study suggests that there is important achievable potential in the Homeowner Water Heater Purchases (11.5 percent of total therm savings potential), where for FY07 only one percent of Focus residential therm savings were realized.

Table 2-20. Comparisons of Focus Electric Energy Impacts (Net, FY07) and Achievable Potential—Residential Markets

Market ID	Market	Annual kWh Potential - High	% of kWh Potential - High	Net kWh Savings	% of kWh Savings	% of kWh Potential Achieved
16.01	ENERGY STAR Marketing	417,000	0.2%	0	0.0%	0.0%
16.02	Retailer Promotion of ENERGY STAR Consumer Electronics	31,371,000	14.7%	0	0.0%	0.0%
17.01	Incentives for CFLs	117,230,000	55.0%	51,394,859	74.5%	43.8%
18.01	Multi-family Common Area Lighting—Direct Install Market	4,744,000	2.2%	0	0.0%	0.0%
19.01	Incentives For Variable Speed Furnaces	15,242,000	7.2%	6,755,976	9.8%	44.3%
20	Central AC/HVAC	4,946,000	2.3%	453,106	0.7%	9.2%
22	Room AC	1,582,000	0.7%	33	0.0%	0.0%
23	Homeowner Water Heater Purchases	9,313,000	4.4%	0	0.0%	0.0%
24.01	Incentives for Energy Efficient (EE) New Home Construction	732,000	0.3%	1,144	0.0%	0.2%
26.01	Dehumidifier Early Retirement	2,019,000	0.9%	1,500	0.0%	0.1%
27	Direct Install Market	13,713,000	6.4%	0	0.0%	0.0%
28	Shell Improvements including Remodeling (25.01)	4,582,000	2.2%	197,236	0.3%	4.3%
29.01	Incentives for Homeowner Clothes Washer Purchases	4,172,000	2.0%	5,021,299	7.3%	120.4%
30.01	Multi-Family Fuel Switching	2,909,000	1.4%	0	0.0%	0.0%
81	Refrigerators & Freezers			846,450	1.2%	
82	Lighting Fixtures			1,314,605	1.9%	
99	Savings not Mapped to Market			2,981,317	4.3%	
	Totals	**212,972,000**	**100.0%**	**68,967,525**	**100.0%**	**32.4%**

Table 2-21. Comparisons of Focus Gas Energy Impacts (Net, FY07) and Achievable Potential—Residential Markets

Market ID	Market	Annual Therm Potential - High	% of Therm Potential - High	Net Therm Savings	% of Therm Savings	% of Therm Potential Achieved
19.01	Incentives For Variable Speed Furnaces	0	0.0%	174,912	13.3%	
21.01	Multi-family Heating System Replacement—Medium and Larger Buildings	262,000	2.2%	180,140	13.7%	68.8%
21.02	Multi-family Fuel Switching	571,000	4.9%	0	0.0%	0.0%
23	Homeowner Water Heater Purchases	1,344,000	11.5%	12,084	0.9%	0.9%
24.01	Incentives for Energy Efficient (EE) New Home Construction	6,884,000	58.7%	148,900	11.3%	2.2%
27	Direct Install Market	630,000	5.4%	0	0.0%	0.0%
28	Shell Improvements including Remodeling (25.01)	1,897,000	16.2%	196,578	14.9%	10.4%
29.01	Incentives for Homeowner Clothes Washer Purchases	140,000	1.2%	167,145	12.7%	119.4%
99	Savings not Mapped to Market			438,126	33.2%	
	Totals	**11,728,000**	**100.0%**	**1,317,884**	**100.0%**	**11.2%**

C. RENEWABLE ENERGY MARKETS

Table 2-22 provides results for comparisons of estimated achievable potential and FY07 Focus savings for renewable energy markets and electric energy potential. This potential is dominated by Agriculture Anaerobic Digestion, contributing almost 60 percent of total achievable potential. Focus is nearly matching the annual potential—both in absolute kWh and in percent of 2006 kWh savings—by capturing almost 93 percent of FY07 savings from this technology.

Focus is also obtaining nearly all of its 2006 therm savings from Wood Residue for Commercial/Institutional Heat (Table 2-23), which is also the source of greatest annual therm potential (75.3 percent according to the Potential Study). Another important source of therm potential is Commercial Solar Thermal (Hot Water) which is projected to have over 24 percent of the annual therm potential. Focus realized almost 17 percent of renewable market therm savings from this technology, or a little over 13 percent of the annual potential.

Table 2-22. Comparisons of Focus Electric Energy Impacts (Net, FY07) and Achievable Potential—Renewables Markets

Market ID	Market	Annual kWh Potential - High	% of kWh Potential - High	Net kWh Savings	Percent kWh Savings	% of kWh Potential Achieved
31.01	Customer-sited, Grid-connected, Commercial Solar Photovoltaics (PV)	263,000	1.3%	346,243	3.1%	131.7%
35.01	Customer-sited, Gird-connected, Commercial Wind Energy	7,914,000	38.1%	16,102	0.1%	0.2%
36.01	Agriculture Anaerobic Digestion	12,583,000	60.6%	10,476,960	94.0%	83.3%
99.03	Savings not Mapped to Market			302,000	2.7%	
	Totals	**20,760,000**	**100.0%**	**11,141,305**	**100.0%**	

Note: See Table 2-19: Comparisons of Focus Energy Impacts (Net, FY07) and Achievable Potential (Average Annual Increments—5-Year Horizon)
—Residential Markets for the Residential Solar Thermal (Hot Water) market

Table 2-23. Comparisons of Focus Gas Energy Impacts (Net, FY07) and Achievable Potential—Renewables Markets

Market ID	Market	Annual Therm Potential - High	% of Therm Potential - High	Net Therm Savings	Percent Therm Savings	% of Therm Potential Achieved
32.01	Commercial Solar Thermal (Hot Water)	212,000	22.6%	28,510	16.9%	13.4%
34.01	Wood Residue for Commercial/Institutional Heat	724,000	77.4%	61,290	36.3%	8.5%
36.01	Agriculture Anaerobic Digestion	0	0.0%	8,275	4.9%	
99.03	Savings not Mapped to Market			70,573	41.8%	
	Totals	**936,000**	**100.0%**	**168,648**	**100.0%**	

3. BUSINESS PROGRAMS EVALUATION

3.1 OVERVIEW OF KEY ACTIVITIES

Business Programs evaluation activities during FY07 were primarily devoted to the determination of program savings. The largest effort was the fieldwork and analysis to determine verified gross and net impacts for energy efficiency measures implemented during FY06. The following is a succinct list of evaluation activities undertaken in FY07.

- The emphasis of the evaluation activity in FY07 was on measurements geared to establishing the value of the programs. This value was established through the direct impact evaluation, which verifies the resource acquisition savings, and through market/program effects assessments that establish evidence of program effects beyond direct resource acquisition.
- The broad approach of the impact evaluation fieldwork was similar to that used in the past. For the majority of this work we used approaches, protocols, and instruments developed in the evaluation work conducted so far. However, we investigated ways to standardize and streamline additional elements, including collection of more supply-side information where relevant, incorporation of participant spillover, and use of market-based attribution methods for CFLs.
  - Other new additions to the impact evaluation included: oversampling of measures implemented in the Wisconsin Public Service territory as part of the joint Focus-WPS Business Programs; coordination with the We Energies 55 MW Energy Efficiency Procurement Plan evaluation team; evaluation of channel strategies as well as the four sectors; CFL savings credited to Channel Lighting; deemed values for six measure types; Energy Advisor Survey used by KEMA engineers; agriculture supplier survey; improved general supplier survey; and the replacement of STAR with the WATTS.
  - A single round of impact evaluation fieldwork and analysis was conducted covering all implementation in FY06.
- Estimation of attribution factors by end-use.
- Estimation of sector level adjustment factors to show the effect of the Channel Initiatives on each sector. These additional breakouts included the four primary sectors, the four primary sectors by Channel versus non-Channel measures, and CFL versus non-CFL measures in the Agriculture and Commercial sectors.
- Development of deemed savings database in coordination with the We Energies evaluation team.
- For the FY06 channel contract metrics the initial round of work was accelerated slightly, with data collection prior to the end of FY06, and draft results were reported in June 2006. Final results were included with the formal contract metrics assessment in October 2006. The assessment of FY07 contract metrics achievement will not be evaluated in FY08. In FY08 the evaluation team will establish baselines for the new long-term contract metrics of the BP HVAC, Lighting, and Rotary Channel Initiatives.
- Projections of tracked and untracked program savings were developed as inputs to the benefit-cost analysis.

3.2 ENERGY IMPACTS

In this section, we provide the estimates of tracked and untracked savings for the program to date. We also provide a summary of the FY06 impact evaluation[5], the end-use specific adjustment factor analysis and present the status of the deemed savings review, which contributes to the estimation of impacts.

3.2.1 Evaluated Tracked Impacts

A. APPROACH AND DEFINITIONS

The evaluation team has implemented eight rounds of data collection and a document review to estimate net energy savings for Business Programs. Similar procedures and protocols have been used in each round. The most recent round included measures installed between July 1, 2005, and June 30, 2006.

i. Adjustment Factors Defined

The adjustment factors estimated from the data collection and analysis are as follows:

- Installation rate: This factor adjusts the tracking estimate of gross savings for noninstallation, but does not correct for any other errors in the tracking estimate. It is the estimated fraction of tracking gross savings corresponding to measures actually installed. (For calculation of the installation rate, a measure is identified as either installed or not. Adjustments to the number of units installed for a particular measure are included in the engineering verification factor, not in the installation rate.)
- Engineering verification factor: This factor adjusts the tracking estimate of gross savings, after the application of the installation rate, to create verified gross savings. It is the estimated ratio of verified gross savings to tracking gross savings corresponding to measures actually installed. Verified gross savings used to estimate this ratio are based on the results of an engineering review, which includes a review of how tracking gross savings were calculated and interviews with participants. For a given measure, verified gross savings may be higher or lower than the tracking estimate of gross savings for a variety of reasons, including the wrong data were entered in the program tracking database; survey responses indicating differences in the quantities installed, equipment efficiencies, and/or operating hours; and mistakes in the calculation of the tracking estimate. (The engineering verification factor includes any correction to the numbers of units installed for a particular measure.)
- Gross savings adjustment factor: This factor combines the installation rate and the engineering verification factor. (It is the ratio of verified gross savings to tracking gross savings.)
- Attribution factor: This factor adjusts verified gross savings for program attribution. It is the estimated proportion of verified gross savings attributable to the Focus Business Programs or the ratio of net savings to verified gross savings. Net savings used to

[5] A more detailed summary of the impact evaluation was provided in the previous semiannual report.

estimate the attribution factor are calculated in one of two methods. The choice between the market-based and self-reported approaches is based on the white paper *Net-to-Gross Method Selection Framework for Evaluating Focus on Energy* program developed by the Focus evaluation team (March 2006).

- Realization rate: This factor combines the gross savings adjustment factor (i.e., the installation rate and the engineering verification factor) and the attribution factor. (It is the ratio of net savings to tracking gross savings.)

The adjustment factors are calculated separately for each energy unit (kWh, kW, and therms) in combination with each sector and channel as well as for Business Programs overall. The sectors and channels used in this analysis are:

- **Sectors:** Agriculture; Commercial; Industrial; and Schools & Government.
- **Channels:** Efficient Heating & Cooling Initiative; and Channel Lighting.[6]

The calculation of the adjustment factors uses appropriate weights corresponding to the sampling rate within each stratum. The main objective in designing the sample drawn in the most recent round was to provide the best possible estimates for each of the sectors and channels.

B. RESULTS

This section provides the final results of the FY06 impact evaluation. The results are provided by the overall program and each sector/channel for kWh, kW, and therms. The results are present in the following order.

1. Gross savings adjustment factor.
2. Attribution factor.
3. Realization rate.

The FY06 adjustment factors are provided in the tables below with indicators of statistical precision, the 90% confidence interval, and sample sizes. The +/- amount is the absolute difference in the estimated percentage, not the relative difference. For example, the Agriculture kWh attribution standard error is 3 percentage points, the +/- is 5 percentage points, and the relative precision at 90 percent is 10 percent (5%/51%).[7]

Table 3-1 shows the FY06 gross savings adjustment factors by sector and channel. The gross savings adjustment factors combine the installation rates and the engineering verification factors to adjust the tracking estimate of gross savings. The gross savings

[6] Adjustment Factors were not calculated for the Motors & VSDs Channel because only fifteen customers installed measures in FY06 through this channel.

[7] The critical value is determined using Student's t distribution and n-1 for the degrees of freedom. The critical value for the Gross Savings Adjustment Factor and the Realization Rate is determined using the degrees of freedom based on the minimum sample size for the components of the adjustment factor. These two adjustment factors are products of other adjustment factors.

adjustment factors for electric savings are particularly high this fiscal year, ranging from 93 to 104 percent. The adjustment factors for therms are also high ranging from 88 to 102 percent.

Table 3-1. Gross Savings Adjustment Factors by Sector/Channel
Based on Samples from Participants Who Installed a Measure during FY06

	kWh					kW					Therms				
		Gross Savings	90% Confidence Interval				Gross Savings	90% Confidence Interval				Gross Savings	90% Confidence Interval		
Segment	min n	Adjustment Factor	+/-	Lower Bound	Upper Bound	min n	Adjustment Factor	+/-	Lower Bound	Upper Bound	min n	Adjustment Factor	+/-	Lower Bound	Upper Bound
Agriculture	16	104%	7.9%	97%	112%	15	93%	11.2%	81%	104%	3	96%	4.8%	91%	101%
Commercial	16	97%	3.0%	94%	100%	10	98%	2.7%	96%	101%	10	97%	2.7%	94%	99%
Industrial	25	99%	1.3%	98%	100%	22	99%	1.2%	98%	100%	21	102%	4.3%	98%	107%
Institutional	15	96%	3.2%	93%	99%	13	98%	1.7%	97%	100%	17	88%	9.0%	79%	97%
Channel EHCI	15	96%	3.2%	93%	100%	7	99%	2.3%	97%	101%	21	92%	1.4%	90%	93%
Channel Lighting	121	98%	1.8%	96%	100%	118	98%	1.9%	96%	100%	6	98%	3.9%	94%	102%
Business Programs Overall	208	99%	1.1%	97%	100%	185	98%	1.5%	96%	99%	78	97%	3.3%	93%	100%

The FY06 attribution factors by sector and channel are provided in Table 3-2. The FY06 attribution factors for the program overall are 71 percent, 70 percent, and 53 percent for kWh, kW, and therms, respectively.

Table 3-2. Attribution Factors by Sector/Channel
Based on Samples from Participants Who Installed a Measure during FY06

	kWh					kW					Therms				
		Attribution	90% Confidence Interval				Attribution	90% Confidence Interval				Attribution	90% Confidence Interval		
Segment	n	Adjustment Factor	+/-	Lower Bound	Upper Bound	n	Adjustment Factor	+/-	Lower Bound	Upper Bound	n	Adjustment Factor	+/-	Lower Bound	Upper Bound
Agriculture	71	51%	5.0%	46%	56%	65	45%	6.2%	38%	51%	19	60%	16.5%	44%	77%
Commercial	45	60%	14.1%	46%	74%	30	58%	14.5%	43%	72%	39	51%	14.7%	36%	65%
Industrial	48	80%	10.7%	69%	90%	43	77%	10.8%	66%	87%	27	37%	15.2%	22%	52%
Institutional	36	65%	13.7%	51%	79%	28	58%	9.2%	49%	67%	51	58%	11.1%	47%	69%
Channel EHCI	15	37%	10.8%	26%	48%	7	43%	10.7%	33%	54%	21	85%	12.0%	73%	97%
Channel Lighting	121	72%	17.3%	55%	90%	118	75%	16.4%	59%	91%	6	63%	45.7%	17%	109%
Business Programs Overall	336	71%	7.5%	63%	78%	291	70%	7.2%	62%	77%	163	53%	11.7%	41%	64%

Table 3-3 shows the FY06 realization rates by sector and channel. The realization rates combine the effect of the gross savings adjustment factors and the attribution factors.

Table 3-3. Realization Rates by Sector/Channel
Based on Samples from Participants Who Installed a Measure during FY06

	kWh					kW					Therms				
			90% Confidence Interval					90% Confidence Interval					90% Confidence Interval		
Segment	min n	Realization Rate	+/-	Lower Bound	Upper Bound	min n	Realization Rate	+/-	Lower Bound	Upper Bound	min n	Realization Rate	+/-	Lower Bound	Upper Bound
Agriculture	16	53%	6.8%	46%	60%	15	41%	7.8%	33%	49%	3	58%	21.6%	36%	79%
Commercial	16	58%	14.4%	44%	73%	10	57%	15.4%	42%	72%	10	49%	15.3%	34%	64%
Industrial	25	79%	10.8%	68%	90%	22	76%	10.9%	65%	87%	21	38%	15.8%	22%	54%
Institutional	15	62%	13.8%	48%	76%	13	57%	9.5%	47%	66%	17	52%	11.4%	40%	63%
Channel EHCI	15	36%	10.5%	25%	46%	7	43%	10.6%	32%	54%	21	78%	11.0%	67%	89%
Channel Lighting	121	71%	17.0%	54%	88%	118	74%	16.2%	58%	90%	6	62%	44.9%	17%	107%
Business Programs Overall	208	70%	7.5%	62%	77%	185	68%	7.2%	61%	75%	78	51%	11.5%	39%	62%

C. EVALUATED TRACKED ENERGY IMPACTS

The estimates of the adjustment factors by sector and channel are used to calculate verified gross savings and net savings. Multiplying tracking gross savings by the gross savings adjustment factor (which is the product of the installation rate and the engineering verification factor) alone yields verified gross savings.

For FY07 (July 1, 2006, through June 30, 2007), Table 3-4a gives tracking and verified gross savings and net savings by sector or program and for Business Programs overall. These estimates are based on the savings tracked for this period with the most recent available adjustment factors. That is, the estimates of the adjustment factors by primary segment

reported above are used to calculate verified gross savings and net savings for this time period.

Table 3-4a. All Business Programs: Tracked Energy Impacts[8]
FY07 (July 1, 2006–June 30, 2007)

Program	Gross kWh	Gross kW	Gross Therms	Verified kWh	Verified kW	Verified Therms	Net kWh	Net kW	Net Therms
Agriculture	14,620,203	3,995	754,368	15,205,011	3,716	724,194	7,748,707	1,638	437,534
Channel EHCI	364,742	360	225,574	364,582	372	208,864	135,063	161	176,918
Channel Lighting	52,397,977	12,329	2,464	51,733,881	12,250	2,420	37,480,261	9,196	1,522
Commercial	25,989,275	4,813	1,329,314	25,905,827	4,930	1,298,198	15,554,931	2,851	658,834
Industrial	42,610,830	6,667	7,771,700	43,602,370	6,882	7,858,786	34,760,245	5,267	2,915,245
Schools & Government	21,616,629	5,511	3,576,639	21,171,400	5,485	3,227,272	13,732,284	3,171	1,883,404
TOTAL	157,599,656	33,676	13,660,059	157,983,071	33,635	13,319,734	109,411,491	22,285	6,073,457

Table 3-4b gives the same results for FY06. These estimates are based on the savings tracked for FY06, with the adjustment factors from the most recent round of impact evaluation data collection are used to calculate the savings shown in Tables 3-4a and 3-4b.

Table 3-4b. All Business Programs: Tracked Energy Impacts
FY06 (July 1, 2005–June 30, 2006)

Program	Gross kWh	Gross kW	Gross Therms	Verified kWh	Verified kW	Verified Therms	Net kWh	Net kW	Net Therms
Agriculture	10,369,971	2,554	169,600	10,784,770	2,375	162,816	5,496,085	1,047	98,368
Channel EHCI	719,513	649	363,167	719,198	671	336,265	266,434	291	284,833
Channel Lighting	40,925,162	10,424	2,572	40,406,474	10,358	2,526	29,273,759	7,775	1,589
Commercial	25,053,979	3,439	1,400,747	24,973,534	3,522	1,367,959	14,995,143	2,037	694,238
Industrial	39,401,969	6,761	5,203,226	40,318,839	6,979	5,261,531	32,142,582	5,342	1,951,784
Schools & Government	14,865,044	4,396	2,535,132	14,558,875	4,375	2,287,500	9,443,240	2,530	1,334,962
TOTAL	131,335,639	28,223	9,674,444	131,761,691	28,280	9,418,597	91,617,242	19,021	4,365,774

Tables 3-4c through 3-4f provide tracking and verified gross savings and net savings by program and for Business Programs overall for FY05 through FY02 (program start through June 30, 2002), respectively. Adjustment factors determined from the earlier rounds of similar data collection and analysis are used to calculate the savings for each of these program years. Estimates of the adjustment factors used to calculate verified gross savings and net savings for the earlier years are provided in the following reports:

- FY02: Volume III, Impact Evaluation of the Business Programs Comprehensive Report, December 23, 2002
- FY03: Business Programs Impact Evaluation Report—Contract Year 2 Complete, January 14, 2004

[8] The findings of the *Comprehensive CFL Market Effects Study* report are reflected in the residential program impacts in this report but are not reflected in the business programs impacts. These findings will be integrated into the program impacts reported for business programs in subsequent reports and are expected to reduce the net savings reported for FY07.

- FY04: Business Programs Impact Evaluation Report—Year 3, Round 1, June 17, 2004
- FY05: Business Programs Impact Evaluation Report—FY05, Round 1, September 9, 2005.

Table 3-4c. All Business Programs: Tracked Energy Impacts
FY05 (July 1, 2004–June 30, 2005)

Program	Gross kWh	Gross kW	Gross Therms	Verified kWh	Verified kW	Verified Therms	Net kWh	Net kW	Net Therms
Agriculture	15,305,374	3,661	260,696	9,701,733	2,194	261,306	5,629,513	1,059	96,301
Commercial	44,218,407	9,807	1,018,331	30,703,691	6,529	920,120	18,924,532	3,871	275,075
Industrial	67,743,333	9,586	4,081,617	54,236,269	8,271	4,230,779	23,556,179	3,162	2,141,769
Schools & Government	16,622,117	4,072	1,826,014	16,078,666	3,908	1,695,299	7,751,822	1,878	951,637
TOTAL	143,889,231	27,125	7,186,658	110,720,360	20,902	7,107,503	55,862,046	9,970	3,464,783

Table 3-4d. All Business Programs: Tracked Energy Impacts
FY04 (July 1, 2003–June 30, 2004)

Program	Gross kWh	Gross kW	Gross Therms	Verified kWh	Verified kW	Verified Therms	Net kWh	Net kW	Net Therms
Agriculture	16,000,309	3,541	93,863	11,105,756	2,876	63,415	5,889,700	1,550	53,368
Commercial	42,261,364	9,346	591,567	37,826,842	9,625	589,498	19,901,095	5,512	509,922
Industrial	80,264,260	11,792	9,588,577	69,713,833	7,524	10,127,720	40,260,298	4,113	8,828,403
Schools & Government	17,954,008	3,929	2,359,952	18,719,877	3,516	1,834,499	13,887,848	2,009	1,224,291
TOTAL	156,479,941	28,608	12,633,959	137,366,308	23,540	12,615,132	79,938,941	13,185	10,615,984

Table 3-4e. All Business Programs: Tracked Energy Impacts
FY03 (July 1, 2002–June 30, 2003)

Program	Gross kWh	Gross kW	Gross Therms	Verified kWh	Verified kW	Verified Therms	Net kWh	Net kW	Net Therms
Agriculture	7,129,148	1,805	60,906	6,716,282	1,722	58,897	3,905,035	1,134	51,166
Commercial	39,232,419	9,477	1,167,849	36,381,429	7,866	1,197,427	17,650,457	4,633	872,738
Industrial	55,254,098	8,014	1,686,471	57,173,820	7,774	1,759,518	21,556,285	2,986	915,699
Industries of the Future	15,295,186	1,638	1,190,100	14,262,206	1,628	1,235,975	9,899,931		833,046
Renewables	0	0	701,849	0	0	678,278	0	0	677,718
Schools & Government	13,860,356	2,576	1,450,431	14,314,442	2,470	1,266,154	9,669,313	1,826	292,211
TOTAL	130,771,207	23,509	6,257,606	128,848,179	21,460	6,196,249	62,681,021	10,580	3,642,577

Table 3-4f. All Business Programs: Tracked Energy Impacts
FY02 (July 1, 2001–June 30, 2002)

Program	Gross kWh	Gross kW	Gross Therms	Verified kWh	Verified kW	Verified Therms	Net kWh	Net kW	Net Therms
Agriculture	931,679	278	1,319	957,662	249	1,316	438,982	91	466
Commercial	7,989,934	1,947	1,359,460	7,929,764	1,287	491,392	3,949,903	613	173,848
Industrial	16,133,651	2,525	866,495	16,618,938	4,083	631,758	11,800,434	3,027	399,772
New Buildings	143,000	113	18,049	143,000	113	18,049	143,000	46	0
Schools & Government	5,492,779	2,134	515,218	4,882,794	1,304	598,213	2,432,174	621	211,640

TOTAL	30,691,043	6,997	2,760,541	30,532,158	7,036	1,740,729	18,764,493	4,397	785,725

Table 3-5 summarizes tracking and verified gross savings and net savings for Business Programs overall for the program-to-date (program start through June 30, 2007).

Table 3-5. All Business Programs: Tracked Energy Impacts
Program to Date (July 1, 2001–June 30, 2007)

Program	Gross kWh	Gross kW	Gross Therms	Verified kWh	Verified kW	Verified Therms	Net kWh	Net kW	Net Therms
Agriculture	64,356,684	15,834	1,340,752	54,471,215	13,132	1,271,944	29,108,023	6,520	737,202
Channel EHCI	1,084,255	1,009	588,741	1,083,780	1,043	545,129	401,497	452	461,751
Channel Lighting	93,323,139	22,753	5,036	92,140,355	22,608	4,947	66,754,019	16,970	3,110
Commercial	184,745,378	38,829	6,867,268	163,721,088	33,760	5,864,593	90,976,062	19,518	3,184,655
Industrial	301,408,142	45,345	29,198,086	281,664,069	41,512	29,870,092	164,076,024	23,897	17,152,673
Industries of the Future	15,295,186	1,638	1,190,100	14,262,206	1,628	1,235,975	9,899,931		833,046
New Buildings	143,000	113	18,049	143,000	113	18,049	143,000	46	0
Renewables	0	0	701,849	0	0	678,278	0	0	677,718
Schools & Government	90,410,933	22,617	12,263,386	89,726,054	21,057	10,908,938	56,916,680	12,034	5,898,145
TOTAL	750,766,716	148,138	52,173,267	697,211,767	134,853	50,397,945	418,275,235	79,437	28,948,300

3.2.2 Evaluated Tracked Energy Impacts by Technology/End-use Categories and Business Programs Sector (Verified Gross for Program-to-Date and for FY07)

The following tables present the verified gross energy impacts for Business Programs by sector (agricultural, commercial, industrial, and schools/government). For each sector, energy impacts are presented for July 1, 2006, through June 30, 2007 (FY07), and for July 2001 through June 30, 2007 (program to date). The tables also include a column that displays the percentage of total kWh, kW, or therm savings that comes from each technology or end-use category. The discussion for each sector includes observations based on the Business Programs tracking data that capture highlights of the empirical results presented in the tables without additional analysis or interpretation.

A. AGRICULTURAL

Table 3-6a. Agricultural
FY07 (July 1, 2006–June 30, 2007)

Program Initiative	Measure Category	Verified kWh	kWh %	Verified kW	kW %	Verified Therms	Therm %
Channel	HVAC	52,925	0.3%	0	0.0%	0	0.0%
Custom	Ag Specialty	1,696,307	11.2%	1,155	31.1%	396,683	54.8%
Custom	Appliance-Other	205,702	1.4%	31	0.8%	-1,333	-0.2%
Custom	Boiler/Other Heating	18,590	0.1%	0	0.0%	1,174	0.2%
Custom	Building Shell	0	0.0%	0	0.0%	95,325	13.2%
Custom	CFL	510,650	3.4%	113	3.0%	0	0.0%
Custom	Commercial Washer	10,567	0.1%	0	0.0%	0	0.0%
Custom	Controls	0	0.0%	0	0.0%	4,790	0.7%
Custom	Custom	22,824	0.2%	5	0.1%	0	0.0%
Custom	Greenhouse	40,667	0.3%	4	0.1%	49,760	6.9%
Custom	Heat Recovery	2,252,216	14.8%	491	13.2%	182,057	25.1%
Custom	Hot Water	2,988,682	19.7%	396	10.7%	-84,148	-11.6%
Custom	HVAC	1,977,997	13.0%	514	13.8%	26,263	3.6%
Custom	Light Fixture	3,616	0.0%	1	0.0%	0	0.0%
Custom	Lighting-Other	669,266	4.4%	130	3.5%	0	0.0%
Custom	Motor	4,096,896	26.9%	714	19.2%	0	0.0%
Custom	Process	-6,846	0.0%	-2	-0.1%	9,795	1.4%
Custom	Refrigeration	227,574	1.5%	72	2.0%	1	0.0%
Custom	Renewable	0	0.0%	0	0.0%	43,827	6.1%
Custom	T8/T5 Fluorescent Lighting	437,379	2.9%	92	2.5%	0	0.0%
TOTAL		15,205,011	100.0%	3,716	100.0%	724,194	100.0%

Table 3-6b. Agricultural
Program to Date (July 1, 2001–June 30, 2007)

Program Initiative	Measure Category	Verified kWh	kWh %	Verified kW	kW %	Verified Therms	Therm %
Channel	CFL	194,132	0.4%	47	0.4%	0	0.0%
Channel	Clothes Washer	2,434	0.0%	0	0.0%	221	0.0%
Channel	Dishwasher	57	0.0%	0	0.0%	5	0.0%
Channel	HVAC	52,925	0.1%	0	0.0%	0	0.0%
Channel	Light Fixture	1,514	0.0%	0	0.0%	0	0.0%
Channel	Motor	428	0.0%	0	0.0%	0	0.0%
Custom	Ag Specialty	2,941,008	5.4%	1,566	11.9%	685,285	53.9%
Custom	Air Conditioning	1,154	0.0%	1	0.0%	0	0.0%
Custom	Appliance-Other	213,328	0.4%	32	0.2%	-1,119	-0.1%
Custom	Boiler/Other Heating	664,498	1.2%	115	0.9%	65,858	5.2%
Custom	Building Shell	820	0.0%	0	0.0%	138,689	10.9%
Custom	CFL	13,734,198	25.2%	3,826	29.1%	0	0.0%
Custom	Clothes Washer	52,418	0.1%	0	0.0%	3,085	0.2%
Custom	Commercial Washer	36,582	0.1%	0	0.0%	383	0.0%

Program Initiative	Measure Category	Verified kWh	kWh %	Verified kW	kW %	Verified Therms	Therm %
Custom	Compressed Air	47,166	0.1%	4	0.0%	0	0.0%
Custom	Controls	0	0.0%	0	0.0%	4,790	0.4%
Custom	Custom	188,699	0.3%	78	0.6%	0	0.0%
Custom	Dehumidifier	416	0.0%	0	0.0%	0	0.0%
Custom	Dishwasher	285	0.0%	0	0.0%	25	0.0%
Custom	Greenhouse	40,667	0.1%	4	0.0%	49,760	3.9%
Custom	Heat Recovery	7,265,850	13.3%	1,644	12.5%	381,052	30.0%
Custom	Hot Water	7,889,855	14.5%	1,378	10.5%	-276,878	-21.8%
Custom	HVAC	5,940,652	10.9%	1,808	13.8%	46,688	3.7%
Custom	Light Fixture	78,628	0.1%	14	0.1%	0	0.0%
Custom	Lighting-Other	1,548,872	2.8%	277	2.1%	0	0.0%
Custom	Motor	11,126,006	20.4%	1,854	14.1%	0	0.0%
Custom	Process	-6,846	0.0%	-2	0.0%	30,706	2.4%
Custom	Refrigeration	823,552	1.5%	167	1.3%	1	0.0%
Custom	Refrigerator	347	0.0%	0	0.0%	0	0.0%
Custom	Renewable	77,382	0.1%	23	0.2%	51,380	4.0%
Custom	Steam Trap	0	0.0%	0	0.0%	92,013	7.2%
Custom	T8/T5 Fluorescent Lighting	1,554,187	2.9%	295	2.2%	0	0.0%
TOTAL		54,471,215	100.0%	13,132	100.0%	1,271,944	100.0%

B. COMMERCIAL

Table 3-7a. Commercial
FY07 (July 1, 2006–June 30, 2007)

Program Initiative	Measure Category	Verified kWh	kWh %	Verified kW	kW %	Verified Therms	Therm %
Channel	HVAC	74,079	0.3%	0	0.0%	0	0.0%
Channel	Motor	9,086	0.0%	1	0.0%	0	0.0%
Custom	Air Conditioning	10,873	0.0%	20	0.4%	0	0.0%
Custom	Appliance-Other	0	0.0%	0	0.0%	21,293	1.6%
Custom	Boiler/Other Heating	38,845	0.1%	0	0.0%	300,166	23.1%
Custom	Building Shell	263,534	1.0%	61	1.2%	28,364	2.2%
Custom	CFL	2,332,704	9.0%	642	13.0%	0	0.0%
Custom	Commercial Washer	766	0.0%	0	0.0%	939	0.1%
Custom	Controls	3,744,084	14.5%	359	7.3%	87,103	6.7%
Custom	Custom	0	0.0%	0	0.0%	40,099	3.1%
Custom	Food Service	55,135	0.2%	13	0.3%	3,516	0.3%
Custom	Freezer	10,658	0.0%	2	0.0%	0	0.0%
Custom	Heat Recovery	18,413	0.1%	3	0.1%	67,025	5.2%
Custom	Hot Water	299,722	1.2%	89	1.8%	365,441	28.1%
Custom	HVAC	3,232,519	12.5%	1,594	32.3%	356,458	27.5%
Custom	Light Fixture	92,976	0.4%	27	0.6%	0	0.0%
Custom	Lighting-LED	76,163	0.3%	9	0.2%	0	0.0%
Custom	Lighting-Other	4,276,790	16.5%	599	12.2%	0	0.0%
Custom	Motor	165,869	0.6%	14	0.3%	0	0.0%

Program Initiative	Measure Category	Verified kWh	kWh %	Verified kW	kW %	Verified Therms	Therm %
Custom	Pump	229,555	0.9%	0	0.0%	0	0.0%
Custom	Refrigeration	2,940,916	11.4%	33	0.7%	0	0.0%
Custom	Refrigerator	12,474	0.0%	2	0.0%	0	0.0%
Custom	Steam Trap	0	0.0%	0	0.0%	28,032	2.2%
Custom	T8/T5 Fluorescent Lighting	7,955,303	30.7%	1,462	29.7%	-237	0.0%
Custom	Vending Miser	65,364	0.3%	0	0.0%	0	0.0%
TOTAL		25,905,827	100.0%	4,930	100.0%	1,298,198	100.0%

Table 3-7b. Commercial
Program to Date (July 1, 2001–June 30, 2007)

Program Initiative	Measure Category	Verified kWh	kWh %	Verified kW	kW %	Verified Therms	Therm %
Channel	CFL	1,649,793	1.0%	452	1.3%	0	0.0%
Channel	Clothes Washer	800	0.0%	0	0.0%	60	0.0%
Channel	HVAC	130,219	0.1%	-3	0.0%	0	0.0%
Channel	Light Fixture	9,114	0.0%	2	0.0%	0	0.0%
Channel	Motor	52,461	0.0%	5	0.0%	0	0.0%
Channel	Refrigerator	46	0.0%	0	0.0%	0	0.0%
Custom	Aeration System	0	0.0%	0	0.0%	2,817	0.0%
Custom	Air Conditioning	262,761	0.2%	139	0.4%	0	0.0%
Custom	Appliance-Other	11,203	0.0%	16	0.0%	130,177	2.2%
Custom	Biomass	0	0.0%	0	0.0%	355,551	6.1%
Custom	Boiler/Other Heating	57,992	0.0%	5	0.0%	771,549	13.2%
Custom	Building Shell	1,184,667	0.7%	110	0.3%	209,992	3.6%
Custom	CFL	66,887,631	40.9%	17,738	52.5%	0	0.0%
Custom	Clothes Washer	53,403	0.0%	0	0.0%	3,124	0.1%
Custom	Commercial Washer	1,266,289	0.8%	627	1.9%	64,204	1.1%
Custom	Compressed Air	228,795	0.1%	13	0.0%	0	0.0%
Custom	Controls	15,970,002	9.8%	1,028	3.0%	753,049	12.8%
Custom	Custom	618,751	0.4%	219	0.6%	77,062	1.3%
Custom	Dehumidifier	546,651	0.3%	88	0.3%	4,963	0.1%
Custom	Dishwasher	867	0.0%	0	0.0%	60	0.0%
Custom	Food Service	75,757	0.0%	16	0.0%	4,395	0.1%
Custom	Freezer	14,587	0.0%	2	0.0%	0	0.0%
Custom	Heat Recovery	-69,397	0.0%	93	0.3%	420,860	7.2%
Custom	Hot Water	2,122,503	1.3%	770	2.3%	1,197,460	20.4%
Custom	HVAC	16,211,535	9.9%	4,627	13.7%	1,180,051	20.1%
Custom	Light Fixture	364,612	0.2%	114	0.3%	0	0.0%
Custom	Lighting-LED	1,027,729	0.6%	127	0.4%	0	0.0%
Custom	Lighting-Other	14,971,838	9.1%	2,461	7.3%	3	0.0%
Custom	Motor	2,053,257	1.3%	214	0.6%	31,774	0.5%
Custom	Other	0	0.0%	0	0.0%	166,121	2.8%
Custom	Process	0	0.0%	0	0.0%	116,453	2.0%
Custom	Pump	3,738,027	2.3%	0	0.0%	0	0.0%
Custom	Refrigeration	10,329,708	6.3%	117	0.3%	4,696	0.1%

Program Initiative	Measure Category	Verified kWh	kWh %	Verified kW	kW %	Verified Therms	Therm %
Custom	Refrigerator	134,565	0.1%	16	0.0%	0	0.0%
Custom	Renewable	0	0.0%	0	0.0%	200	0.0%
Custom	Steam Trap	0	0.0%	0	0.0%	370,210	6.3%
Custom	T8/T5 Fluorescent Lighting	23,749,559	14.5%	4,762	14.1%	-237	0.0%
Custom	Vending Miser	65,364	0.0%	0	0.0%	0	0.0%
TOTAL		163,721,088	100.0%	33,760	100.0%	5,864,593	100.0%

C. INDUSTRIAL

Table 3-8a. Industrial
FY07 (July 1, 2006–June 30, 2007)

Program Initiative	Measure Category	Verified kWh	kWh %	Verified kW	kW %	Verified Therms	Therm %
Channel	HVAC	580,875	1.3%	-4	-0.1%	0	0.0%
Channel	Motor	42,801	0.1%	6	0.1%	0	0.0%
Custom	Aeration System	2,530,879	5.8%	298	4.3%	0	0.0%
Custom	Air Conditioning	297	0.0%	1	0.0%	0	0.0%
Custom	Biomass	0	0.0%	0	0.0%	489,416	6.2%
Custom	Boiler/Other Heating	92,564	0.2%	2	0.0%	158,322	2.0%
Custom	Building Shell	47,710	0.1%	48	0.7%	5,251	0.1%
Custom	CFL	42,573	0.1%	7	0.1%	0	0.0%
Custom	Compressed Air	11,065,586	25.4%	1,463	21.3%	63,174	0.8%
Custom	Controls	1,418,485	3.3%	0	0.0%	140,469	1.8%
Custom	Custom	132,380	0.3%	0	0.0%	0	0.0%
Custom	Heat Recovery	1,519,725	3.5%	174	2.5%	4,646,002	59.1%
Custom	Hot Water	0	0.0%	0	0.0%	86,933	1.1%
Custom	HVAC	1,470,689	3.4%	250	3.6%	126,669	1.6%
Custom	Light Fixture	11,730	0.0%	2	0.0%	0	0.0%
Custom	Lighting-LED	30,866	0.1%	3	0.1%	0	0.0%
Custom	Lighting-Other	6,170,638	14.2%	756	11.0%	0	0.0%
Custom	Motor	2,131,264	4.9%	980	14.2%	0	0.0%
Custom	Process	2,622,699	6.0%	337	4.9%	2,131,862	27.1%
Custom	Pulping	221,348	0.5%	46	0.7%	0	0.0%
Custom	Pump	1,275,532	2.9%	31	0.4%	0	0.0%
Custom	Refrigeration	1,522,044	3.5%	358	5.2%	10,687	0.1%
Custom	Refrigerator	255,817	0.6%	29	0.4%	0	0.0%
Custom	T8/T5 Fluorescent Lighting	10,415,865	23.9%	2,095	30.4%	0	0.0%
TOTAL		43,602,370	100.0%	6,882	100.0%	7,858,786	100.0%

Table 3-8b. Industrial
Program to Date (July 1, 2001–June 30, 2007)

Program Initiative	Measure Category	Verified kWh	kWh %	Verified kW	kW %	Verified Therms	Therm %
Channel	HVAC	591,769	0.2%	-5	0.0%	0	0.0%
Channel	Motor	54,359	0.0%	8	0.0%	0	0.0%
Custom	Aeration System	16,960,952	6.0%	2,245	5.4%	0	0.0%
Custom	Air Conditioning	8,287	0.0%	8	0.0%	0	0.0%
Custom	Biogas	0	0.0%	0	0.0%	382,479	1.3%
Custom	Biomass	0	0.0%	0	0.0%	2,656,956	8.9%
Custom	Boiler/Other Heating	2,013,660	0.7%	205	0.5%	4,123,110	13.8%
Custom	Building Shell	305,020	0.1%	56	0.1%	266,319	0.9%
Custom	CFL	175,655	0.1%	31	0.1%	0	0.0%
Custom	Compressed Air	62,274,479	22.1%	7,940	19.1%	467,216	1.6%
Custom	Controls	3,879,142	1.4%	322	0.8%	632,107	2.1%
Custom	Custom	10,529,424	3.7%	1,209	2.9%	3,843,698	12.9%
Custom	Heat Recovery	3,032,458	1.1%	395	1.0%	6,353,818	21.3%
Custom	Hot Water	1,805,000	0.6%	240	0.6%	471,589	1.6%
Custom	HVAC	16,965,758	6.0%	2,088	5.0%	3,876,088	13.0%
Custom	Kiln	1,233,519	0.4%	204	0.5%	22,854	0.1%
Custom	Light Fixture	50,723	0.0%	8	0.0%	0	0.0%
Custom	Lighting-LED	248,391	0.1%	31	0.1%	-62	0.0%
Custom	Lighting-Other	32,569,411	11.6%	4,539	10.9%	334	0.0%
Custom	Motor	14,334,241	5.1%	2,848	6.9%	64,939	0.2%
Custom	Other	813,534	0.3%	199	0.5%	0	0.0%
Custom	Process	8,523,983	3.0%	1,334	3.2%	4,951,107	16.6%
Custom	Pulping	1,153,616	0.4%	239	0.6%	0	0.0%
Custom	Pump	2,625,053	0.9%	343	0.8%	0	0.0%
Custom	Refrigeration	10,006,010	3.6%	2,203	5.3%	55,898	0.2%
Custom	Refrigerator	255,817	0.1%	29	0.1%	0	0.0%
Custom	Renewable	0	0.0%	0	0.0%	445,739	1.5%
Custom	Steam Trap	0	0.0%	0	0.0%	1,255,901	4.2%
Custom	T8/T5 Fluorescent Lighting	91,253,808	32.4%	14,792	35.6%	0	0.0%
TOTAL		281,664,069	100.0%	41,512	100.0%	29,870,092	100.0%

D. SCHOOLS/GOVERNMENT

Table 3-9a. Schools/Government
FY07 (July 1, 2006–June 30, 2007)

Program Initiative	Measure Category	Verified kWh	kWh %	Verified kW	kW %	Verified Therms	Therm %
Channel	HVAC	154,628	0.7%	-2	0.0%	0	0.0%
Channel	Motor	30,247	0.1%	5	0.1%	0	0.0%
Custom	Ag Specialty	0	0.0%	0	0.0%	3,339	0.1%
Custom	Air Conditioning	1,151	0.0%	2	0.0%	0	0.0%
Custom	Appliance-Other	260,076	1.2%	0	0.0%	1,192	0.0%

Program Initiative	Measure Category	Verified kWh	kWh %	Verified kW	kW %	Verified Therms	Therm %
Custom	Boiler/Other Heating	24,485	0.1%	0	0.0%	1,659,035	51.4%
Custom	Building Shell	5,662	0.0%	0	0.0%	127,825	4.0%
Custom	CFL	714,501	3.4%	183	3.3%	0	0.0%
Custom	Compressed Air	2,226	0.0%	0	0.0%	0	0.0%
Custom	Controls	3,354,710	15.8%	190	3.5%	234,752	7.3%
Custom	Custom	156,899	0.7%	111	2.0%	33,939	1.1%
Custom	Food Service	127,345	0.6%	20	0.4%	0	0.0%
Custom	Freezer	2,337	0.0%	0	0.0%	0	0.0%
Custom	Heat Recovery	-12,506	-0.1%	-6	-0.1%	51,138	1.6%
Custom	Hot Water	254,109	1.2%	39	0.7%	21,083	0.7%
Custom	HVAC	5,268,306	24.9%	3,011	54.9%	207,551	6.4%
Custom	Light Fixture	30,827	0.1%	7	0.1%	0	0.0%
Custom	Lighting-LED	1,389,964	6.6%	211	3.9%	0	0.0%
Custom	Lighting-Other	2,253,149	10.6%	240	4.4%	6,176	0.2%
Custom	Motor	22,683	0.1%	2	0.0%	0	0.0%
Custom	Other	0	0.0%	0	0.0%	436	0.0%
Custom	Pump	36,351	0.2%	0	0.0%	0	0.0%
Custom	Refrigeration	36,173	0.2%	15	0.3%	1,515	0.0%
Custom	Refrigerator	9,914	0.0%	2	0.0%	0	0.0%
Custom	Steam Trap	0	0.0%	0	0.0%	588,420	18.2%
Custom	T8/T5 Fluorescent Lighting	4,865,858	23.0%	1,215	22.1%	-3,081	-0.1%
Custom	Vending Miser	28,273	0.1%	0	0.0%	0	0.0%
Custom	Water Heating	2,154,032	10.2%	240	4.4%	293,953	9.1%
TOTAL		21,171,400	100.0%	5,485	100.0%	3,227,272	100.0%

Table 3-9b. Schools/Government
Program to Date (July 1, 2001–June 30, 2007)

Program Initiative	Measure Category	Verified kWh	kWh %	Verified kW	kW %	Verified Therms	Therm %
Channel	HVAC	154,628	0.2%	-2	0.0%	0	0.0%
Channel	Motor	31,948	0.0%	6	0.0%	0	0.0%
Custom	Ag Specialty	0	0.0%	0	0.0%	3,339	0.0%
Custom	Air Conditioning	3,377	0.0%	4	0.0%	0	0.0%
Custom	Appliance-Other	4,193,134	4.7%	315	1.5%	-15,853	-0.1%
Custom	Boiler/Other Heating	624,711	0.7%	103	0.5%	2,530,214	23.2%
Custom	Building Shell	206,658	0.2%	32	0.2%	709,063	6.5%
Custom	CFL	4,430,684	4.9%	1,148	5.4%	0	0.0%
Custom	Clothes Washer	400	0.0%	0	0.0%	17	0.0%
Custom	Commercial Washer	397	0.0%	0	0.0%	19	0.0%
Custom	Compressed Air	10,448	0.0%	0	0.0%	0	0.0%
Custom	Controls	11,103,368	12.4%	2,557	12.1%	1,883,420	17.3%
Custom	Custom	1,746,035	1.9%	552	2.6%	134,447	1.2%
Custom	Food Service	136,377	0.2%	22	0.1%	0	0.0%
Custom	Freezer	2,752	0.0%	0	0.0%	0	0.0%
Custom	Heat Recovery	-38,494	0.0%	-38	-0.2%	157,592	1.4%

Program Initiative	Measure Category	Verified kWh	kWh %	Verified kW	kW %	Verified Therms	Therm %
Custom	Hot Water	393,302	0.4%	245	1.2%	488,924	4.5%
Custom	HVAC	14,903,254	16.6%	4,972	23.6%	1,141,830	10.5%
Custom	Light Fixture	94,368	0.1%	24	0.1%	0	0.0%
Custom	Lighting-LED	8,145,218	9.1%	1,818	8.6%	0	0.0%
Custom	Lighting-Other	13,800,761	15.4%	2,888	13.7%	6,752	0.1%
Custom	Motor	241,161	0.3%	33	0.2%	0	0.0%
Custom	Other	0	0.0%	0	0.0%	92,847	0.9%
Custom	Process	23,427	0.0%	30	0.1%	-176	0.0%
Custom	Pump	278,369	0.3%	21	0.1%	0	0.0%
Custom	Refrigeration	225,423	0.3%	122	0.6%	-1,124	0.0%
Custom	Refrigerator	12,889	0.0%	2	0.0%	0	0.0%
Custom	Renewable	0	0.0%	0	0.0%	564	0.0%
Custom	Steam Trap	33,271	0.0%	0	0.0%	3,472,787	31.8%
Custom	T8/T5 Fluorescent Lighting	23,626,257	26.3%	5,895	28.0%	10,322	0.1%
Custom	Vending Miser	3,187,372	3.6%	67	0.3%	0	0.0%
Custom	Water Heating	2,154,032	2.4%	240	1.1%	293,953	2.7%
Grant	Other	529	0.0%	0	0.0%	0	0.0%
TOTAL		89,726,054	100.0%	21,057	100.0%	10,908,938	100.0%

3.2.3 End Use Category Attribution Factors

FY06 participant attribution factors at the sector level are reported in Table 3-2 above. These factors represent the fraction of tracked, verified gross savings that can be attributed to Focus. The factors are developed and applied at the sector level for calculation of sector and total BP net savings.

In April 2007, we completed the report titled *Business Programs End-Use Specific Attribution Factors-Fiscal Year 2006*. The primary purpose of this report is to provide end-use specific attribution factor results based on the FY06 statewide Focus on Energy Business Programs' impact evaluation data. The secondary purpose of this report is to provide a full series of sector level adjustment factors and additional analysis of the data that illustrate the effect the Channel Initiatives are having on each sector. The additional breakouts include the four primary sectors, the four primary sectors by Channel versus non-Channel measures, and CFL versus non-CFL measures in the Agriculture and Commercial sectors.

A. KEY RESULTS

The Business Programs have been continuously evolving since inception. Many of these changes have resulted in methodological changes over the years that may have affected the trends in adjustment factors that may not necessarily result from improvements or reductions in program effectiveness.[9] Three such changes in FY06 are with regards to CFLs.

1. Energy savings values for CFLs are deemed in FY06.

[9] For more information on methodological changes that effected the FY06 analysis refer to the statewide Focus on Energy Business Programs impact evaluation methodology, refer to the recently finalized *Business Programs Impact Evaluation Report – Fiscal Year 2006 (March 2, 2007).*

2. The attribution estimation method for CFLs changed in FY06 from one based on self-reported program response to market-based methods.

3. In FY06 all CFL savings tracked in the rebate database are being credited to the Channel Lighting.

These changes had a significant effect on the kWh and kW adjustment factors for the Agriculture and Commercial sectors, as well as the Business Programs overall. The effects of these changes are evident throughout the results presented in this report. Research conducted in the FY06 impact evaluation report indicates the dramatic increase in kWh and kW gross savings adjustment factors for Agriculture, Commercial, and the program overall are primarily a result of methodological changes and secondarily to improvements in program effectiveness.

B. END-USE

The FY06 attribution factors by end-use are provided in Table 3-10. Amongst all segments CFLs had the highest attribution rate. This is due to the change in attribution estimation from self reported to market based[10]. Following CFLs, the highest attribution results were for manufacturing process electric measures at 85 (kWh) and 77 (kW) percent. For both segments, the kWh and kW attribution rate increases are statistically significant at the 95 percent level of confidence.

Following CFLs the highest attribution results are for manufacturing process electric measures, at 85 percent for kWh and 77 percent for kW. The manufacturing process therm rate was much lower at 30 percent.

Table 3-10. Attribution Factors by End-use
Based on Samples from Participants Who Installed a Measure during FY06

	kWh					kW					Therms				
			90% Confidence Interval					90% Confidence Interval					90% Confidence Interval		
Segment	n	Attribution Adjustment Factor	+/-	Lower Bound	Upper Bound	n	Attribution Adjustment Factor	+/-	Lower Bound	Upper Bound	n	Attribution Adjustment Factor	+/-	Lower Bound	Upper Bound
Lighting (excluding CFLs)	110	63%	12.3%	51%	76%	106	65%	12.6%	52%	77%	0	*	*	*	*
HVAC	80	50%	12.4%	38%	62%	50	51%	5.1%	46%	56%	110	61%	12.7%	49%	74%
Building Shell	0	*	*	*	*	0	*	*	*	*	12	57%	11.0%	46%	68%
Manufacturing Process	69	85%	9.6%	75%	94%	47	77%	13.4%	63%	90%	23	30%	17.8%	12%	47%
Other	24	73%	18.1%	55%	92%	16	70%	16.9%	53%	87%	34	47%	25.1%	22%	72%
CFLs	112	96%	4.3%	92%	101%	112	97%	3.9%	93%	101%	0	*	*	*	*

[10] The attribution estimation method for CFLs changed in FY06 from one based on self-reported program response to market-based methods. The market-based methods are employed by the Residential Evaluation Team. At the time of the *Business Programs Impact Evaluation Report – Fiscal Year 2006 (March 2, 2007)* and *Business Programs End-Use Specific Attribution Factors – Fiscal Year 2006 (April 20, 2007)* the most current CFL attribution estimate was 100 percent. This estimate was reported in "FY04/05 Net-to-Gross Savings Adjustments for CFLs Rewarded through the ENERGY STAR Products Program," memorandum to Oscar Bloch, Wisconsin DOA, dated January 11, 2006 (Revised Draft). KEMA used this estimate for CFLs rebated through the program and tracked in WECC's Rebate Database. Subsequent to the publication of the Business Programs' impact report the Residential Evaluation Team released an updated estimate (81%) in its *Comprehensive CFL Market Effects Study – Draft Report (June 19, 2007)*. The more recent estimate will be used in future evaluation reports.

C. ADDITIONAL BREAKOUTS

Within the four primary sectors in FY06, CFLs directly contribute to higher kWh and kW attribution factors for the Agriculture and Commercial sectors. Also, the kWh and kW attribution rate for the Industrial sector are statistically higher in FY06 compared to the previous year.

The FY06 attribution factors by primary sector and Channel versus non-Channel measures show that the kWh and kW attribution factors for the Agriculture and Commercial sectors are statistically different from each other at the 95 percent level of confidence. Once again this is due to the change in attribution methods for CFLs. The high Industrial sector attribution result includes the lower results for the Channel measures associated with Industrial. Therefore, although attribution for the Channel measures is lower there are other significant factors contributing to increases in attribution for the Industrial sector.

The FY06 attribution factors by CFL/non-CFL in Agriculture and Commercial sectors shows that a change in CFL attribution methods from self-reported to market based produces much higher attribution results for CFLs compared with non-CFLs. The differences for both sectors and energy units are statistically different from each other at the 95 percent level of confidence.

D. END-USE AND SECTOR ATTRIBUTION OVER TIME

To assess the stability of the end-use and sector-level comparisons, we examined these adjustment factors over time. Following are general patterns seen in attribution factors based on three cycles of end-use adjustment factors and five years of sector-level estimates:

- Changes both up and down are to be expected each year, even if the programs are consistently working to improve program attribution.
- Manufacturing process attribution factors have varied quite a bit, most likely because of the variability of project types and the potential for very large projects that can swing the averages one way or another. These swings can also affect overall attribution for the Industrial sector and for BP as a whole.
- HVAC attribution factors have been consistently below 60%, for both electric and gas measures.
- Non-CFL lighting attribution was low for FY03–04, but has been in the 60–70 percent range since then. CFL attribution prior to the adoption of the market-based estimation method was in a similar range.
- Building shell and “other” measures are too few in the sample to observe any general patterns.
- At the sector level, the Industrial sector shows the most variability in electric measure attribution over time, most likely related to swings due to large process projects. Apart from these swings, the only statistically significant change in sector electric attribution is for the Commercial sector in FY06, reflecting the methodological change for CFLs. For gas measures, greater variability is seen in all sectors, related to the smaller sample sizes as well as greater variability of the mix of project types.

3.2.4 Deemed Savings

Two rounds of deemed savings work conducted in FY07. The first round was completed in October 2006, and the second in April 2007. The deemed savings work was a collaborative effort between KEMA and the We Energies evaluation team. Together the evaluation teams developed a database of deemed kW and kWh values for prescriptive measures that are included in the statewide programs and We Energies' Nonresidential Prescriptive Rebate and Comprehensive Agriculture programs. Prior to PSC approval of the final database of deemed values the evaluation teams and the implementers reached consensus on discrepancies that arose during the implementers review of the draft database.

3.3 PROGRAM TARGETS AND ACCOMPLISHMENTS

Gross program savings as verified by evaluation are shown in the following table along with the program goals and percentage of goal achieved. Savings shown are as of June 30, 2007.

Table 3-11. Verified Gross Program Savings Versus Program Targets FY07 (July 1, 2006–June 30, 2007)

	kWh			kW			Therms		
Program	**Target**	**Verified Gross**	**% of Target**	**Target**	**Verified Gross**	**% of Target**	**Target**	**Verified Gross**	**% of Target**
Agricultural	15,977,000	20,648,561	129%	3,527	5,121	145%	300,680	725,484	241%
Commercial	50,492,000	51,459,093	102%	9,958	11,978	120%	1,202,719	1,448,415	120%
Industrial	47,729,000	63,246,405	133%	6,810	10,719	157%	7,240,370	7,911,168	109%
Schools & Government	21,302,000	22,629,011	106%	5,705	5,817	102%	2,756,231	3,234,666	117%
Program Area Totals	**135,500,000**	**157,983,071**	**117%**	**26,000**	**33,635**	**129%**	**11,500,000**	**13,319,734**	**116%**
Channel Lighting	49,610,000	51,733,881	104%	10,450	12,250		0	2,420	N/A
Channel EHCI	1,132,000	364,582	32%	379	372		422,850	208,864	49%
Channel Motors	N/A	*	N/A	N/A	*	N/A	N/A	*	N/A
Channel Totals*	**50,742,000**	**52,098,464**	**103%**	**62,829**	**79,892**	**127%**	**23,422,850**	**26,850,752**	**115%**

*Channel savings are included in program area totals above, but are shown here to compare against targets set for channel initiatives.

3.4 PROGRAM MARKET EFFECTS METRICS

For FY06 Business Programs has identified a market effects component in the activities of four Business Program areas. These areas are the motor/drive and lighting channel strategies, the pulp and paper industrial cluster and the agriculture program. The evaluation team provided an assessment of the market effects contract metrics in the report *Lighting and Motor/Drive Channel Market Effects Contract Metrics Assessment (October 2006).* This effort was summarized in the previous semiannual report. Studies are being fielded this fall to analyze performance against contract metrics for the lighting, rotary, and HVAC channels. The results of these studies will be reported in January 2008.

For further information, including recommended program improvements, the reader is referred to the following recent evaluation reports.

Table 3-12. Further Business Programs Reading

Fiscal Year	Date	Title
FY07	4/20/2007	Business Programs: End-use Specific Attribution Factors - FY06
	4/13/2007	Final Deemed Savings for FY08 (Spring 2007)
	3/2/2007	Business Programs: Impact Evaluation Report - FY06
	11/10/2006	Business Programs: Lighting and Motor/Drive Channel Market Effects Contract Metrics Assessment
	10/27/2006	Deemed Savings Resolution (Fall 2006)
FY06	6/21/2006	Business Programs: A Behind-the-Scenes Look at Attribution
	6/12/2006	Business Programs: Targeted Market Study: HVLS Fans on Wisconsin Dairy Farms
	4/5/2006	Business Programs: Recent Customer Experience
	4/4/2006	Business Programs: Delivery Review
	3/16/2006	Net-to-Gross Method Selection Framework for Evaluating Focus on Energy Programs
	2/3/2006	Business Programs: Measure Review
	12/30/2005	Focus on Energy Public Benefits Evaluation BP Motors Metric Preliminary Assessment
	12/22/2005	Business Programs: Participant Spillover Savings Study
	10/28/2005	Business Programs: End-use Specific Adjustment Factors
	9/9/2005	Business Programs: Impact Evaluation Report – FY05, Round 1

4. RESIDENTIAL PROGRAMS EVALUATION

This chapter describes our evaluation of Residential Programs, overall and by individual program area:

- ENERGY STAR® Products
- New Construction (This includes the Wisconsin ENERGY STAR Homes program and measures installed through the Efficient Heating and Cooling Initiative in new homes.)
- Existing Homes (This includes the Home Performance with ENERGY STAR program and measures installed through the Efficient Heating and Cooling Initiative in existing homes.)
- Apartment and Condominium Efficiency Services
- Targeted Home Performance with ENERGY STAR.

4.1 OVERALL

4.1.1 Evaluated Energy Impacts

The following tables present the gross, verified gross, and net energy savings summary by Residential program area for:

a. FY07: July 1, 2006, through June 30, 2007
b. Program to date: July 1, 2001, through June 30, 2007
c. FY06: July 1, 2005, through June 30, 2006
d. FY05: July 1, 2004, through June 30, 2005
e. FY04: July 1, 2003, through June 30, 2004
f. FY03: July 1, 2002, through June 30, 2003
g. FY02: June 1, 2001, through June 30, 2002, (although FY02 of the program covered a 15-month period, significant energy savings were not recognized in the first two months of that period).

The discussion of each individual program includes tables on the energy savings totals and any new research to modify verified gross energy savings or net energy savings numbers.

Table 4-1a. All Residential Programs: Tracked Energy Impacts
FY07 (July 1, 2006–June 30, 2007)

Program	Gross kWh	Gross kW	Gross Therms	Verified kWh	Verified kW	Verified Therms	Net kWh	Net kW	Net Therms
ACES	1,467,617	413	400,607	1,465,272	413	400,607	1,465,272	413	400,607
EHCI	9,270,252	2,984	274,846	8,901,996	2,189	275,048	7,207,846	1,970	231,328
ENERGY STAR	82,661,151	4,676	284,306	70,147,508	3,553	272,840	59,642,301	2,977	226,240
HPES	392,348	214	345,909	391,417	223	315,030	263,159	127	229,309
THPES	435,080	0	107,675	435,080	350	107,675	435,080	350	107,675
WESH	24,892	1	153,767	24,456	0	153,727	24,045	0	153,715
TOTAL	94,251,340	8,288	1,567,110	81,365,729	6,729	1,524,927	69,037,703	5,838	1,348,875

Table 4-1b. All Residential Programs: Tracked Energy Impacts
Program to Date (July 1, 2001–June 30, 2007)

Program	Gross kWh	Gross kW	Gross Therms	Verified kWh	Verified kW	Verified Therms	Net kWh	Net kW	Net Therms
ACES	47,996,589	5,197	3,676,281	51,965,060	5,194	3,973,739	51,965,060	5,194	3,973,739
EHCI	20,701,023	11,373	533,042	19,883,243	9,310	549,164	16,675,518	8,897	466,384
ENERGY STAR	432,749,660	24,803	1,579,017	331,899,159	22,654	1,169,933	315,267,120	20,060	1,066,259
HPES	38,308,430	24,070	2,742,861	37,093,189	23,942	2,333,234	36,028,087	23,091	1,973,515
THPES	2,308,202	326	681,038	1,654,959	800	442,401	1,654,959	800	442,401
WESH	2,713,800	402	837,746	1,938,182	421	830,964	1,909,935	414	830,454
TOTAL	544,777,704	66,170	10,049,986	444,433,792	62,323	9,299,435	423,500,678	58,456	8,752,753

Table 4-1c. All Residential Programs: Tracked Energy Impacts
FY06 (July 1, 2005–June 30, 2006)

Program	Gross kWh	Gross kW	Gross Therms	Verified kWh	Verified kW	Verified Therms	Net kWh	Net kW	Net Therms
ACES	5,848,481	469	537,436	5,848,481	469	537,436	5,848,481	469	537,436
EHCI	11,430,771	8,388	258,196	10,981,247	7,122	274,116	9,467,672	6,926	235,056
ENERGY STAR	71,470,049	4,175	338,824	55,960,193	3,249	147,914	55,557,482	3,278	120,638
HPES	995,068	373	484,986	424,633	239	312,460	290,734	138	223,601
THPES	371,904	0	92,366	371,904	300	92,040	371,904	300	92,040
WESH	77,532	14	147,666	73,655	12	147,386	66,852	5	147,274
TOTAL	90,193,805	13,418	1,859,474	73,660,113	11,390	1,511,352	71,603,125	11,115	1,356,045

Table 4-1d. All Residential Programs: Tracked Energy Impacts
FY05 (July 1, 2004–June 30, 2005)

Program	Gross kWh	Gross kW	Gross Therms	Verified kWh	Verified kW	Verified Therms	Net kWh	Net kW	Net Therms
ACES	16,662,736	846	790,191	16,662,736	846	790,191	16,662,736	846	790,191
ENERGY STAR	85,125,237	2,230	364,546	55,726,642	3,244	157,742	66,639,278	3,994	127,944
HPES	10,084,849	7,432	603,527	9,259,509	7,363	451,179	8,996,000	6,797	420,884
THPES	593,163	115	167,477	288,277	44	69,503	288,277	44	69,503
WESH	506,663	138	200,558	484,021	138	196,698	471,025	138	196,312
TOTAL	112,972,649	10,761	2,126,300	82,421,186	11,635	1,665,313	93,057,316	11,819	1,604,834

Table 4-1e. All Residential Programs: Tracked Energy Impacts
FY04 (July 1, 2003–June 30, 2004)

Program	Gross kWh	Gross kW	Gross Therms	Verified kWh	Verified kW	Verified Therms	Net kWh	Net kW	Net Therms
ACES	10,811,378	558	510,518	10,650,266	553	512,838	10,650,266	553	512,838
ENERGY STAR	99,153,158	6,257	355,024	64,839,210	4,637	355,120	63,001,520	4,329	355,120
HPES	14,343,646	8,440	568,436	14,344,396	8,445	516,836	14,222,627	8,396	470,929
THPES	708,507	148	220,606	418,019	62	107,214	418,019	62	107,214
WESH	878,340	226	170,969	885,694	230	170,191	885,694	230	170,191
TOTAL	125,895,029	15,628	1,825,553	91,137,585	13,927	1,662,200	89,178,126	13,569	1,616,293

Table 4-1f. All Residential Programs: Tracked Energy Impacts
FY03 (July 1, 2002–June 30, 2003)

Program	Gross kWh	Gross kW	Gross Therms	Verified kWh	Verified kW	Verified Therms	Net kWh	Net kW	Net Therms
ACES	10,570,777	2,355	1,031,053	14,842,729	2,392	1,326,191	14,842,729	2,392	1,326,191
ENERGY STAR	76,044,689	5,681	180,798	64,985,956	5,428	180,798	55,509,728	3,834	180,798
HPES	9,433,147	5,967	335,438	9,597,352	6,013	330,719	9,535,398	5,988	307,370
THPES	183,949	58	85,943	130,604	41	61,020	130,604	41	61,020
WESH	1,226,373	23	101,537	266,080	41	90,761	258,043	41	90,761
TOTAL	97,458,936	14,084	1,734,769	89,822,721	13,917	1,989,489	80,276,502	12,297	1,966,140

Table 4-1g. All Residential Programs: Tracked Energy Impacts
FY02 (July 1, 2001–June 30, 2002)

Program	Gross kWh	Gross kW	Gross Therms	Verified kWh	Verified kW	Verified Therms	Net kWh	Net kW	Net Therms
ACES	2,635,599	556	406,476	2,495,575	521	406,476	2,495,575	521	406,476
ENERGY STAR	18,295,376	1,786	55,519	20,239,649	2,542	55,519	14,916,810	1,649	55,519
HPES	3,059,372	1,644	404,564	3,075,882	1,659	407,009	2,720,169	1,645	321,421
THPES	15,598	5	6,971	11,075	3	4,949	11,075	3	4,949
WESH	0	0	63,249	204,276	0	72,201	204,276	0	72,201
TOTAL	24,005,945	3,991	936,780	26,026,457	4,725	946,154	20,347,905	3,818	860,567

4.1.2 Market Effects

The residential evaluation team has placed primary emphasis on strengthening verified gross and verified net impact reporting. However, beginning with FY04, additional attention has been given to understanding potential market effects.

During FY07, the evaluation team conducted a comprehensive market effects study that established a comprehensive system for collecting retail-based CFL sales information that directly addresses the limitations of the former POS approach.[v] This system allows for a uniform approach to program attribution for all sectors touched by the retail-based CFL initiative (i.e., residential, commercial, agricultural, and multifamily) and provides a representative picture of Wisconsin retail-based CFL sales through the inclusion of both participating and nonparticipating retailers. This comprehensive market effects study meets three primary objectives:

- Determine whether or not (and the extent to which) market effects are occurring in the Wisconsin CFL market.
- Help evaluators and program staff understand the mechanisms that are either contributing to or taking away from the program's ability to achieve market effects.
- Enhance the evaluation team's ability to provide reliable estimates of the net effects of the overall retail-based CFL initiative in all sectors: residential, commercial, agricultural, and multifamily.

Moreover, market effects metrics have been established for each residential program. These metrics, which were reflected in WECC's FY06 contract with DOA, were measured during the first half of FY07 in order to provide early insight into the extent to which residential programs are changing the marketplace for the delivery of energy efficient products, practices, and services. Some metrics attempt to measure behavioral changes among early program participants. Other metrics measure broad market movements, such as the penetration rate (or market share) of ENERGY STAR clothes washers. Both the early participant and broad market metrics provide some insight into the extent to which residential programs are showing promise toward permanently altering the marketplace for energy efficient products, practices, and services.

The FY06 metric measurement process (discussed next in the *Program Metrics and Goals*) provided some findings related to market effects.

4.1.3 Program Metrics and Goals

During the first half of FY07, evaluation efforts focused on addressing Residential Program metrics that the residential evaluation team agreed to review as part of our FY07 Detailed Evaluation Plan submitted to DOA.[vi] The Metrics goals were a key aspect of Wisconsin Energy Conservation Corporation's (WECC) FY06 contract for delivery of the Residential Programs.[vii]

Gross program savings unadjusted by evaluation results are shown in the following table along with the program goals and percentage of goal achieved.

Table 4-2. Verified Gross Program Savings Versus Program Portfolio Targets FY07 (July 1, 2006–June 30, 2007)

	kWh			kW			Therms	
Goal	Verified Gross	% of Target	Target	Verified Gross	% of Target	Target	Verified Gross	% of Target
74,607,700	81,365,729	109%	8,343	6,729	81%	1,340,715	1,524,927	114%

4.2 ENERGY STAR PRODUCTS

FY07 evaluation efforts focused on the following:

- Making net-to-gross adjustments for clothes washers[viii]
- Conducting a comprehensive market effects study for retailed-based CFLs[ix]
- Measuring program metrics[x]

Key findings from these efforts are presented below for the each of the following four areas:

- Process Findings and Issues
- Evaluated Energy Impacts
- Market Effects
- Program Metrics and Goals.

4.2.1 Process Findings and Issues

We did not formally include process related evaluation tasks as part of our FY07 Detailed Evaluation Plan submitted to DOA. The evaluation team, however, stayed abreast of process related issues through monitoring of program changes and issues based on regular communications with the ESP program manager.

4.2.2 Evaluated Energy Impacts

The evaluation team made net-to-gross adjustments for clothes washers rewarded through ESP during FY06. For any such analysis, the principle research issue is relatively simple, although the information needed to answer the question with complete certainty can be challenging to obtain. The research involves determining, based on the information available, whether or not the program (in this case ESP) induced customers to take actions (i.e., purchase ENERGY STAR® qualified clothes washers) that they would not have taken in absence of the program. The major finding outlined in this report is that the number of clothes washers rewarded through Focus (13,693) overestimates what is reasonable for the number of clothes washers induced by Focus efforts. Therefore, we recommend a net-to-gross adjustment of 78 percent for FY06. The FY06 adjustment is comparable to the 75 percent adjustment for FY05. This is because market share in Wisconsin grew at a rate comparable to that in the baseline area during FY06.[xi]

The tables below show energy impacts for ESP program activity.

Table 4-3. ENERGY STAR Products Program: Tracked Energy Impacts
FY07 (July 1, 2006–June 30, 2007)

Program Initiative	Measure Category	Verified kWh	kWh %	Verified kW	kW %	Verified Therms	Therm %
Customer Rewards	Ceiling Fan	31,850	0.0%	0	0.0%	0	0.0%
Customer Rewards	CFL	60,490,430	86.2%	3,417	96.2%	0	0.0%
Customer Rewards	Clothes Washer	2,981,834	4.3%	0	0.0%	99,722	36.5%
Customer Rewards	Dehumidifier	1,500	0.0%	2	0.0%	0	0.0%
Customer Rewards	Dishwasher	4,950	0.0%	0	0.0%	275	0.1%
Customer Rewards	Freezer	462	0.0%	0	0.0%	0	0.0%
Customer Rewards	Lighting Fixture	440,980	0.6%	0	0.0%	0	0.0%
Customer Rewards	Lighting-LED	498,630	0.7%	0	0.0%	0	0.0%
Customer Rewards	Lighting-Other	102,335	0.1%	0	0.0%	0	0.0%
Customer Rewards	Refrigerator	13,332	0.0%	2	0.1%	0	0.0%
Customer Rewards	Room A/C	33	0.0%	0	0.0%	0	0.0%
Customer Rewards	Torchiere	240,810	0.3%	7	0.2%	0	0.0%
Sales Rewards	Clothes Washer	3,448,742	4.9%	0	0.0%	114,008	41.8%

Program Initiative	Measure Category	Verified kWh	kWh %	Verified kW	kW %	Verified Therms	Therm %
Sales Rewards	Dishwasher	1,059,030	1.5%	0	0.0%	58,835	21.6%
Sales Rewards	Refrigerator	832,590	1.2%	126	3.6%	0	0.0%
TOTAL		70,147,508	100.0%	3,553	100.0%	272,840	100.0%

Table 4-4. ENERGY STAR Products Program: Tracked Energy Impacts By Measure Program to Date (July 1, 2001–June 30, 2007)

Program Initiative	Measure Category	Verified kWh	kWh %	Verified kW	kW %	Verified Therms	Therm %
Appliance Turn In	Freezer	6,690,060	2.0%	1,144	5.0%	0	0.0%
Appliance Turn In	Refrigerator	20,942,508	6.3%	3,506	15.5%	0	0.0%
Customer Rewards	Ceiling Fan	121,100	0.0%	0	0.0%	0	0.0%
Customer Rewards	CFL	265,910,901	80.1%	14,630	64.6%	0	0.0%
Customer Rewards	Clothes Washer	13,919,742	4.2%	0	0.0%	783,032	66.9%
Customer Rewards	Dehumidifier	735,550	0.2%	736	3.2%	0	0.0%
Customer Rewards	Dishwasher	445,320	0.1%	0	0.0%	24,740	2.1%
Customer Rewards	Freezer	504	0.0%	0	0.0%	0	0.0%
Customer Rewards	Lighting Fixture	3,412,468	1.0%	114	0.5%	0	0.0%
Customer Rewards	Lighting-LED	1,136,478	0.3%	0	0.0%	0	0.0%
Customer Rewards	Lighting-Other	102,335	0.0%	0	0.0%	0	0.0%
Customer Rewards	Refrigerator	1,891,182	0.6%	311	1.4%	0	0.0%
Customer Rewards	Room A/C	248,259	0.1%	1,278	5.6%	0	0.0%
Customer Rewards	Room A/C Turn-In	212,440	0.1%	489	2.2%	0	0.0%
Customer Rewards	Torchiere	5,422,413	1.6%	155	0.7%	0	0.0%
Customer Rewards	Torchiere Turn-In	34,551	0.0%	1	0.0%	0	0.0%
Sales Rewards	Clothes Washer	6,212,024	1.9%	0	0.0%	221,006	18.9%
Sales Rewards	Dishwasher	2,540,790	0.8%	0	0.0%	141,155	12.1%
Sales Rewards	Refrigerator	1,920,534	0.6%	291	1.3%	0	0.0%
TOTAL		331,899,159	100.0%	22,654	100.0%	1,169,933	100.0%

4.2.3 Market Effects

The evaluation team conducted a comprehensive market effects study. The study represented a multifaceted effort by the residential program evaluation team to establish a comprehensive system for collecting retail-based compact fluorescent lighting (CFL) sales information in Wisconsin. The system was designed to provide a representative picture of Wisconsin retail-based CFL sales through the inclusion of all retail market channels through which CFLs are sold: (1) hardware; (2) home centers; (3) drug; (4) grocery; and (5) mass merchandisers. The system has four primary objectives:

- To estimate annual retail-based CFL sales in Wisconsin
- To determine whether or not (and the extent to which) market effects are occurring in the Wisconsin CFL market
- To help evaluators and program staff understand the mechanisms that are either contributing to or taking away from the program's ability to achieve market effects

- To enhance the evaluation team's ability to provide reliable estimates of the net effects of the overall retail-based CFL initiative in all sectors: residential, commercial, agricultural, and multifamily.

In cooperation with residential program staff at WECC, we were able to collect statewide CFL sales data from participating retailers who collectively accounted for 97 percent of all rewards paid during calendar year 2006. We also completed on-site visits to 80 of the 472 participating retail stores for the purpose of recording the number of CFLs on the shelf, the variety of CFLs available, and CFL prices. A parallel effort was undertaken to estimate nonparticipant CFL sales through store-level telephone surveys, on-site visits, and sales data collection. In total, we completed 361 telephone surveys and 150 site visits with a sample of nonparticipating stores within each of the five market channels. During these on-site visits, we collected 2006 CFL sales data (at a store level) from individual store managers and then leveraged this information to estimate sales for all nonparticipating stores.

The system, now established, can be implemented annually. This is important for at least five reasons. First, and perhaps most importantly, the national market for CFLs appears to be expanding rapidly. As a result, it is important for program staff to ensure that paid rewards are creating lift (i.e., additional sales) both across and within individual participating retailers.[xii] Second, the impact of the CFL initiative reaches beyond the residential sector into commercial, agricultural, and multifamily buildings. Third, CFLs have historically made up a significant portion of overall program savings, particularly in the residential sector. Fourth, the emphasis upon CFLs is likely to continue as Focus on Energy moves toward full funding. And, finally, any hope of documenting the long-term market effects of this CFL promotion hinges on the success of such a system.

RESULTS

In 2006, over 4.6 million CFLs were sold through Wisconsin retailers. Nearly all of these sales were made through participating retailers (about 3.0 million) or Wal-Mart (about 1.4 million). With the exception of Wal-Mart, the lack of sales among nonparticipating retailers (about 200,000 CFLs in 2006) is clear evidence that the Wisconsin program is having little (if any) influence on them. Among participating retailers, the information collected through this research process suggests that participating hardware stores' CFL sales are likely to drop substantially (perhaps by 80–90%) if the program ended. In other words, their program-induced CFL sales do not (at this time) appear to be sustainable. Participating home improvement stores, on the other hand, sell significant numbers of CFLs without reward (both in Wisconsin and other states); but, despite relatively high sales levels, the Wisconsin program has also had success inducing these retailers to sell substantially more CFLs than they would have if the Wisconsin promotion was not available.

Overall, the Wisconsin retail-based CFL initiative has been very successful in promoting the purchase and use of CFLs in the residential, commercial, agricultural, and multifamily sectors. During calendar year 2006, over 1.15 million CFLs were rewarded through the program and the program achieved a net-to-gross ratio of 0.81. This means that 81% of the 1.15 million CFLs rewarded through the program during 2006 would not have been sold in the absence of the program. Clearly, the program has been very successful, but the market conditions that fostered the environment contributing to this success—as evidenced by a drop in the net-to-gross ratio from 1.24 to 0.81 between 2005 and 2006—is changing.

Given this information, there appears to be two important questions concerning the CFL initiative moving forward: (1) What drove the decline in the net-to-gross ratio between 2005 and 2006? and (2) What can be done to reverse this trend? This report clearly demonstrates a very big advance in the regional (and likely national) market for CFLs between 2005 and 2006. In particular, home improvement channel CFL sales outside of Wisconsin (in states without CFL initiatives) expanded dramatically. This growth in areas not formally touched by a program is undoubtedly a result of long standing efforts to promote CFLs by states such as Wisconsin and California, regional collaborates in the Northwest and Northeast, as well as the national ENERGY STAR program. Now, with the table set by these leaders in the energy efficiency industry, we are beginning to see interest and aggressive promotion by national/regional retailers such Lowes and Home Depot as well as mass merchandising giants such as Wal-Mart and their affiliated Sam's Clubs. All of this points to what this analysis found, a dramatic increase in CFL baseline sales (i.e., what we would have expected Wisconsin's 2006 CFL sales to look like if the program had not been offered). And, it is in many ways, a good news, bad news story. The good news is that the collective efforts by those in the energy efficiency industry (particularly in the Midwest, California, Northeast, and Northwest) have worked—major retailers in the U.S. are beginning to get on board. The bad news (if it should even be worded that way) is that CFL promotional programs (in order to continue to achieve net results) need to remain innovative and stay ahead of regional and national trends.

RECOMMENDATIONS

The following recommendations flow from the information presented in the study. These recommendations should enhance the Wisconsin retail-based CFL initiative's ability to achieve positive results over the next several years.

- To improve overall cost effectiveness, the program should require that participating retailers include multi-packs as part of program product offerings.[xiii] For example, the CFL most seen on the shelves of Wisconsin retailers (i.e., a 60 watt soft white spiral) has an average price, across all retailers, of $5.27 when sold as a single-pack. This same CFL, when sold in a six-pack within the home improvement channel and Wal-Mart, has an average retail price of $1.66. WECC's floor price for a CFL (i.e., the lowest the retail price can be after reward) has been $0.97. This would mean that, within home improvement stores, the incentive could be reduced (from $2 per CFL) to $0.69 per CFL if the bulbs were sold via six-packs—a cost savings of $1.31 per CFL. Since the majority of consumers purchase six of more CFLs at a time, the program could greatly reduce the overall amount spent on rewards (and achieve the same level of savings) or spend the same overall amount on rewards (but induce retailers to sell many more CFLs).[xiv] Assuming that the reduced reward does not dampen retailers' commitment to the program, overall cost effectiveness should improve.

- Extending the point made in the previous bullet, it is important for the Wisconsin retail-based CFL initiative to inform consumers to the tremendous benefit of purchasing CFLs in packs of six or more. The $1.66 price of CFLs sold in six-packs (at home improvement stores) and the $1.40 price of CFLs sold in 8-packs (at Wal-Mart) are just 69 cents and 43 cents, respectively, above WECC's floor price of $0.97.

- The program, moving forward, will have to be careful when dealing with members of the home improvement channel as well as Wal-Mart. The home improvement channel and Wal-Mart are aggressively promoting CFLs across the region/nation. In fact, we estimated that Wal-Mart sold about 1.4 million CFLs in Wisconsin during calendar

year 2006. Therefore, the program needs to make wise/informed decisions and only provide funding to retailers when there is a high probability of the retailer increasing their sales.

For example, let us assume that WECC strikes a deal with Wal-Mart to reward 300,000 CFLs. It is important to understand that providing rewards for these 300,000 CFLs may not induce Wal-Mart to sell a single CFL more than they sold in 2006 (they were already selling 1.4 million). Extending this example, one can see how important it would be to believe that Wal-Mart would sell close to 1.7 million CFLs annually if they were included in the promotion (i.e., the 1.4 million they were already selling plus the 300,000 rewarded).

- The program should continue to monitor the literature, and the information made available through the continuation of this retail-based CFL tracking system, regarding CFL pricing. In particular, it is important to try to determine what the long-term price for each type of CFL will be (i.e., the lowest one can reasonably expect the price to get in the next 2 to 5 years). It would appear that the long-term price of a 60 watt soft white spiral (the most available CFL in Wisconsin) may be around $1.66. The program's current floor price is $0.97. Raising the floor price over time can accomplish at least two important objectives. First, it will reduce the amount of incentive thereby increasing the program's cost effectiveness. Second, the floor price will be closer to what Wisconsin consumers can expect to pay for a 60 watt soft white spiral (in absence of a reward) over the long-term.

- The program should consider expanding the diversity of CFLs that receive rewards during the "instant" promotion period. Wisconsin retailers have a wide selection and diversity of CFLs available covering a range of wattages, light types, lamp types, and other features (e.g., dimmable, 3-way, outdoor). While other types are included in the promotion, the "instant" promotion tends to be concentrated on soft white spirals. The program may, over time, be able to increase overall product offerings and the associated pricing by asking retailers to include a greater number of other CFLs (e.g., Globes, Candelabras, A-Lines) in instant promotional offerings. This should increase the range of CFLs that the average customer has experience with.

- The program, as explained in the remainder of this bullet point, should use a net-to-gross ratio of 1.01 for Fiscal Year (FY) 06 and 0.81 for FY07. Historically, program planning and goal accomplishment has been on a FY basis. Retailers provided calendar year sales data and the analysis was completed on that basis. Therefore, to derive the net-to-gross ratio for FY06 (which runs from July 1, 2005, through July 31, 2006) we took a weighted average[xv] of the calendar year 2005 result (1.24) and the calendar year 2006 result (0.81). Following this method, we will need the calendar year 2006 result (0.81) and calendar year 2007 result to determine a net-to-gross ratio for FY07. Since we will not have the calendar year 2007 information until early in 2008, we suggest using the calendar year 2006 result (0.81) in the interim.

- Given the quickly changing CFL market, it is important to implement this CFL tracking system on an annual basis. Clearly, it will be important to stay abreast of changes in the CFL market (among both program participants and nonparticipants, in both Wisconsin and outside the state) in order to be able to continue to modify the program for maximum cost effectiveness and results.

4.2.4 Program Metrics and Goals

The ESP program had three contract metric goals for FY06, which we address below. For each metric, we include a brief description and an overview of our measurement approach and results.

FY06 METRIC #1

Increase statewide (ENERGY STAR) clothes washer market share by 4 percentage points from the market share reported in the 2nd calendar quarter of 2005 using data from WECC retailer sales data and D&R International.[xvi]

Measurement Approach

The evaluation team addressed this metric by analyzing information drawn from D&R International and WECC retailers.[xvii] Unfortunately, D&R International data for the 1st and 2nd quarters of 2006 are not available yet.[xviii] Therefore, we had to choose different pre- and post-periods on which to base the analysis. We decided to compare the 4th quarter of 2005 (post) to the 4th quarter of 2004 (pre).

Results

Our analysis indicates that ESP has not met the goal for this metric. The evaluation team's review of ENERGY STAR clothes washer market share, as reported by D&R International and WECC Retailers, indicates that 48.6 percent of the clothes washers sold in Wisconsin during the 4th quarter of 2005 were ENERGY STAR qualified, compared to 44.9 percent during the 4th quarter of 2004 (Table 4-5). This represents a 3.7 percentage point increase, which is less than the metric goal of 4 percentage points.[xix]

Table 4-5. ENERGY STAR Clothes Washer Market Share

Source	2004 Q4 Market Share	2005 Q4 Market Share	Percentage Point Increase
D&R International	42.6%	47.2%	4.6%
WECC Retailers	47.3%	50.1%	2.8%
Overall*	**44.9%**	**48.6%**	**3.7%**

* In the absence of information on the relative sales volumes of retailers in the D&R International and WECC samples, we weight each source by 50 percent to derive an overall market share estimate.

Although the D&R International data for the 1st and 2nd quarters of 2006 are not available yet, WECC retailer data for the 1st and 2nd quarters of 2006 is. In 2006, market share among WECC retailers was 51.7 percent and 54.9 percent, respectively, for the 1st and 2nd quarter. In 2005, WECC retailer market share was 48.4 percent and 55.9 percent, respectively, for the 1st and 2nd quarter. Therefore, the percentage point change between 2005 and 2006 was +3.3 percent and -1.0 percent, respectively, for the 1st and 2nd quarter, which again is less than the metric goal of 4 percentage points.

FY06 METRIC #2

2 percentage point increase in consumers' understanding of the ENERGY STAR label from the 2004 survey of 400 residents.

Measurement Approach

The evaluation team compared the 2004 survey results to data gathered through a random-digit-dial survey of 402 Wisconsin households conducted during August 2006. Survey design and implementation, as it pertains to ENERGY STAR awareness and understanding, mirrored the 2004 study. This measurement recognizes the fact that WECC's activities are a subset of the many external influences on ENERGY STAR awareness and understanding.

Results

Our analysis indicates that ESP has met the goal for this metric. The evaluation team's analysis of the 2006 survey results, with respect to ENERGY STAR understanding, indicates that 46 percent of all survey respondents could correctly identify the intended message of the label, thereby showing ENERGY STAR understanding. This represents a 14 percentage point increase over the 2004 results (32 percent).

FY06 METRIC #3

Increase the number of CFLs sold through new retailer types (drug, grocery, and new mass merchant) by 5% from total sales during FY05.

Measurement Approach

The evaluation team measured this metric by analyzing the program database to compare the distribution of CFLs by retailer type in FY06 to the distribution in FY05.

Results

Our analysis indicates that ESP has met the goal for this metric. In FY06, 37,424 CFLs were sold through drug, grocery, and mass merchant retailer types, compared to 13,962 CFLs in FY05 (Table 4-6). This represents a 168 percent increase, which is greater than the metric goal of 5 percent.

Table 4-6. CFLs Sales by Drug, Grocery, and Mass Merchant Retailer Types

Retailer Type	FY05	FY06
Drug	0	13
Grocery	31	22,255
Mass Merchant	13,931	15,156
Total	**13,962**	**37,424**

4.3 NEW CONSTRUCTION

New Construction includes the Wisconsin ENERGY STAR Homes (WESH) program and measures installed through the Efficient Heating and Cooling Initiative (EHCI) in new homes.

FY07 evaluation efforts focused on measuring WESH program metrics.[xx] Key findings from this effort are presented below for the each of the following four areas:

- Process findings and issues
- Evaluated energy impacts

- Market effects
- Program metrics and goals.

4.3.1 Process Findings and Issues

We did not formally include process related evaluation tasks as part of our FY07 detailed evaluation plan submitted to DOA. The evaluation team, however, stayed abreast of process related issues through monitoring of program changes and issues based on regular communications with the WESH program manager.

4.3.2 Evaluated Energy Impacts

Because evaluation activities conducted during FY04 and FY05 have satisfactorily addressed the pertinent energy impact issues for WESH, we did not plan any energy impact activities for FY07.

The tables below show energy impacts for new construction program activity. This includes WESH activity and measures installed through the Heating and Cooling Initiative in new homes.

Table 4-7. New Construction: Energy Impacts
FY07 (July 1, 2006–June 30, 2007)

Program Initiative	Measure Category	Verified kWh	kWh %	Verified kW	kW %	Verified Therms	Therm %
Renewables	Solar Water Heating	19,840	81.1%	0	0.0%	4,769	3.1%
Reward Items	Air Conditioning	0	0.0%	0	0.0%	0	0.0%
Reward Items	Appliance-Other	1,926	7.9%	0	3.9%	18	0.0%
Reward Items	ECM Furnace	1,546	6.3%	0	78.7%	40	0.0%
Reward Items	Lighting-Other	1,144	4.7%	0	17.3%	0	0.0%
Whole House	Building Shell	0	0.0%	0	0.0%	148,900	96.9%
TOTAL		24,456	100.0%	0	100.0%	153,727	100.0%

Starting in FY04, technology rewards for the Efficient Heating and Cooling Initiative (EHCI) were expanded to include all new homes, regardless of WESH-certification. The table below presents impacts broken out by measure within both WESH and EHCI.

Table 4-8. New Construction: Tracked Energy Impacts By Measure
Program to Date (July 1, 2001–June 30, 2007)

Program Initiative	Measure Category	Verified kWh	kWh %	Verified kW	kW %	Verified Therms	Therm %
Renewables	Solar Water Heating	28,160	1.5%	0	0.0%	7,987	1.0%
Reward Items	Air Conditioning	139,025	7.2%	334	79.2%	0	0.0%
Reward Items	Appliance-Other	793,898	41.0%	11	2.6%	10,276	1.2%
Reward Items	Boiler/Other Heating	1,500	0.1%	4	0.9%	0	0.0%
Reward Items	CFL	111,540	5.8%	3	0.8%	0	0.0%
Reward Items	ECM Furnace	614,023	31.7%	68	16.1%	12,900	1.6%
Reward Items	Lighting-Other	45,760	2.4%	2	0.4%	0	0.0%
Whole House	Building Shell	204,276	10.5%	0	0.0%	799,801	96.2%
TOTAL		1,938,182	100.0%	421	100.0%	830,964	100.0%

4.3.3 Market Effects

The FY06 metric measurement process provided some findings related to WESH market effects. These findings are summarized next in the *Program Metrics and Goals* section. In addition to measuring FY06 metrics, we present an analysis of WESH's market share of new homes built annually in Wisconsin (Table 4-9). We include this analysis in response to interest in including this as a possible future metric. The housing start estimates are based on reports from the Wisconsin Builders Association website and represent one- and two-family housing starts in Wisconsin.[xxi] The figure for each year is based on year-end data reported in the December report. For example, the 22,106 estimate for 2005 is based on the year-end estimate in the December 2005 report. Because the housing start estimate is counted on the front end of the construction process while the WESH estimate is counted on the back end when construction is complete, we compare WESH homes in each fiscal year, which covers the period from July through June, to the previous calendar year's housing starts. For example, WESH homes built during FY06 are compared to housing starts in 2005.

Table 4-9. WESH Market Share Trends

Housing Starts			WESH Homes			
Year	Number	% Change from Previous Period	FY	Number*	% Change from Previous Period	Market Share**
2001	19,707	—	FY02	587	—	3.0%
2002	20,774	5.4%	FY03	884	50.6%	4.3%
2003	22,564	8.6%	FY04	1,544	74.7%	6.8%
2004	26,230	16.2%	FY05	1,901	23.1%	7.2%
2005	22,016	-16.1%	FY06	1,458	-23.3%	6.6%

* Based on totals reported in the Year-End Report.
** WESH homes as a percent of housing starts.

Both the number of housing starts and the number of WESH homes increased each year between FY02 and FY05, and the percentage increase in WESH homes was larger than the percentage increase in housing starts for each year. From FY05 to FY06, both the number of housing starts and the number of WESH homes decreased, and the percentage decrease in WESH homes was larger than the percentage decrease in housing starts. Finally, the data show that WESH market share in terms of housing starts has been relatively flat over the past three years at around seven percent. This result may signal a plateau in market share; therefore, we recommend continued monitoring of WESH market share to assess the persistence of this trend.

4.3.4 Program Metrics and Goals

The WESH program had four contract metric goals for FY06, which we address below. For each metric, we include a brief description and an overview of our measurement approach and results. At the end of this section, we present an analysis of WESH's market share of new homes built annually in Wisconsin. We include this analysis in response to interest in including this as a possible future metric.

FY06 METRIC #1

Of the builders with air tightness in the 0.25 to 0.15 CFM@50 per square foot of exterior surface area range, increase by 10% the number that achieve a downward air tightness trend during FY06.

Measurement Approach

The evaluation team measured this metric by analyzing the program database and applying guidelines established in FY05, which we discuss below.[xxii]

The first guideline entails which builders to include in the analysis. We decided to look only at builders who built at least five homes in FY06 and at least five homes cumulatively in all previous FYs of involvement. This helps to ensure that the analysis excludes those builders who have not had enough WESH interaction to produce measurable effects.

The second guideline deals with the analysis periods from which to make comparisons. We decided to compare the average infiltration rate of homes certified in FY06 to that of the homes certified in FY05.[xxiii]

The third guideline concerns what constitutes a downward trend in infiltration rates. We decided to establish thresholds based on the following two ranges in infiltration rates of homes certified in FY06: (1) 0.25-0.20 CFM@50 per square foot and (2) 0.20-0.15 CFM@50 per square foot. For builders in the 0.25-0.20 CFM@50 per square foot range, a builder is classified as achieving a downward trend if the average infiltration rate in FY06 is at least 0.03 CFM@50 per square foot lower than that in FY05 (e.g., 0.22 CFM@50 per square foot in FY05 to 0.19 CFM@50 per square foot or lower in FY06). For builders in the 0.20-0.15 CFM@50 per square foot range, a builder is classified as achieving a downward trend if the average infiltration rate in FY06 is at least 0.02 CFM@50 per square foot lower than that in FY05 (e.g., 0.17 CFM@50 per square foot in FY05 to 0.15 CFM@50 per square foot or lower in FY06). The logic for having a lower threshold for builders in the 0.20-0.15 CFM@50 per square foot range is based on the premise of decreasing returns to scale in infiltration rate improvements (i.e., as builders improve the infiltration rates of their homes it becomes increasingly more difficult for them to continually achieve a lower average infiltration rate in the future as there are less opportunities for improvement). The metric does not address builders who average less than 0.15 CFM@50 per square foot. WESH classifies these builders as high performance builders. We recommend that future metrics address these builders.[xxiv]

Results

Of the 738 builders who had certified at least one WESH home through the end of FY05, 31 were included in the analysis when applying the first guideline.[xxv] Although this represents only about four percent of WESH builders, these 31 builders have certified about 56 percent of all WESH homes (3,956 out of 7,068).

Of these 31 builders, three were in the 0.25–0.20 CFM@50 per square foot range, 16 were in the 0.20–0.15 CFM@50 per square foot range, and 12 averaged less than 0.15 CFM@50 per square foot for homes built during FY05, the pre-period for comparison in this analysis for FY06 (per the second guideline).

Because the current metric does not address builders who averaged less than 0.15 CFM@50 per square foot, we only included the 19 builders in the 0.25–0.15 CFM@50 per square foot range. Applying the third guideline to these 19 builders, we identified five that achieved a downward trend from FY05 to FY06 (none of the three builders in the 0.25–0.20 CFM@50 per square foot range and five of the 16 builders in the 0.20–0.15 CFM@50 per square foot range). This represents 26 percent of the 19 builders in the 0.25–0.15 CFM@50 per square foot range. The results are presented below in Table 4-10.

Table 4-10. Summary of Results for FY06 Analysis

BUILDERS ADDRESSED IN METRIC			
Infiltration Rate Range*	**Number of Builders**	**Number of Builders Achieving Downward Trend**	**Percent of Builders Achieving Downward Trend**
0.25–0.20	3	0	0%
0.20–0.15	16	5	31%
Total	19	5	26%
BUILDERS NOT ADDRESSED IN METRIC			
Infiltration Rate Range*	**Number of Builders**	**Number of Builders Remaining in Range**	**Retention Rate**
< 0.15	12	12	100%

* Measured in CFM@50 per square foot

We conducted the same analysis for FY05 and found that 34 percent of builders in the 0.25-0.15 CFM@50 per square foot range achieved a downward trend. We interpret the *increase by 10 percent* specified in the metric to mean a 10 percent increase in FY06 over the 34 percent in FY05, which results in a threshold for FY06 of 37.4 percent of builders achieving a downward trend. Because the 26 percent who achieved a downward trend in FY06 is less than this threshold, we conclude that the metric has not been met.

Finally, because we recommended that future metrics address builders who averaged less than 0.15 CFM@50 per square foot, we looked at the 12 builders who averaged less than 0.15 CFM@50 per square foot in FY05 to see how many also averaged less than 0.15 CFM@50 per square foot in FY06. We found that all of these builders averaged less than 0.15 CFM@50 per square foot during FY05. This represents a retention rate of 100 percent (Table 9).

FY06 METRIC #2

Monitor builder usage of performance trends data in terms of subcontractor management, marketing, and other related activities.

Measurement Approach

The evaluation team measured this metric by interviewing WESH consultants who have requested performance trends data on behalf of their builders and the builders who have been provided performance trends data. The goal of the interviews was to assess how these builders are using the performance trends data provided to them.

Results

Based on information tracked by the program manager and interviews with 14 WESH consultants, performance data has been provided to 33 builders during FY06. These 33 builders account for 52 percent of the WESH homes certified during FY06. We interviewed ten of these 33 builders. Of the ten builders we interviewed, six are actively using the performance trends data and four are not. The builders that are actively using the performance trends data, however, represent about 90 percent of the homes certified among the ten interviewed builders. Because the interviews indicated that WESH builders are actively using the data to improve their practices and to market to homebuyers, we conclude that WESH has met this metric. A few examples of how the data is being used are provided below.[xxvi]

- By looking at performance trends data, one builder found that the application of mortar caulk around the rim joist and additional sealing of their bonus rooms led to a significant reduction in infiltration rates, and have made these techniques part of their standard practice. This builder also uses the performance data to differentiate themselves from other builders, both WESH and non-WESH, and explains to the customer the importance of testing.
- One builder uses performance trends data along with a spreadsheet developed by program staff to show potential homebuyers comparisons of the energy consumption of their WESH homes to both new, non-WESH homes and existing homes.
- One builder uses performance trends data to monitor subcontractor performance and to identify techniques that further improve air tightness. This builder never builds the same home twice and is always experimenting with different techniques. The data allows this builder to monitor the performance of each home built and to evaluate what is working and what is not. This builder also uses the data in the sales process and let's customers know what percent his homes fall below the minimum WESH guidelines.
- Another builder works with his WESH consultant to analyze the technical performance data to generate an estimate of the energy savings of his homes compared to a home built to the Uniform Dwelling Code. Based on these calculations, the builder credits the first year's energy costs to the homebuyer at closing. This builder is also investigating how to use this data for more general marketing purposes.

The four builders who are not using the data told us that they are interested in using the data but that the data need to be provided in a manner that is user-friendly and is easily understandable among potential homebuyers. The six builders who are actively using the data also expressed a similar sentiment. Specifically, builders recommended that the data needs to convey to homebuyers, in simple laymen's terms, the level of savings, preferably in dollar amounts, that a WESH home will deliver. An issue to address is the baseline on which to calculate these savings. Some builders recommend using a new home built to the Uniform Dwelling Code as the comparison home; however, it may be the case that the typical non-WESH home exceeds this standard, which would result in an overestimate of the savings.

FY06 METRIC #3

<u>Pre-FY06 (experienced) builders produce in FY06, on average, at least 90% of the certified homes they produced in FY05.</u>

Measurement Approach

The evaluation team measured this metric by analyzing the program database to compare the number of WESH homes certified by experienced builders in FY05 and FY06. A builder is classified as an experienced builder in FY06 if the builder had certified at least three homes through the end of FY05. Similarly, a builder is classified as an experienced builder in FY05 if the builder had certified at least three homes through the end of FY04. This classification is based on discussions with the program manager.

Results

Our analysis indicates that WESH has not met this metric. In FY06, 142 experienced builders certified 1,262 homes, which is 81 percent of the 1,562 homes that were certified by 133 experienced builders in FY05. This is less than the metric goal of 90 percent. Because the metric alludes to averages, we also compared averages and came to the same result. Experienced builders averaged 8.9 certified homes in FY06, which is 76 percent of the average (11.7) certified by experienced builders in FY05.

FY06 METRIC #4

Maintain new builder participation (as defined by average # of certified homes associated with new builders annually).

Measurement Approach

The evaluation team measured this metric by analyzing the program database to compare the number of WESH homes certified by new builders in FY05 and FY06. A builder is classified as a new builder in FY06 if the builder had certified less than three homes through the end of FY05. Similarly, a builder is classified as a new builder in FY05 if the builder had certified less than three homes through the end of FY04. This classification is based on discussions with the program manager.

Results

Our analysis indicates that WESH has not met this metric. In FY06, 123 new builders certified 223 homes, which is less than the 381 certified by 170 new builders in FY05. Because the metric alludes to averages, we also compared averages and came to the same result. New builders averaged 1.8 certified homes in FY06, which is less than the average (2.2) certified by new builders in FY05.

4.4 EXISTING HOMES

Existing Homes includes the Home Performance with ENERGY STAR (HPWES) program and measures installed through the Efficient Heating and Cooling Initiative (EHCI) in existing homes.

FY07 evaluation efforts focused on the following:

- Analyzing net impacts for attic and sidewall insulation measures installed through HPWES[xxvii]

- Measuring program metrics[xxviii]

Key findings from these efforts are presented below for the each of the following four areas:

- Process findings and issues
- Evaluated energy impacts
- Market effects
- Program metrics and goals.

4.4.1 Process Findings and Issues

We did not formally include process related evaluation tasks as part of our FY07 detailed evaluation plan submitted to DOA. The evaluation team, however, stayed abreast of process related issues through monitoring of program changes and issues based on regular communications with the program manager.

4.4.2 Evaluated Energy Impacts

The evaluation team analyzed net impacts for attic and sidewall insulation measures installed through HPWES. The analysis focused on attic and sidewall insulation because these two measures comprise the majority of HPWES energy savings. For any such analysis, the principle research issue is relatively simple, although the information needed to answer the question with complete certainty can be challenging to obtain. The research involves determining, based on the information available, whether or not the program (in this case HPWES) induced customers to take actions (i.e., install attic and sidewall insulation) that they would not have taken in absence of the program. The program has been applying a net-to-gross ratio of 85 percent for both attic and sidewall insulation measures. The major finding of this report is that 62 percent of attic insulation and 50 percent of sidewall insulation installed among the HPWES participants we interviewed would NOT have been installed in the absence of the program, which implies net-to-gross ratios of 0.62 and 0.50, respectively.

Although these results suggest a net-to-gross ratio of 62 percent for attic insulation and 50 percent for sidewall insulation, we acknowledge limitations in the analysis that potentially bias the estimates such that they under-report net savings. In particular, this analysis neither addressed possible program effects on the supply-side of the insulation market nor accounted for any actions that may have been taken by HPWES participants that were attributable to program efforts but not tracked by the program. Although this research did not address possible supply-side effects, we have assessed market effects indicators pertaining to the supply-side of the market for the HPWES program. Of the two supply-side market effects contract metrics established for FY06, the evaluation found that the program exceeded one of the metrics (135 percent) and met 91 percent of the other. Because these metric-related results provide indications of program effects on the supply-side of the market, we recommend that the net-to-gross ratio remain unchanged at 85 percent until the possible supply-side effects are better understood. Accordingly, the evaluation team will assess possible program effects on the supply-side of the insulation market during FY08. Regarding accounting for non-tracked actions, the evaluation team continues to recommend that WECC develop methods to also track recommendations—both rebated and non-rebated—that are made by consultants and qualified contractors, and the associated non-rebated actions that are implemented as a result of these recommendations.

The tables below show energy impacts for Existing Homes program activity.

Table 4-11. Existing Homes: Tracked Energy Impacts
FY07 (July 1, 2006–June 30, 2007)

Program Initiative	Measure Category	Verified kWh	kWh %	Verified kW	kW %	Verified Therms	Therm %
EHCI	Water Heating	14,720	3.8%	1	0.5%	-780	-0.2%
Renewables	Solar Water Heating	50,338	12.9%	0	0.0%	20,375	6.5%
Whole House	Building Shell	325,494	83.2%	222	99.5%	282,299	89.6%
Whole House	Lighting-Other	865	0.2%	0	0.0%	0	0.0%
Whole House	Other	0	0.0%	0	0.0%	1,053	0.3%
Whole House	Water Heating	0	0.0%	0	0.0%	12,084	3.8%
TOTAL		391,417	100.0%	223	100.0%	315,030	100.0%

Table 4-12. Existing Homes: Tracked Energy Impacts By Measure
Program to Date (July 1, 2001–June 30, 2007)

Program Initiative	Measure Category	Verified kWh	kWh %	Verified kW	kW %	Verified Therms	Therm %
EHCI	Adjustment	0	0.0%	0	0.0%	0	0.0%
EHCI	Air Conditioning	2,990,838	15.0%	7,161	76.9%	0	0.0%
EHCI	Boiler/Other Heating	0	0.0%	0	0.0%	119,364	21.7%
EHCI	ECM Furnace	16,892,405	85.0%	2,149	23.1%	429,800	78.3%
TOTAL		19,883,243	100.0%	9,310	100.0%	549,164	100.0%

4.4.3 Market Effects

The FY06 metric measurement process provided some findings related to market effects. These findings are summarized next in the *Program Metrics and Goals* section.

4.4.4 Program Metrics and Goals

The EHCI program had one contract metric goal and the HPWES program had seven contract metric goals for FY06, which we address below. For each metric, we include a brief description and an overview of our measurement approach and results.

EHCI - FY06 METRIC #1

Increase in market share for 90+ furnaces with ECM by 2 percentage points as compared to the baseline set in FY05.

Measurement Approach

The evaluation team measured this metric by analyzing trends in annual ECM furnace market share as reported by information in the Energy Center of Wisconsin's (ECW) Furnace and AC Tracking (FACTS) reports. These reports provide market-based information on current and historic sales trends of residential furnaces sold in Wisconsin by distributors who agree to provide data to ECW.[xxix] Because data for the 2nd quarter of 2006 (the last quarter of FY06) was not available at the time the analysis was conducted, we had to choose different pre- and post-periods on which to base the analysis. We decided to move the pre- and post- periods up one quarter and compare the year beginning with the 2nd quarter of 2005 and ending with

the 1st quarter of 2006 (post) to the year beginning with the 2nd quarter of 2004 and ending with the 1st quarter of 2005 (pre).

Results

Our analysis indicates that EHCI has met its goal for this metric. As shown in Table 4-13, the market share for ECM furnaces increased from 20.1 percent to 25.2 percent.[xxx] This represents an increase of 5.1 percentage points, which is greater than the metric goal of 2 percentage points.

Table 4-13. ECM Furnace Market Share

Period	ECM Furnaces	All Furnaces	Market Share
Pre (2004-Q2 thru 2005-Q1)	11,430	56,770	20.1%
Post (2005-Q2 thru 2006-Q1)	13,845	54,911	25.2%

HPWES - FY06 METRIC #1

Increase the knowledge base of new and existing program providers. Retain 90% of consultants and qualified contractors that enter the program after training

Measurement Approach

The evaluation team measured the second part of this metric (retain 90% of consultants and qualified contractors that enter the program after training) by analyzing the program database to assess trends in program activity for each consultant and qualified contractor. The first part of this metric (increase the knowledge base of new and existing program providers) was measured as part of FY04 evaluation efforts. The results indicated that the program has established a network of program providers that have the knowledge and skills necessary to deliver the program.[xxxi] Because the program achieved its goal, we recommended that further measurement of this aspect of the metric is not necessary at this time.

Results

Our analysis indicates that HPWES has not met this metric. During FY05, 59 consultants and qualified contractors provided services through the program. Thirteen of these 59 did not provide services through the program in FY06. This represents a retention rate of 78 percent, which is less than the metric goal of 90 percent.

HPWES - FY06 METRIC #2

Increase the number of remodeling/home improvement companies with whom consultants and qualified contractors have developed relationships to 116 in FY06.[xxxii]

Measurement Approach

The evaluation team measured this metric by analyzing the program database to assess trends in program activity for each remodeling/home improvement company involved with the program.

Results

Our analysis indicates that HPWES has met this metric. During FY06, a total of 157 remodeling/home improvement companies provided services through the program (Table 4-14). This is greater than the metric goal of 116.

Table 4-14. Number of Remodeling/Home Improvement Companies Involved with Program

Company Type	Period of Program Activity			
	FY03	FY04	FY05	FY06
Remodeler	9	29	29	71
Ally—HVAC	17	21	17	26
Ally—Insulation	6	17	25	37
Ally-Other	0	5	4	23
Total	**32**	**72**	**75**	**157**

HPWES - FY06 METRIC #3

Increase the number of referrals received by consultants and qualified contractors from remodeling/home improvement companies to 147 in FY06.[xxxiii]

Measurement Approach

The evaluation team measured this metric by analyzing the program database to assess trends in number of referrals received by consultants and qualified contractors from remodeling/home improvement companies.

Results

Our analysis indicates that HPWES has not met this metric. During FY06, a total of 134 referrals were received from remodeling/home improvement companies (Table 4-15). This is less than the metric goal of 147.

Table 4-15. Number of Referrals Received from Remodeling/Home Improvement Companies

Company Type	Period of Program Activity			
	FY03	FY04	FY05	FY06
Remodeler	15	69	75	76
Ally—HVAC	17	9	11	13
Ally—Insulation	1	6	27	43
Ally-Other	0	3	3	2
Total	**33**	**87**	**116**	**134**

HPWES - FY06 METRIC #4

Increase the number of assessments and ratings performed by consultants and qualified contractors to 1,559 in FY06.[xxxiv]

Measurement Approach

The evaluation team measured this metric by analyzing the program database to assess trends in number of assessments and ratings performed by consultants and qualified contractors.

Results

Our analysis indicates that HPWES has met this metric. A total of 2,145 assessments and ratings were completed during FY06. This is greater than the metric goal of 1,559.

HPWES - FY06 METRIC #5

Increase the percent of assessments and ratings that result in the installation of at least one measure by at least 3 percentage points in FY06 as compared to the percentage with installations in FY05.

Measurement Approach

The evaluation team measured this metric by analyzing the program database to assess trends in the percent of assessments and ratings that involve the installation of at least one major measure related to building performance within the same FY in which the assessment and rating was performed.[xxxv]

Results

Our analysis indicates that HPWES has not met this metric. Although the total number of assessments and ratings completed increased from 1,498 in FY05 to 2,145 in FY06, the percent of assessments and ratings involving the installation of at least one major measure related to building performance within the same year in which the assessment and rating was performed decreased by 10 percentage points from FY05 to FY06 (Table 4-16). This is less than the metric goal of a 3 percentage point increase.

Table 4-16 Tracked Program Activity

Type	Period of Program Activity			
	FY03	FY04	FY05	FY06
Number of Assessments/Ratings	515	1,220	1,498	2,145
Number of Assessments/Ratings Involving the Installation of at Least One Major Building Performance-Related Measure w/in Same FY as Assessment/Rating	162 (31%)	562 (46%)	648 (43%)	717 (33%)

The increase in the number of assessments and ratings in FY06 is likely attributable to the increased exposure of the program as a result of higher natural gas prices and increased

media interest. The key issue, however, is whether the increased number of assessments and ratings will eventually lead to a corresponding increase in measure installations. The above results indicate that it has not within FY06, but this does not mean that the increase will not occur in subsequent FYs. Therefore, we recommend that the program track the following to monitor the number of assessments and ratings that result in at least one major performance-related measure installation:

- Cumulative installation rates by cohort groups based on the year in which the assessment/rating was performed. This will allow a comparison of, say, second year progress of the FY06 cohort to second year progress of other cohorts to see if the drop in installation rates persists over time.
- Lag times between assessments/ratings and measure installations. This will help the program manager assess the potential installations among assessments/ratings without an installation.
- Installation rates and lag times by consultants/qualified contractor. Installation rates are a function of the ability of the consultant/qualified contractor to convince the homeowner to take action. This analysis will identify program providers who have higher and lower installation rates. Program staff can then identify the best practices related to customer communication used by program providers with higher installation rates and design training to transfer the use of these practices to program providers with lower installation rates.

We also recommend that the program target customers who have received an assessment or rating but have yet to perform an installation.

MULTIPLE MEASURE INSTALLATIONS

In addition to measuring FY06 HPWES metrics, we analyzed the program database to look at the distribution of single and multiple measure installations involving the installation of at least one major building performance-related measure (Table 4-17). The vast majority of these installations involve the installation of multiple measures. For example, 86 percent of the installations in FY06 involved multiple measures. Specifically, 39 percent of these installations involved two measures (air sealing and attic insulation being the most common combination); 27 percent involved three measures (air sealing, attic insulation, and sidewall insulation being the most common combination); and 20 percent involved four or more measures (most all of which involved air sealing, attic insulation, and sidewall insulation in combination with one or more of the other measures).

Table 4-17. Multiple Measure Installations among Participants Installing One or More Major Performance-Related Measures

Number of Measures Installed	Percent of Installations			
	FY03	FY04	FY05	FY06
One Measure	11%	15%	13%	14%
Two Measures	24%	29%	41%	39%
Three Measures	32%	28%	28%	27%
Four or More Measures	33%	28%	18%	20%

4.5 APARTMENT AND CONDOMINIUM EFFICIENCY SERVICES

Given that the ACES program budget has been significantly reduced from previous levels, the evaluation team did not consider this effort worthy of evaluation spending during FY07.

Table 4-18. Apartment and Condominium Efficiency Services: Tracked Energy Impacts FY07 (July 1, 2006–June 30, 2007)

Program Initiative	Measure Category	Verified kWh	kWh %	Verified kW	kW %	Verified Therms	Therm %
MF Central HVAC System	Boiler/Other Heating	0	0.0%	0	0.0%	180,140	45.0%
MF Central HVAC System	Building Shell	0	0.0%	0	0.0%	628	0.2%
MF Central HVAC System	HVAC	0	0.0%	0	0.0%	2,200	0.5%
MF Central HVAC System	Water Heating	0	0.0%	0	0.0%	4,463	1.1%
New Construction	Air Conditioning	35,940	2.5%	0	0.0%	0	0.0%
New Construction	Boiler/Other Heating	155,787	10.6%	40	9.7%	72,018	18.0%
New Construction	Building Shell	-2,030	-0.1%	0	0.0%	4,430	1.1%
New Construction	CFL	384,585	26.2%	26	6.4%	0	0.0%
New Construction	Clothes Washer	52,016	3.5%	0	0.0%	10,433	2.6%
New Construction	Dishwasher	46,616	3.2%	0	0.0%	2,789	0.7%
New Construction	ECM Furnace	0	0.0%	0	0.0%	5,764	1.4%
New Construction	Lighting-LED	37,909	2.6%	4	0.9%	0	0.0%
New Construction	Lighting-Other	194,780	13.3%	16	4.0%	0	0.0%
New Construction	Other	449,961	30.7%	253	61.2%	75,804	18.9%
New Construction	Refrigerator	32,708	2.2%	4	0.9%	0	0.0%
New Construction	Water Heating	77,000	5.3%	70	16.9%	36,091	9.0%
Renewables	Solar Water Heating	0	0.0%	0	0.0%	5,847	1.5%
Whole Building	Air Conditioning	0	0.0%	0	0.0%	0	0.0%
TOTAL		1,465,272	100.0%	413	100.0%	400,607	100.0%

Table 4-19. Apartment and Condominium Efficiency Services: Tracked Energy Impacts By Measure
Program to Date (July 1, 2001–June 30, 2007)

Program Initiative	Measure Category	Verified kWh	kWh %	Verified kW	kW %	Verified Therms	Therm %
Appliance Turn In	Freezer	0	0.0%	0	0.0%	0	0.0%
Appliance Turn In	Refrigerator	0	0.0%	0	0.0%	0	0.0%
Comprehensive Assessment	Miscellaneous	1,170,894	2.3%	0	0.0%	295,138	7.4%
CSG Lighting	Lighting-LED	415,734	0.8%	34	0.6%	0	0.0%
CSG Lighting	Lighting-Other	9,164,013	17.6%	487	9.4%	0	0.0%
Customer Rewards	Ceiling Fan	3,675	0.0%	0	0.0%	0	0.0%
Customer Rewards	CFL	7,246,900	13.9%	221	4.3%	0	0.0%
Customer Rewards	Clothes Washer	21,714	0.0%	0	0.0%	2,068	0.1%
Customer Rewards	Dehumidifier	4,350	0.0%	4	0.1%	0	0.0%
Customer Rewards	Dishwasher	2,790	0.0%	0	0.0%	155	0.0%
Customer Rewards	Lighting Fixture	71,552	0.1%	3	0.1%	0	0.0%
Customer Rewards	Refrigerator	4,026	0.0%	1	0.0%	0	0.0%
Customer Rewards	Room A/C	15,226	0.0%	36	0.7%	0	0.0%
Customer Rewards	Room A/C Turn-In	9,040	0.0%	21	0.4%	0	0.0%

Program Initiative	Measure Category	Verified kWh	kWh %	Verified kW	kW %	Verified Therms	Therm %
Customer Rewards	Torchiere	57,236	0.1%	2	0.0%	0	0.0%
In Unit Exchange	CFL	1,790,382	3.4%	54	1.0%	0	0.0%
In Unit Exchange	Lighting-Other	5,426,124	10.4%	161	3.1%	0	0.0%
In Unit Exchange	Water Heating	5,199,720	10.0%	0	0.0%	393,580	9.9%
MF Central HVAC System	Boiler/Other Heating	25,183	0.0%	0	0.0%	320,036	8.1%
MF Central HVAC System	Building Shell	0	0.0%	0	0.0%	1,070	0.0%
MF Central HVAC System	HVAC	0	0.0%	0	0.0%	2,200	0.1%
MF Central HVAC System	Water Heating	51,849	0.1%	0	0.0%	46,395	1.2%
New Construction	Adjustment	-49,535	-0.1%	-7	-0.1%	2,528	0.1%
New Construction	Air Conditioning	154,943	0.3%	61	1.2%	0	0.0%
New Construction	Appliance-Other	23,076	0.0%	2	0.0%	867	0.0%
New Construction	Boiler/Other Heating	669,851	1.3%	84	1.6%	287,246	7.2%
New Construction	Building Shell	98,986	0.2%	20	0.4%	34,162	0.9%
New Construction	CFL	1,520,479	2.9%	122	2.4%	2,118	0.1%
New Construction	Clothes Washer	231,360	0.4%	0	0.0%	21,411	0.5%
New Construction	Dishwasher	140,108	0.3%	0	0.0%	7,939	0.2%
New Construction	ECM Furnace	0	0.0%	0	0.0%	5,764	0.1%
New Construction	Light Fixture	129,830	0.2%	16	0.3%	0	0.0%
New Construction	Lighting-LED	51,648	0.1%	4	0.1%	0	0.0%
New Construction	Lighting-Other	656,108	1.3%	93	1.8%	0	0.0%
New Construction	Other	495,213	1.0%	255	4.9%	83,238	2.1%
New Construction	Refrigerator	104,648	0.2%	13	0.3%	0	0.0%
New Construction	Water Heating	419,605	0.8%	81	1.6%	90,249	2.3%
Renewables	SDHW	0	0.0%	0	0.0%	11,012	0.3%
Renewables	Solar Water Heating	0	0.0%	0	0.0%	6,247	0.2%
Whole Building	Air Conditioning	285,336	0.5%	111	2.1%	0	0.0%
Whole Building	Boiler/Other Heating	3,874,645	7.5%	451	8.7%	1,304,573	32.8%
Whole Building	Building Shell	888,010	1.7%	34	0.7%	131,724	3.3%
Whole Building	CFL	4,215,299	8.1%	1,901	36.6%	0	0.0%
Whole Building	Clothes Washer	131,543	0.3%	171	3.3%	13,164	0.3%
Whole Building	Custom	19,501	0.0%	0	0.0%	12,665	0.3%
Whole Building	Dishwasher	16,020	0.0%	0	0.0%	570	0.0%
Whole Building	HVAC	215,538	0.4%	9	0.2%	576,260	14.5%
Whole Building	Lighting-LED	1,183,345	2.3%	266	5.1%	3,264	0.1%
Whole Building	Lighting-Other	3,956,673	7.6%	386	7.4%	0	0.0%
Whole Building	Other	27,706	0.1%	0	0.0%	0	0.0%
Whole Building	Refrigerator	24,298	0.0%	0	0.0%	0	0.0%
Whole Building	Water Heating	1,800,417	3.5%	98	1.9%	314,381	7.9%
Whole Building	Wind	0	0.0%	0	0.0%	3,715	0.1%
TOTAL		51,965,060	100.0%	5,194	100.0%	3,973,739	100.0%

4.6 TARGETED HOME PERFORMANCE WITH ENERGY STAR

Table 4-22. Targeted Home Performance with ENERGY STAR: Tracked Energy Impacts FY07 (July 1, 2006–June 30, 2007)

Program Initiative	Measure Category	Verified kWh	kWh %	Verified kW	kW %	Verified Therms	Therm %
Whole House	Other	435,080	100.0%	350	100.0%	107,675	100.0%
TOTAL		435,080	100.0%	350	100.0%	107,675	100.0%

Table 4-23. Targeted Home Performance with ENERGY STAR: Tracked Energy Impacts By Measure Program to Date (July 1, 2001–June 30, 2007)

Program Initiative	Measure Category	Verified kWh	kWh %	Verified kW	kW %	Verified Therms	Therm %
Whole House	Air Conditioning	4,982	0.3%	9	1.2%	0	0.0%
Whole House	Boiler/Other Heating	0	0.0%	0	0.0%	88,488	20.0%
Whole House	Building Shell	317,109	19.2%	101	12.6%	135,246	30.6%
Whole House	CFL	185,888	11.2%	4	0.4%	0	0.0%
Whole House	ECM Furnace	72,895	4.4%	5	0.7%	23,823	5.4%
Whole House	Lighting-Other	3,425	0.2%	0	0.0%	0	0.0%
Whole House	Other	806,984	48.8%	650	81.2%	199,715	45.1%
Whole House	Refrigerator	80,817	4.9%	21	2.6%	0	0.0%
Whole House	Water Heating	182,859	11.0%	11	1.4%	-4,870	-1.1%
TOTAL		1,654,959	100.0%	800	100.0%	442,401	100.0%

5. RENEWABLE ENERGY PROGRAM EVALUATION

5.1 OVERVIEW/KEY ACTIVITIES

This chapter describes evaluation activities for the Renewable Energy Program since January 2007. This chapter summarizes the following:

- Reports Delivered in the Second Half of FY06
- Program Activities
  - Count of projects installed
  - Program-reported gross energy impacts
- Net Energy Impacts
  - Estimated FY06 Net Energy Impacts (July 1, 2005–June 30, 2006)
  - Final FY05 Net Energy Impacts

5.1.1 Reports Delivered in Fiscal Year 06

During the second half of FY06, the Renewable Energy evaluation team submitted the following reports:

- Semi-annual report coving first half of Fiscal Year 06
- Inputs for the benefit-cost analysis.

5.2 ENERGY IMPACTS

5.2.1 Program Activities

Table 5-1 reports the number of projects by technology for the Focus on Energy Renewable Program by year. The table shows that the program increased the total number of renewable energy system installations for the sixth consecutive fiscal year. Overall, 122 projects (37 nonresidential and 85 residential) were completed through the program in FY07, compared to 93 in FY06. This increase is due to an increase in PV projects in the residential sector. The number of non-residential projects decreased by two (not substantial), but the mix of projects was different than the previous year. The number of non-residential PV systems almost doubled (from 9 to 16), while the number of biogas and thermal bioenergy projects decreased substantially (by 9).

Table 5-1. Projects Implemented by Type and Year

Technology	Completed Projects						
	FY02 Mar 02–June 02	FY03 Jul 02–Jun 03	FY04 Jul 03–Jun 04	FY05 Jul 04–Jun 05	FY06 Jul 05–Jun 06	FY07 Jul 06–Jun 07	Program To Date
Commercial and Industrial Projects							
Solar Water Heating	0	0	0	4	5	4	**13**
Biogas	0	0	1	4	7	2	**14**
Thermal Bioenergy	0	0	3	7	16	12	**38**
Solar Electric	1	2	3	9	9	16	**40**
Wind Machine	0	2	2	5	1	1	**11**
Hydroelectric	0	1	0	1	0	0	**2**
Other	0	0	0	1	1	2	**4**
All Nonresidential	**1**	**5**	**9**	**31**	**39**	**37**	**122**
Residential Projects							
Solar Electric (PV)	0	20	40	35	48	76	**219**
Wind Machine	0	1	8	2	5	5	**21**
Other	0	0	0	1	1	2	**4**
All Residential	**0**	**21**	**48**	**38**	**54**	**85**	**246**
All Projects	**1**	**26**	**57**	**69**	**93**	**122**	**368**

5.2.2 FY07 Program-reported Gross Energy Impacts

Table 5-2 provides the gross energy savings for projects that received a Cash-Back Reward or a grant with associated energy impacts. The program-reported gross impacts for the Renewable Energy Program by technology and segment are provided for FY05, FY06, FY07, and program to-date.

Despite the substantial increase in the number of projects, gross energy savings decreased in FY07 by 20% (kW), 30% (kWh), and 67% (therms) with respect to FY06. This is consistent with an increase in residential PV systems (small savings per project) and a decrease in nonresidential biogas and thermal bioenergy projects (large savings per project). In other words, the lower savings are driven entirely by the nonresidential sector

Table 5-2. Renewable Energy Program-reported Gross Impacts[11]
By Segment and Technology

Segments	Technology	Energy Impacts	Completed			
			FY05 Jul 04–Jun 05	FY06 Jul 05–Jun 06	FY07 Jul 06–Jun 07	Program To Date
Nonresidential	Solar Water Heating	Kilowatts	0	0	0	0
		Annual kWh	0	0	0	0
		Annual therms	20,481	13,708	2,072	36,261
	Biogas	Kilowatts	2,270	1,586	1,045	4,931
		Annual kWh	18,714,864	12,366,960	8,238,780	39,532,946
		Annual therms	18,965	0	0	108,653
	Thermal Bioenergy	Kilowatts	0	0	0	0
		Annual kWh	0	0	0	0
		Annual therms	406,318	1,982,546	682,163	3,160,397
	Solar Electric	Kilowatts	46	24	94	182
		Annual kWh	57,382	29,643	114,922	227,602
		Annual therms	0	0	0	1,283
	Wind Machine	Kilowatts	240	65	90	481
		Annual kWh	343,758	83,600	109,560	672,174
		Annual therms	0	0	0	0
	Hydroelectric	Kilowatts	700	0	0	1,300
		Annual kWh	2,956,800	0	0	6,473,600
		Annual therms	0	0	0	0
	Other	Kilowatts	0	0	14	14
		Annual kWh	0	0	29973	29973
		Annual therms	1,056	102	1480	2,638
	All Nonresidential	**Kilowatts**	**3,256**	**1,675**	**1,243**	**6,908**
		Annual kWh	**22,072,804**	**12,480,203**	**8,493,235**	**46,936,295**
		Annual therms	**446,820**	**2,071,844**	**685,715**	**3,309,232**
Residential	Solar-PV and	Kilowatts	48	135	255	545

[11] Gross energy impacts are those reported in the Program tracking system maintained by WECC.

[12] "Solar PV and Thermal" includes residential PV installations and projects that combine PV with solar thermal technologies. The therm savings are from both the combined projects and PV installations that were off-grid and displacing fossil fuel generators on-site.

Segments	Technology	Energy Impacts	Completed			
			FY05 Jul 04–Jun 05	FY06 Jul 05–Jun 06	FY07 Jul 06–Jun 07	Program To Date
	Thermal[12]	Annual kWh	69,521	177,638	328,898	715,698
		Annual therms	0	0	0	3,776
	Wind Machine	Kilowatts	38	106	40	269
		Annual kWh	49,218	123,346	51,353	370,374
		Annual therms	0	0	0	0
	Other	Kilowatts	0	0	0	0
		Annual kWh	0	-15,545	0	-15,545
		Annual therms	372	1,881	2,910	5,163
	All Residential	**Kilowatts**	**87**	**241**	**295**	**814**
		Annual kWh	**118,739**	**285,439**	**380,251**	**1,070,527**
		Annual therms	**372**	**1,881**	**2,910**	**8,939**
TOTAL	**All Projects**	**Kilowatts**	**3,343**	**1,916**	**1,538**	**7,722**
		Annual kWh	**22,191,543**	**12,765,642**	**8,873,486**	**48,006,822**
		Annual therms	**447,192**	**2,073,725**	**688,625**	**3,318,171**

5.3 NET ENERGY IMPACTS

This section explains the calculation of estimated energy impacts for FY07 and final FY06 energy impacts. Final fiscal year energy impacts are determined following the end of the fiscal year. They are based on surveys with program participants and calculated for all projects completed in that fiscal year. For example, final FY06 adjustment factors were calculated during the first half of FY07 based on all projects completed in FY06.

This report includes estimated FY07 net energy impacts based upon the final FY06 net adjustment factors. (The final FY07 adjustment factors, based on projects completed between July 1, 2006, and June 30, 2007, will be reported in the January 2008 semi-annual report.) In this report we present the final FY06 adjustment factors, final FY06 energy impacts, and estimated energy impacts for FY07 using the final FY06 adjustment factors.

5.3.1 Estimated FY07 Energy Impacts (July 1, 2006–June 30, 2007)

Estimated FY07 evaluation-verified gross and net energy impacts are determined by applying the final FY06 adjustment factors to the FY07 program-reported gross energy savings. The estimated FY07 impacts, the final FY06 impacts, and the impacts for the previous program years are provided in Table 5-3. During the first half of FY07, the evaluation calculated FY06 adjustment factors based on projects completed during FY06. These adjustment factors were developed on a technology basis and are applied to the program-reported gross energy savings (by technology) for FY07 to determine estimated FY07 evaluation-verified gross and net energy impacts.

For all completed years in the table, evaluation-verified gross is calculated by multiplying the overall program-reported gross savings by the overall program gross savings adjustment factor. Similarly, evaluation-verified net savings is the product of the overall program-reported gross savings and the overall realization rate. This is done for each of the three energy units (kWh, kW, and therms). In the case of estimated FY07 energy savings, the adjustment factors are applied at the technology level because the percentage of savings each technology accounts for changed from FY06 to FY07. Technology level adjustment factors are not provided in this report to protect respondent confidentiality. We must note, however, that applying FY06 adjustment factors to FY07 projects resulted in low net savings estimates. Further discussion of the calculation and application of the adjustment factors is provided in the next section.

Table 5-3. Renewable Energy Program
Reported Gross, Evaluation-Verified Gross, and Evaluated Net Impacts

Time Period	kWh			kW			Therms		
	Gross	Verified Gross	Verified Net	Gross	Verified Gross	Verified Net	Gross	Verified Gross	Verified Net
FY02: Mar 02–Jun 02	536	545	440	0.48	0.41	0.32	0	0	0
FY03: Jul 02–Jun 03	3,659,120	3,718,437	3,005,052	707	604	478	1,686	1,713	1,385
FY04: Jul 03–Jun 04	516,495	484,151	448,980	217	220	195	106,943	213,834	199,754
FY05: Jul 04–Jun 05	22,191,543	21,909,710	4,256,338	3,343	3,261	984	447,192	343,622	88,276
FY06: Jul 05–Jun 06	12,765,642	13,042,016	2,350,819	1,916	1,874	386	2,073,725	2,066,494	459,285
FY07: Jul 06 - Jun 07 (estimated)	8,873,486	9,378,311	1,848,201	1,539	1,688	405	688,625	717,119	232,283
Total	**48,006,822**	**48,533,170**	**11,909,830**	**7,723**	**7,648**	**2,449**	**3,318,171**	**3,342,782**	**980,983**

5.3.2 Final FY06 Energy Impacts

This section presents the results of the FY06 impact evaluation[13]. The objective of this analysis was two-fold. The first objective was to verify the data that had been entered into the Program tracking database to produce *gross savings adjustment factors*. The gross savings factors were based on verification of installation and an engineering review of the reported savings from installation for projects between July 1, 2005, and June 30, 2006.

[13] These results were initially reported in the semiannual report in the First Quarter of 2007.

The second objective was to determine the *realization rate* for the Program. The realization rate is the percentage of Program reported impacts that can be attributed to the Program. The realization rate is a function of the gross savings adjustment factor combined with the attribution factor, which subtracts out estimated free-ridership. Free-ridership calculations are based on participant reporting of the effect the Program had on their installation of the renewable energy measure. For instance, the Program could have:

- Been the main factor in the decision to install
- Accelerated the timing of the installation
- Changed the size of the measure installed
- Had no impact on a pre-existing intention to install the measure.

Data used in the net analysis came from several sources.

- Program-reported savings for each measure were obtained directly from the Renewable Energy Program tracking database.
- The evaluation team requested additional information from Program staff for each completed measure. This included detailed paperwork associated with the project application, and conversations clarifying the status of some projects. This information was used as a basis for the engineering verification.
- We conducted telephone interviews with participants completing 35 percent of the measures and representing 98 percent of kWh, 89 percent of kW, and 97 percent of therms savings reported by the program. These are very high proportions of savings. The interviews verified installation details, assessed the extent to which the project implementation was attributable to the Focus Renewable Energy Program, and covered some general issues associated with participating in the Program and installing a renewable energy measure.
- We verified the information provided in the Program documentation (measure, size, and other key variables) and then reviewed the engineering calculations for reasonableness and consistency.
- We contacted miscellaneous vendors to confirm information, get product specifications, or otherwise obtain information necessary for a thorough engineering review.

Table 5-4 below reports the final adjustment factors for FY06. These factors are based on a sample of projects completed in FY06 (July 1, 2005–June 30, 2006). The resulting gross savings adjustment factors combined with the attribution factor are used to determine the net program impacts. These numbers were calculated for each technology and then applied to all projects (based on technology) for a final net energy impact. The results are applied by technology but are reported at the aggregate level for electric energy (kWh), electric demand (kW), and fossil fuels (therms). [14]

[14] For a more complete description of the data collection methodology and analysis algorithms refer to *Renewable Energy Program: Spring 2004 Impact and Linkage Evaluation* Bobbi Tannenbaum and

Table 5-4. Final Net Adjustment Factors for FY06

Adjustment Factor	kWh				kW				Therms			
			Margin of Error (90% confidence)				Margin of Error (90% confidence)				Margin of Error (90% confidence)	
	n[a]	Estimate	Jul05-Jun06[a]	Extra-polated	n[a]	Estimate	Jul05-Jun06[a]	Extra-polated	n[a]	Estimate	Jul05-Jun06[a]	Extra-polated
Installation Rate	18	100%			18	100%			15	100%		
Engineering Verification Factor	23	102%	+/- 5.9%	+/- 9.0%	22	98%	+/- 5.7%	+/- 8.7%	15	100%	+/- 0.8%	+/- 1.3%
Gross Savings Adjustment Factor		102%				98%				100%		
Attribution Factor	23	18%	+/- 13.2%	+/- 20.4%	22	21%	+/- 12.4%	+/- 19.1%	15	22%	+/- 21.2%	+/- 32.7%
Realization Rate		18%				20%				22%		

Similar to previous year, the final FY06 gross savings adjustment factors are high, 102 percent, 98 percent, and 100 percent for energy (kWh), demand (kW), and therms, respectively. Final FY06 net evaluated energy impacts are 18 percent of the energy (kWh), 20 percent of the demand (kW), and 22 percent of program-reported gross therm (i.e., raw tracking system) impacts. These low realization rates are primarily a result of low attribution factors. For all energy types the installation rate was 100 percent and the engineering verification factor was close to 100%. The free-ridership rates, however, for all energy types for the Renewable Energy Program are high. Free-ridership is estimated at 82 percent for kWhs (energy), 79 percent for kW (demand), and 78 percent for therms. That is, the analysis indicates that 82 percent of the electric energy savings, 70 percent of the demand savings, and 74 percent of the therm savings would have been implemented without the program.

The results above represent a very high free-ridership rate and a significant drop in program attribution from previous years. The low program attribution is driven by projects that were expansions of existing renewable systems or had substantial economic benefits to the customer, or both. There was also a drop in the attribution for solar projects, probably due in part to the federal tax credits for PV that became available in January of 2006.

The Renewable Energy Program has responded the decreased attribution rates by making adjustments to the incentive amounts and eligibility requirements for some of the technologies. These changes are effective July 1, 2007, and so will not be reflected in the attribution rates developed based on FY07 projects.

Ryan Barry, KEMA Consulting and Adam Serchuk, Serchuk and Associates, PA Government Services Inc. July 19, 2004

6. FOCUS ON ENERGY BIBLIOGRAPHY

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EPA's *E-Grid 2000 database* with data for the MAIN and MAPP NERC regions from 1998.

APPENDIX A: GEOGRAPHIC DISTRIBUTION OF DIRECT ENERGY IMPACTS

This appendix presents the geographic distribution of direct energy impacts.

Please note: the utility territory maps now only include electric savings. The next semiannual report (March 2008) will include maps for gas savings by utility territory as well.

A.1 INTRODUCTION

The following appendix sections provide tables and maps that show annual energy savings achieved through resource acquisition activities of Focus on Energy programs. This version of the report does not provide observations, comments, or analysis of the data—which is largely the domain of the respective program evaluation leads. It is expected that evaluation team leads may integrate some of this information in the relevant evaluation reports and make the relevant analysis integrating it with other evaluation results and analysis. The data reported here is the evaluated verified gross numbers, so it does represent evaluation work done to establish evaluated verified gross for specific programs and/or program areas.

The maps that represent impacts by "*County*" and *"Utility Territory*" have been normalized, while the maps that represent impacts by "*Senate District*" and "*Assembly District*" show total energy impacts. The primary reason the Senate District and Assembly District data has not been normalized is because of difficulty in estimating the number of eligible participants in those regions due to issues with the nonparticipating utility territories. Some options are being considered for establishing those estimates for use in future reports.

For the county maps, an effort was made to estimate the number of eligible participants (excluding the relevant customers of nonparticipating utilities). For the utility maps, this was not an issue—since by definition their customers are eligible to participate in the program, therefore the number of customers reported by the utilities was used. Although, it should be noted there are likely some differences in the definition of rate classes from utility to utility that may cause anomalies in the *"per capita"* values. This will be most notable in the Industrial Sector. There are some differences in the numbers of eligible customers using these two methods. These differences are primarily due to the definition of a *"customer,"* since the utilities define customers by *service addresses or meters*; the method used for the county maps defined eligible customers as *households* (using U.S. Census data) for the residential segment *and business addresses* for the business segment (using Dunn & Bradstreet data).

The maps are based on the "Dollars Saved per Customer" column in the tables for the county and utility territory maps. This represents the annuals dollars in energy bill savings realized by program participants divided by the total number of customers in the county or utility territory. The senate and assembly district maps present the information shown in the "Annual Dollars Saved" column of the tables. This represents the annual dollars in energy bill savings realized by program participants. The energy bill savings are calculated using the average retail price of energy for the state of Wisconsin for each rate class (commercial, industrial, and residential). Comparisons cannot be made between maps, because both the definition of per capita and energy savings scales vary by program.

A.2 BUSINESS PROGRAMS

This section presents tables and maps that show annual energy savings achieved through participation in Focus on Energy Business Programs. These impacts are broken out for the Commercial and Industrial sectors.

The *"Number of Customers"* presented for each of the counties in Table A-1 and Table A-5 are based on the number of customers in industries targeted by the program administrator in the respective programs who are in participating utility territories in that county. The number businesses in participating utility territories in each county were estimated by determining the proportion of businesses in the State of Wisconsin Department of Workforce Development Standard Name and Address Program (SNAP) covered by Wisconsin's Unemployment Insurance Law. It was determined, based on geographic location, whether each business was in a utility territory of a utility participating in the Focus on Energy program. Then for each industry (at the two-digit SIC level) in each county, the proportion of the businesses that were in a participating utility territory was determined. Because the SNAP database is not fully representative of all of the businesses in the state, this ratio was applied to the number of businesses in that industry in that county reported by Dun and Bradstreet.

An analysis of the industries of the businesses that have had energy savings potential identified by the program administrator was conducted to determine which of the industries were being targeted by the program administrator. This analysis resulted in the identification of 23 of the 82 two-digit SIC codes as being targeted by the industrial programs and 28 of the 82 two-digit SIC codes as being targeted by the commercial programs, with 8 industries (as identified by the two-digit SIC code) being targeted by both the industrial and commercial programs. The 23 codes identified as being targeted by the industrial programs account for about 33% of Wisconsin businesses, while the 28 codes identified as being targeted by the commercial programs account for about 79% of Wisconsin businesses.

The *"Number of Customers"* presented for each of the participating utilities in Table A-4 and Table A-9 are based on the number of customers reported by the utilities in 2003.

A.2.1 Commercial Programs

Figure A-1.
Wisconsin Focus on Energy Commercial Programs
Per Capita Energy Bill Savings by County
Program to Date (July 1, 2001–June 30, 2007)

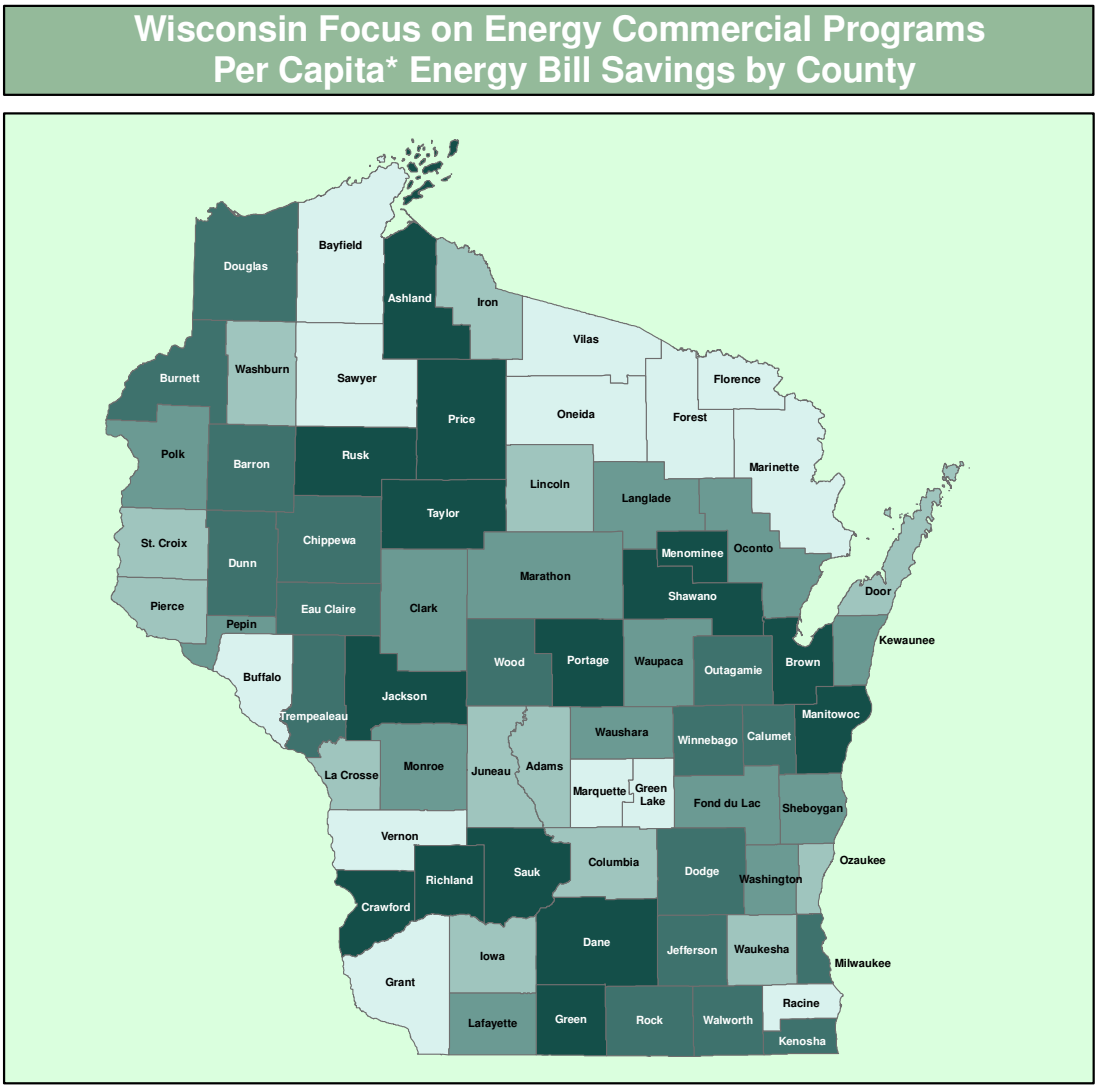


Table A-1. Commercial Program Energy Impacts
(By County)
Program to Date (July 1, 2001–June 30, 2007)

County	Annual Dollars per Capita	Annual kWh Saved	Annual Therms Saved	Eligible Participants
ADAMS	$219	593,206	15,095	298
ASHLAND	$489	2,612,940	149,332	757
BARRON	$325	2,475,918	193,196	1,239
BAYFIELD	$134	681,779	30,297	658
BROWN	$438	26,052,582	1,623,956	8,735
BUFFALO	$80	347,845	22,096	648
BURNETT	$310	982,034	73,742	507
CALUMET	$384	3,639,820	96,426	1,051
CHIPPEWA	$358	4,223,582	344,435	1,965
CLARK	$299	2,980,679	140,494	1,312
COLUMBIA	$222	2,152,657	277,407	2,073
CRAWFORD	$476	4,606,786	8,215	831
DANE	$403	44,597,984	2,331,715	15,152
DODGE	$323	6,797,110	370,951	2,929
DOOR	$153	1,134,854	69,801	1,087
DOUGLAS	$340	3,060,338	295,260	1,634
DUNN	$312	2,303,140	225,326	1,350
EAU CLAIRE	$354	9,257,984	516,322	3,667
FLORENCE	$93	25,304	1,108	35
FOND DU LAC	$263	7,986,446	283,094	3,640
FOREST	$54	217,015	5,191	436
GRANT	$89	1,235,691	54,653	1,789
GREEN	$680	5,669,169	133,842	900
GREEN LAKE	$48	862,847	16,319	1,842
IOWA	$168	1,908,982	65,260	1,351
IRON	$196	584,917	20,811	359
JACKSON	$922	503,762	41,208	91
JEFFERSON	$307	4,418,029	314,266	2,241
JUNEAU	$228	720,331	24,871	376
KENOSHA	$300	8,335,520	390,729	3,647
KEWAUNEE	$261	2,157,839	83,175	1,015
LA CROSSE	$206	7,719,280	205,739	4,159
LAFAYETTE	$254	854,214	78,887	596
LANGLADE	$233	1,974,107	75,929	1,042
LINCOLN	$182	1,715,539	93,923	1,312
MANITOWOC	$854	6,543,608	447,772	1,174
MARATHON	$287	12,945,914	349,121	5,019
MARINETTE	$145	2,394,050	68,972	1,872
MARQUETTE	$121	510,125	26,470	574
MENOMINEE	$660	357,379	14,026	67
MILWAUKEE	$356	60,595,815	3,568,666	24,399
MONROE	$294	3,033,751	231,833	1,663
OCONTO	$272	2,004,298	69,341	876

County	Annual Dollars per Capita	Annual kWh Saved	Annual Therms Saved	Eligible Participants
ONEIDA	$134	2,453,623	96,778	2,273
OUTAGAMIE	$336	16,250,330	546,910	5,713
OZAUKEE	$175	3,609,257	169,264	2,713
PEPIN	$298	938,704	51,529	440
PIERCE	$201	1,535,202	58,888	938
POLK	$295	3,468,697	156,286	1,523
PORTAGE	$458	9,063,553	366,658	2,470
PRICE	$800	824,428	354,886	534
RACINE	$133	6,590,343	198,468	5,693
RICHLAND	$629	892,810	12,203	139
ROCK	$351	13,791,158	669,917	5,237
RUSK	$805	3,148,041	126,158	487
SAUK	$541	10,347,449	272,422	2,118
SAWYER	$120	970,812	29,791	933
SHAWANO	$417	2,896,539	103,449	835
SHEBOYGAN	$249	6,319,166	266,786	3,215
ST. CROIX	$213	2,605,421	137,573	1,684
TAYLOR	$2,639	917,034	106,675	70
TREMPEALEAU	$390	957,872	82,824	421
VERNON	$114	939,861	24,422	908
VILAS	$94	1,011,514	15,039	1,068
WALWORTH	$300	9,677,454	274,499	3,633
WASHBURN	$182	1,041,108	35,668	678
WASHINGTON	$248	7,220,051	240,408	3,433
WAUKESHA	$161	19,330,159	624,847	13,996
WAUPACA	$232	4,927,770	34,704	1,935
WAUSHARA	$255	1,715,191	68,700	838
WINNEBAGO	$303	11,247,103	611,991	5,157
WOOD	$370	2,524,841	84,568	805
NOT MAPPED*		294,829	20,294	

* *Unknown County*: The impacts for these participants is not mapped either because their address information is not complete or because their address falls out of the boundaries of participating utility territory according to the GIS mapping application.

Figure A-2.
Wisconsin Focus on Energy Commercial Programs
Implemented Energy Bill Savings by Senate District
Program to Date (July 1, 2001–June 30, 2007)

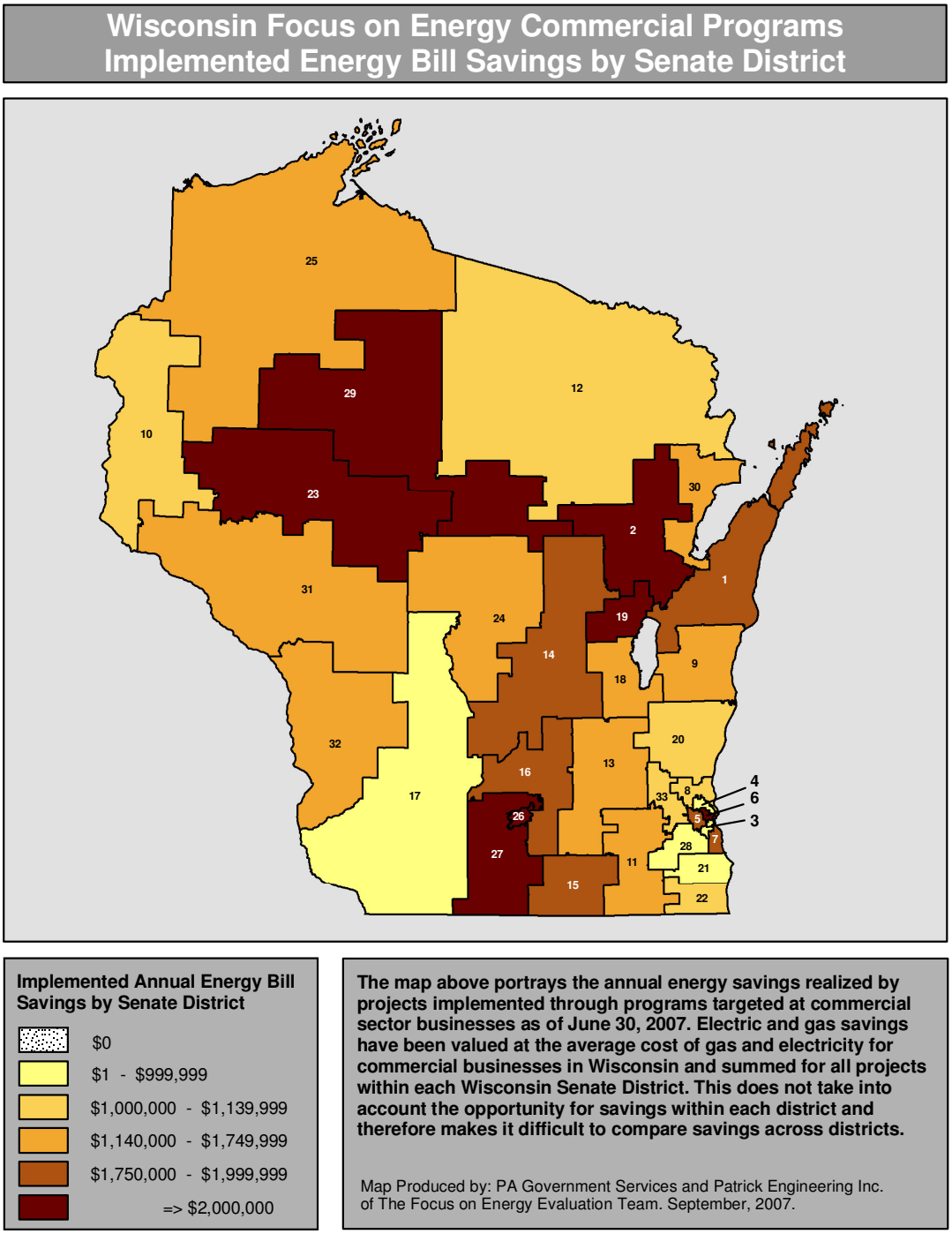


Table A-2. Commercial Program Energy Impacts
(By Senate District)
Program to Date (July 1, 2001–June 30, 2007)

Senate District	Annual Dollars Saved	Annual kWh Saved	Annual Therms Saved
1	$1,834,646	10,453,612	946,975
2	$2,201,932	17,335,762	737,358
3	$944,922	3,872,439	613,726
4	$620,570	4,786,433	216,086
5	$1,936,810	12,298,142	894,486
6	$2,360,498	17,423,831	887,170
7	$1,789,573	14,095,664	598,739
8	$1,313,150	9,959,521	471,312
9	$1,745,422	13,497,669	604,825
10	$1,364,253	9,326,737	574,703
11	$1,492,792	11,842,567	492,401
12	$1,146,986	9,552,734	340,536
13	$1,520,262	10,989,132	590,760
14	$1,914,298	17,081,391	473,491
15	$1,965,476	14,924,550	703,986
16	$1,810,940	13,839,936	641,230
17	$943,156	7,423,702	315,979
18	$1,473,621	11,401,393	510,172
19	$2,360,830	18,779,317	774,519
20	$1,110,524	8,623,702	381,835
21	$615,113	5,764,181	129,182
22	$1,209,781	8,889,645	458,040
23	$2,172,773	14,993,821	903,660
24	$1,522,381	12,422,517	473,387
25	$1,716,979	11,368,917	754,066
26	$3,003,395	19,009,193	1,392,192
27	$2,195,728	18,582,023	627,334
28	$915,744	9,149,477	144,969
29	$2,209,340	15,961,014	859,285
30	$1,670,432	13,564,113	524,966
31	$1,524,129	10,003,778	676,720
32	$1,420,546	13,977,404	242,861
33	$1,138,013	9,763,870	314,045
999*	$48,599	327,307	20,884

* *Unknown District*: The impacts for these participants is not mapped either because their address information is not complete or because their address falls out of the boundaries of participating utility territory according to the GIS mapping application.

Figure A-3.
Wisconsin Focus on Energy Commercial Programs
Implemented Energy Bill Savings by Assembly District
Program to Date (July 1, 2001–June 30, 2007)

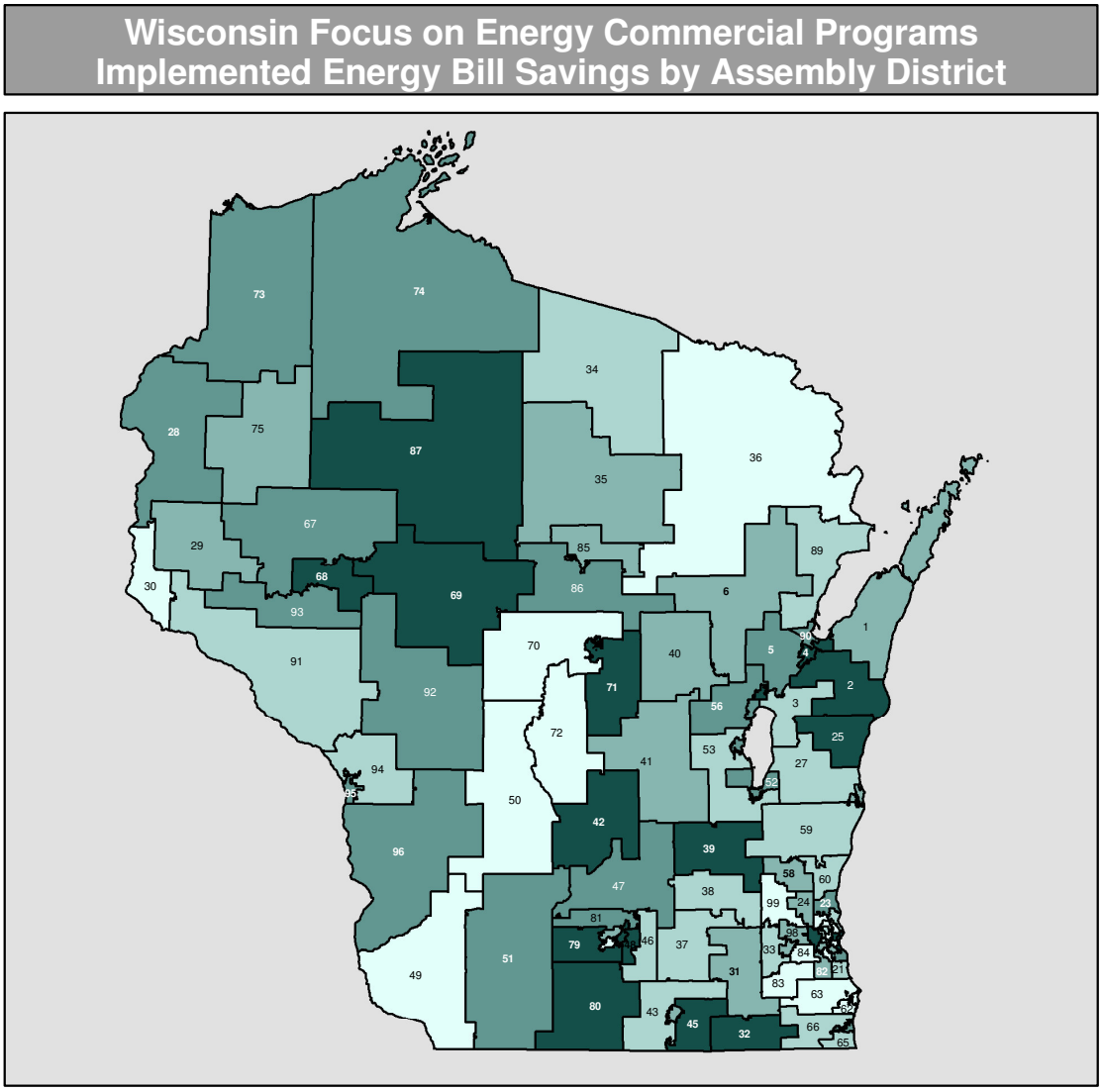


Table A-3. Commercial Program Energy Impacts
(by Assembly District)
Program to Date (July 1, 2001–June 30, 2007)

Assembly District	Annual Dollars Saved	Annual kWh Saved	Annual Therms Saved
1	$436,677	3,643,094	129,131
2	$1,025,691	3,377,834	735,000
3	$372,278	3,432,684	82,844
4	$1,143,564	8,432,769	430,494
5	$577,579	5,038,423	152,475
6	$480,789	3,864,570	154,389
7	$171,458	782,742	104,688
8	$274,744	1,468,048	149,932
9	$498,719	1,621,649	359,107
10	$262,621	1,862,689	105,024
11	$123,354	1,196,123	22,557
12	$234,594	1,727,621	88,505
13	$411,076	2,469,550	201,572
14	$997,466	8,242,951	301,520
15	$528,268	1,585,642	391,393
16	$1,769,083	13,708,995	610,660
17	$396,575	3,001,510	142,863
18	$194,840	713,326	133,647
19	$859,497	6,685,971	294,556
20	$599,897	4,626,974	208,889
21	$330,178	2,782,719	95,294
22	$301,826	1,532,306	171,416
23	$543,514	4,343,840	176,608
24	$467,810	4,083,375	123,288
25	$926,130	6,459,960	379,432
26	$507,016	4,548,625	123,367
27	$312,276	2,489,084	102,026
28	$668,444	5,009,272	244,960
29	$460,449	2,328,217	262,285
30	$235,360	1,989,248	67,457
31	$442,570	2,771,922	207,583
32	$769,945	7,213,421	161,840
33	$280,278	1,857,224	122,978
34	$397,027	3,403,081	109,840
35	$503,292	4,012,404	164,369
36	$246,667	2,137,249	66,327
37	$409,029	3,284,372	131,629
38	$358,254	1,805,983	204,530
39	$752,979	5,898,777	254,601
40	$435,394	4,763,358	34,485
41	$435,306	3,216,103	163,362
42	$1,043,598	9,101,930	275,644
43	$404,512	3,615,349	99,565

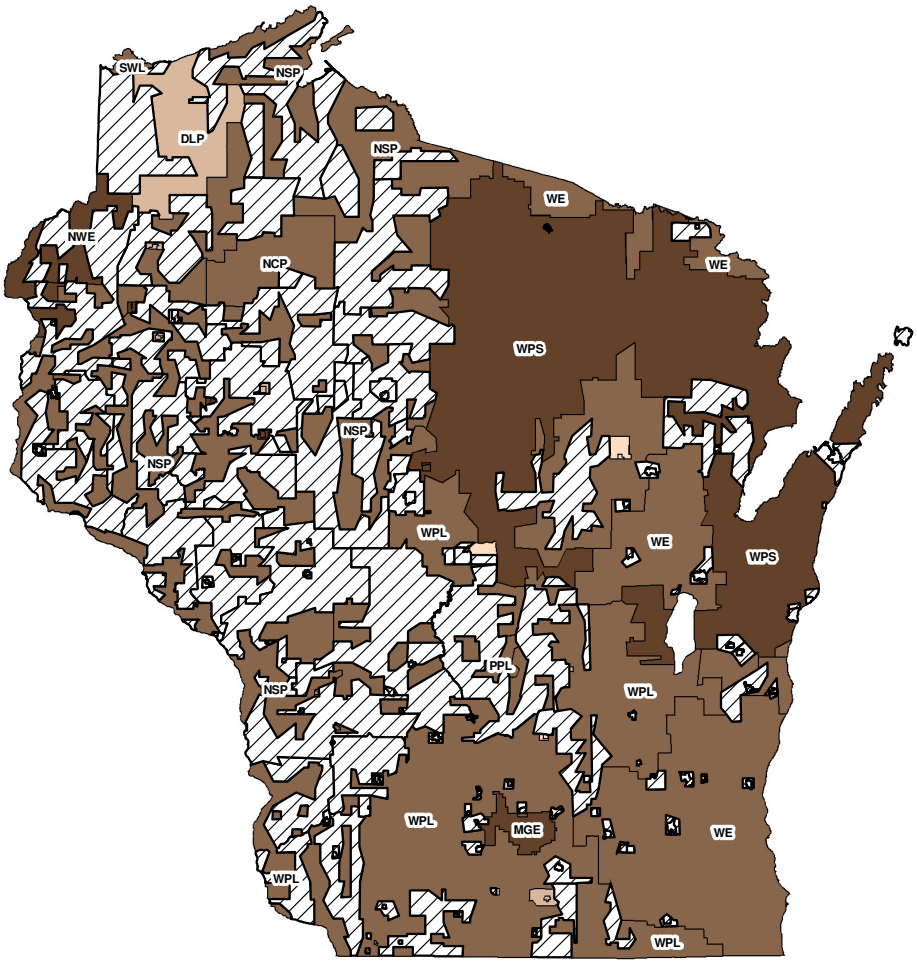
Assembly District	Annual Dollars Saved	Annual kWh Saved	Annual Therms Saved
44	$523,169	4,983,215	103,153
45	$1,037,795	6,325,986	501,268
46	$356,397	1,818,881	201,614
47	$623,155	4,590,554	234,975
48	$831,388	7,430,501	204,641
49	$182,529	1,505,976	55,378
50	$198,128	1,668,337	57,305
51	$562,499	4,249,389	203,296
52	$535,934	4,307,513	172,123
53	$407,678	3,704,333	95,286
54	$530,009	3,389,547	242,764
55	$685,051	4,343,257	316,930
56	$652,387	7,205,948	45,953
57	$1,023,392	7,230,111	411,635
58	$517,561	4,074,516	173,334
59	$309,939	2,508,885	98,059
60	$283,025	2,040,301	110,442
61	$276,760	2,732,087	46,572
62	$193,730	1,658,498	53,767
63	$144,622	1,373,596	28,843
64	$613,903	3,614,823	307,133
65	$293,343	2,829,556	54,883
66	$302,535	2,445,266	96,024
67	$621,235	3,810,786	298,065
68	$794,636	5,878,248	297,597
69	$756,902	5,304,787	307,998
70	$216,531	2,261,367	26,115
71	$1,107,918	8,691,505	373,600
72	$197,932	1,469,645	73,671
73	$573,278	3,273,792	295,294
74	$635,054	4,788,958	230,231
75	$508,647	3,306,167	228,541
76	$269,392	983,841	184,986
77	$516,632	3,844,264	191,605
78	$2,217,370	14,181,088	1,015,601
79	$855,175	7,752,534	201,375
80	$746,383	6,932,445	161,907
81	$594,170	3,897,044	264,052
82	$474,874	4,853,889	66,067
83	$195,042	1,754,353	47,078
84	$245,828	2,541,235	31,824
85	$512,703	5,314,350	65,180
86	$670,948	5,502,292	206,348
87	$1,025,688	5,144,371	587,757
88	$825,277	6,413,469	283,354
89	$314,470	2,822,762	76,388
90	$530,685	4,327,882	165,223

Assembly District	Annual Dollars Saved	Annual kWh Saved	Annual Therms Saved
91	$375,510	2,528,992	161,369
92	$531,224	3,104,914	267,692
93	$617,395	4,369,872	247,660
94	$324,467	3,225,796	52,703
95	$550,507	4,728,229	151,500
96	$545,572	6,023,379	38,658
97	$453,544	3,696,003	141,437
98	$450,018	4,052,018	108,269
99	$234,450	2,015,850	64,338
Not mapped	$48,599	327,307	20,884

* *Unknown District:* The impacts for these participants is not mapped either because their address information is not complete or because their address falls out of the boundaries of participating utility territory according to the GIS mapping application.

Figure A-4.
Wisconsin Focus on Energy Commercial Programs
Per Capita Energy Bill Savings by Electric Utility Territory
Program to Date (July 1, 2001–June 30, 2007)

Wisconsin Focus on Energy Commercial Programs
Per Capita* Energy Bill Savings by Utility Territory



Per Capita Annual Energy Bill Savings by Utility Territory

	$0
	$0.01 - $25.00
	$25.01 - $75.00
	$75.01 - $130.00
	> $130
	Non Participating Utility Territories

The map above portrays the annual electric energy savings realized by projects implemented through programs targeted at commercial sector businesses as of June 30, 2007. Electric savings has been valued at the average cost of electricity for commercial businesses in Wisconsin and summed for all projects within each utility territory and divided by the number of commercial business customers in that utility territory.

*** The unit of population is commercial customers as reported by the utilities in 2003.**

Map Produced by: PA Government Services and Patrick Engineering Inc. of The Focus on Energy Evaluation Team. September, 2007

Table A-4. Commercial Program Electric Impacts
(By Participating Electric Utility)
Program to Date (July 1, 2001–June 30, 2007)

Utility	Map Code	Annual Dollars per Capita	Annual Dollars Saved	Annual kWh Saved	Annual Therms Saved	Number of Customers
Alliant Energy	WPL	$126	$6,825,740	81,162,185	2,465,603	54,010
Bloomer Electric & Water Co		$168	$57,386	682,355	89,493	341
City of Argyle		$0	$0	0	0	96
City of Barron		$33	$10,666	126,828	13,366	321
City of Cornell		$62	$8,825	104,929	3,701	143
City of Evansville		$35	$20,683	245,939	1,499	583
City of Princeton		$37	$5,965	70,932	0	163
City of Shullsburg		$15	$2,481	29,496	0	168
Consolidated Water Power Co	CWP	$24	$4,350	51,723	0	182
Cumberland City of		$216	$48,382	575,289	27,301	224
Dahlberg Light & Power Co	DLP	$34	$36,927	439,083	12,098	1,080
La Farge Municipal Electric Co		$79	$8,727	103,768	369	111
Madison Gas & Electric Co	MGE	$165	$2,989,069	35,541,846	1,860,507	18,070
North Central Power Co Inc	NCP	$83	$35,135	417,776	-315	423
Northwestern Wisconsin Elec Co	NWE	$4,793	$134,213	1,595,872	94,959	28
Pioneer Power & Light Co	PPL	$98	$11,852	140,929	0	121
Spooner City of		$40	$13,875	164,988	18,569	347
Superior Water, Light & Power Co	SWL	$114	$213,065	2,533,468	281,559	1,871
Village of Benton		$17	$1,353	16,093	0	82
Village of Cadott		$1,625	$12,996	154,534	24,892	8
Village of Cashton		$48	$4,898	58,234	1,612	101
Village of Centuria		$0	$0	0	0	69
Village of Gresham		$17	$2,676	31,821	9,513	161
Village of Pardeeville		$8	$1,101	13,095	1,097	135
Village of Stratford		$226	$34,114	405,637	8,298	151
Village of Viola		$0	$0	0	0	85
We Energies	WEP	$113	$11,602,180	137,956,952	6,523,061	103,051
Westfield Electric Co		$0	$0	0	0	129
Wisconsin Public Service Corp	WPS	$136	$6,134,548	72,943,501	3,402,898	45,128
Wonewoc Electric & Water Util		$4	$353	4,200	5,581	79
Xcel Energy	NSP	$89	$3,422,259	40,692,734	2,713,873	38,263
Not mapped*			$2,104,290	25,021,287	1,732,344	

* *Unknown Utility:* The impacts for these participants is not mapped either because their address information is not complete or because their address falls out of the boundaries of participating utility territory according to the GIS mapping application.

Figure A-5.
Wisconsin Focus on Energy Commercial Programs
Per Capita Gas Impacts by Participating Gas Utility
Program to Date (July 1, 2001–June 30, 2007)

The next semiannual report (March 2008) will include maps and data for gas savings by utility territory

Table A-5. Commercial Program Gas Impacts
(By Participating Gas Utility)
Program to Date (July 1, 2001–June 30, 2007)

The next semiannual report (March 2008) will include maps and data for gas savings by utility territory

A.2.2 Industrial Programs

Figure A-6.
Wisconsin Focus on Energy Industrial Programs
Per Capita Energy Bill Savings by County
Program to Date (July 1, 2001–June 30, 2007)

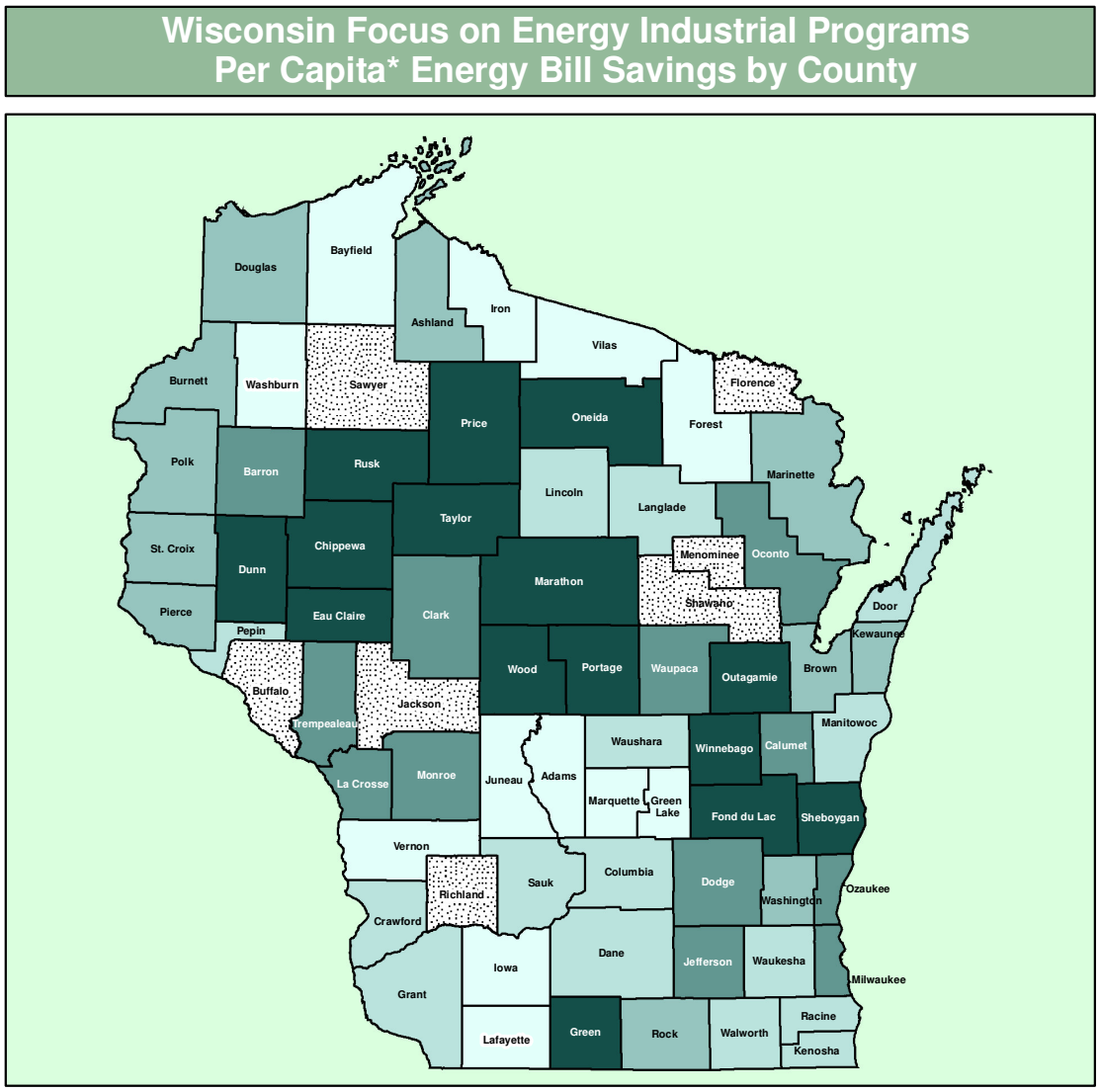


Table A-6. Industrial Program Energy Impacts
(By County)
Program to Date (July 1, 2001–June 30, 2007)

County	Annual Dollars per Capita	Annual kWh Saved	Annual Therms Saved	Eligible Participants
ADAMS	$40	86,388	0	128
ASHLAND	$316	1,312,173	18,002	300
BARRON	$423	1,211,138	147,931	513
BAYFIELD	$42	33,585	10,905	300
BROWN	$370	17,034,163	691,935	4,550
BURNETT	$345	1,480,305	0	252
CALUMET	$548	2,507,973	65,179	386
CHIPPEWA	$1,324	8,437,991	663,431	868
CLARK	$416	917,915	162,487	514
COLUMBIA	$134	1,869,303	4,718	853
CRAWFORD	$155	659,163	2,817	268
DANE	$153	10,956,390	494,745	7,409
DODGE	$463	4,458,843	299,908	1,204
DOOR	$110	704,470	14,102	505
DOUGLAS	$211	788,193	114,460	753
DUNN	$1,415	6,165,284	364,767	510
EAU CLAIRE	$1,026	7,058,614	1,317,660	1,669
FOND DU LAC	$1,191	24,572,798	385,204	1,531
FOREST	$41	171,539	0	249
GRANT	$139	299,300	72,178	638
GREEN	$620	3,826,671	6,438	373
GREEN LAKE	$41	506,395	0	718
IOWA	$16	129,783	0	490
IRON	$98	289,992	0	174
JEFFERSON	$613	4,651,586	401,534	1,091
JUNEAU	$50	136,640	0	160
KENOSHA	$103	2,028,023	65,105	1,786
KEWAUNEE	$306	459,477	92,097	384
LA CROSSE	$493	9,068,528	426,101	1,931
LAFAYETTE	$26	98,746	0	220
LANGLADE	$141	318,173	47,270	461
LINCOLN	$109	496,630	39,039	618
MANITOWOC	$187	643,393	50,555	469
MARATHON	$879	12,618,233	1,310,309	2,310
MARINETTE	$242	2,264,631	81,877	885
MARQUETTE	$49	159,826	0	192
MILWAUKEE	$453	26,792,899	3,907,843	11,962
MONROE	$578	2,185,399	272,150	686
OCONTO	$536	272,668	184,747	369
ONEIDA	$2,057	927,743	2,223,339	1,090
OUTAGAMIE	$920	31,543,330	747,757	2,816
OZAUKEE	$463	6,329,147	338,168	1,522

County	Annual Dollars per Capita	Annual kWh Saved	Annual Therms Saved	Eligible Participants
PEPIN	$101	76,364	10,059	143
PIERCE	$370	1,165,220	59,208	343
POLK	$266	2,959,626	10,450	694
PORTAGE	$3,112	7,551,132	2,973,936	1,083
PRICE	$15,379	9,407,389	3,204,564	241
RACINE	$185	3,952,036	336,953	3,047
ROCK	$235	5,630,560	219,281	2,328
RUSK	$623	1,777,500	36,181	225
SAUK	$151	2,102,148	673	821
SHEBOYGAN	$3,253	18,577,791	3,769,222	1,476
ST. CROIX	$214	1,807,488	92,438	921
TAYLOR	$2,152	109,583	89,674	44
TREMPEALEAU	$473	534,126	68,099	208
VERNON	$53	233,062	3,412	324
VILAS	$75	606,522	0	476
WALWORTH	$127	2,717,660	61,810	1,735
WASHBURN	$12	60,670	611	343
WASHINGTON	$222	3,307,130	222,859	1,864
WAUKESHA	$145	12,051,381	538,296	8,512
WAUPACA	$589	1,583,734	414,550	850
WAUSHARA	$154	185,491	42,941	346
WINNEBAGO	$895	14,043,593	1,346,407	2,404
WOOD	$7,411	8,786,780	2,577,985	412
Not mapped*		225,852	1,699	

* *Unknown County:* The impacts for these participants is not mapped either because their address information is not complete or because their address falls out of the boundaries of participating utility territory according to the GIS mapping application.

Figure A-7.
Wisconsin Focus on Energy Industrial Programs
Implemented Energy Bill Savings by Senate District
Program to Date (July 1, 2001–June 30, 2007)

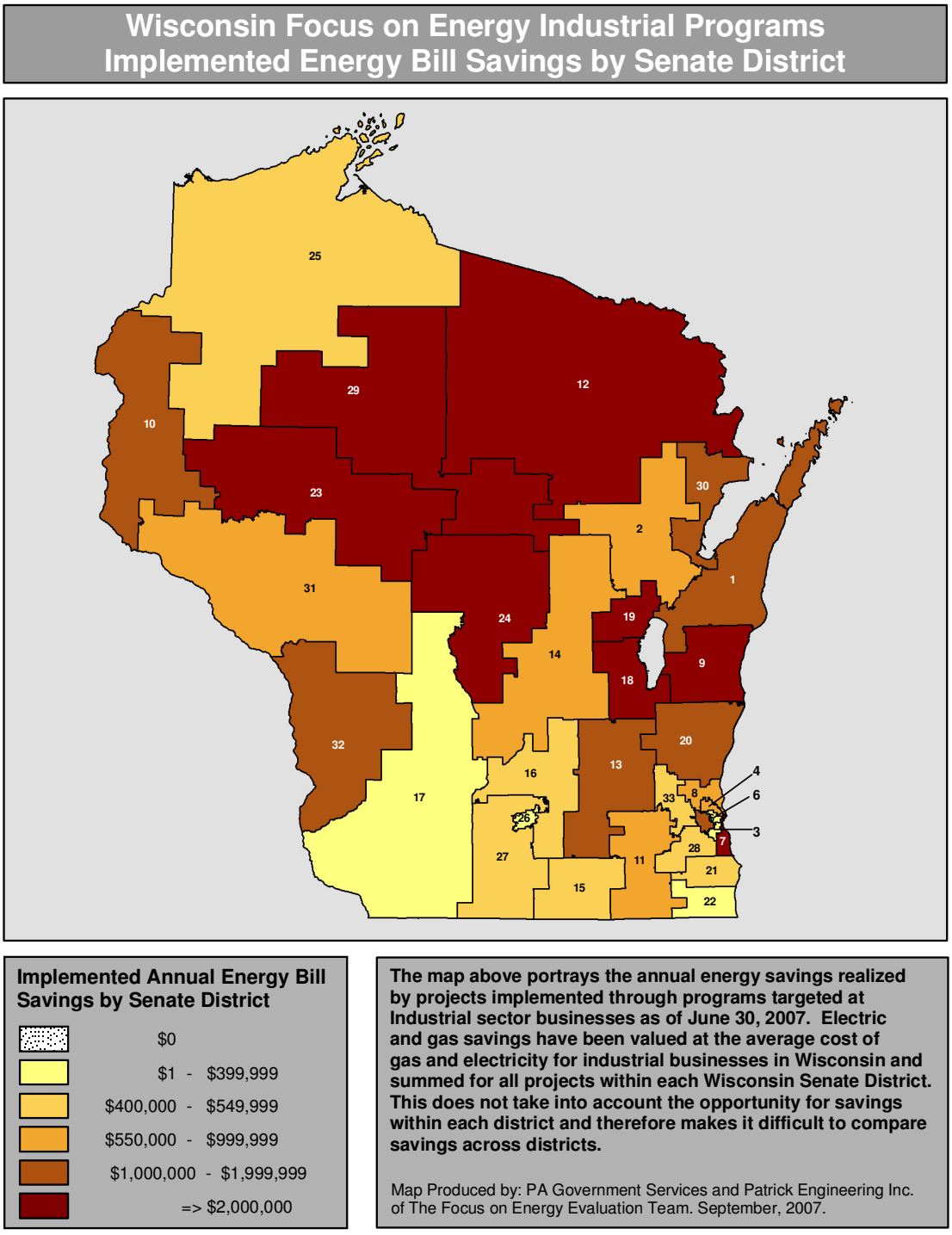


Table A-7. Industrial Program Energy Impacts
(By Senate District)
Program to Date (July 1, 2001–June 30, 2007)

Senate District	Annual Dollars Saved	Annual kWh Saved	Annual Therms Saved
1	$1,597,465	14,558,193	753,499
2	$933,865	8,737,927	426,906
3	$247,243	2,344,098	111,189
4	$993,386	4,916,810	715,729
5	$1,575,473	8,597,729	1,087,323
6	$151,853	1,087,416	89,342
7	$2,171,283	5,118,508	1,900,726
8	$583,006	9,031,456	52,801
9	$4,701,936	17,874,930	3,710,254
10	$1,309,430	13,511,791	523,309
11	$574,840	3,891,728	351,633
12	$2,504,559	3,231,057	2,352,208
13	$1,119,129	8,784,644	612,390
14	$742,985	4,272,055	499,785
15	$545,571	5,608,814	219,281
16	$479,449	4,746,271	203,627
17	$233,658	2,765,905	72,178
18	$2,414,000	34,603,909	385,457
19	$2,885,002	24,590,075	1,462,506
20	$1,147,824	9,709,263	586,301
21	$494,642	3,963,697	265,830
22	$252,611	2,016,362	136,229
23	$2,818,319	15,585,413	1,932,822
24	$6,433,288	16,499,962	5,551,921
25	$508,084	3,696,399	295,463
26	$390,491	3,345,566	196,923
27	$501,384	6,842,869	100,633
28	$458,814	2,829,948	297,168
29	$5,948,299	23,787,172	4,623,590
30	$1,059,867	9,701,635	497,368
31	$793,332	3,816,012	578,202
32	$1,011,106	9,960,753	432,331
33	$411,689	5,672,057	79,443
Not mapped*	$14,952	225,852	1,699

* *Unknown District:* The impacts for these participants is not mapped either because their address information is not complete or because their address falls out of the boundaries of participating utility territory according to the GIS mapping application.

Figure A-8.
Wisconsin Focus on Energy Industrial Programs
Implemented Energy Bill Savings by Assembly District
Program to Date (July 1, 2001–June 30, 2007)

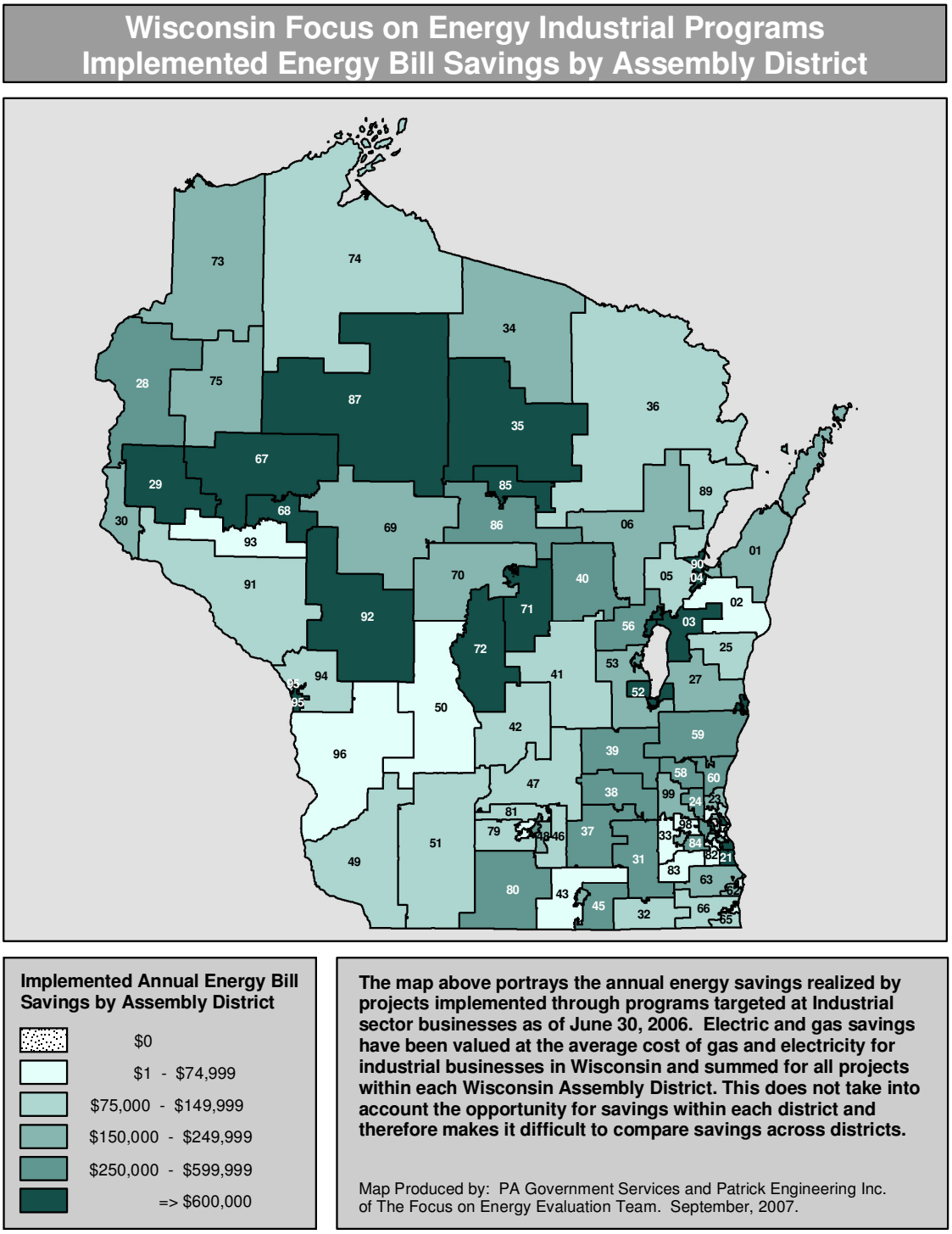


Table A-8. Industrial Program Energy Impacts
(By Assembly District)
Program to Date (July 1, 2001–June 30, 2007)

Assembly District	Annual Dollars Saved	Annual kWh Saved	Annual Therms Saved
1	$174,463	1,189,858	106,199
2	$52,875	602,618	17,724
3	$1,370,127	12,765,717	629,576
4	$630,003	7,836,217	171,985
5	$113,987	764,224	70,174
6	$189,875	137,486	184,747
7	$261	4,439	0
8	$33,138	563,569	0
9	$213,844	1,776,090	111,189
10	$798,422	3,489,674	602,875
11	$180,362	1,178,790	112,854
12	$14,603	248,346	0
13	$998,647	1,777,877	908,647
14	$449,368	4,840,520	167,424
15	$127,457	1,979,332	11,253
16	$9,240	142,508	875
18	$142,612	944,908	88,467
19	$68,148	562,669	35,633
20	$1,053,182	1,870,885	958,511
21	$1,049,953	2,684,953	906,583
22	$82,091	1,372,241	1,426
23	$224,968	3,574,882	15,005
24	$275,948	4,084,333	36,371
25	$85,893	625,004	49,942
26	$4,383,489	16,961,546	3,441,210
27	$232,554	288,379	219,103
28	$268,059	4,443,442	6,895
29	$847,491	7,143,851	434,383
30	$193,879	1,924,497	82,031
31	$413,923	1,186,268	349,767
32	$110,663	1,850,806	1,866
33	$50,254	854,654	0
34	$212,511	1,267,151	140,247
35	$2,195,183	1,028,783	2,169,401
36	$96,865	935,123	42,561
37	$321,491	3,598,081	111,711
38	$319,346	733,098	280,731
39	$478,293	4,453,466	219,948
40	$504,723	1,646,351	414,550
41	$146,403	1,074,750	84,561
42	$91,859	1,550,953	673
43	$39,802	432,697	14,593
44	$239,343	2,500,994	93,785

Assembly District	Annual Dollars Saved	Annual kWh Saved	Annual Therms Saved
45	$266,427	2,675,123	110,904
46	$149,216	277,847	135,039
47	$139,085	2,365,394	0
48	$191,148	2,103,030	68,587
49	$88,622	299,300	72,178
50	$8,034	136,640	0
51	$137,002	2,329,965	0
52	$1,734,033	23,809,450	339,469
53	$163,231	2,679,728	5,755
54	$516,736	8,114,731	40,233
55	$1,722,236	5,842,480	1,401,116
56	$267,693	3,714,138	50,103
57	$895,074	15,033,457	11,287
58	$305,043	2,606,848	154,228
59	$341,915	1,606,304	251,488
60	$500,867	5,496,111	180,585
61	$74,120	535,811	43,307
62	$176,446	1,944,285	63,132
63	$244,076	1,483,602	159,390
64	$59,927	983,741	2,116
65	$116,418	925,795	62,989
66	$76,267	106,825	71,123
67	$1,014,895	7,458,408	585,712
68	$1,556,633	6,935,849	1,167,485
69	$246,791	1,191,155	179,625
70	$208,764	850,725	161,323
71	$3,200,957	7,369,835	2,812,613
72	$3,023,566	8,279,402	2,577,985
73	$158,974	788,193	114,460
74	$124,626	1,635,750	28,906
75	$224,483	1,272,456	152,097
76	$48,150	818,882	0
77	$450	7,662	0
78	$341,891	2,519,023	196,923
79	$82,491	1,001,927	23,961
80	$293,942	4,525,099	28,319
81	$124,951	1,315,843	48,353
82	$48,460	788,887	2,107
83	$52,554	893,774	0
84	$357,800	1,147,288	295,061
85	$1,519,220	8,321,336	1,046,672
86	$479,859	4,035,790	246,498
87	$3,949,220	11,430,046	3,330,420
88	$228,462	3,635,778	14,917
89	$142,309	1,708,114	42,552
90	$689,096	4,357,743	439,899
91	$112,805	610,490	78,158

Assembly District	Annual Dollars Saved	Annual kWh Saved	Annual Therms Saved
92	$630,825	2,360,245	500,044
93	$49,702	845,277	0
94	$82,108	622,875	46,223
95	$870,404	8,445,653	379,878
96	$58,593	892,225	6,230
97	$246,206	3,978,030	12,498
98	$14,052	197,816	2,460
99	$151,430	1,496,211	64,485
Not mapped*	$14,952	225,852	1,699

* *Unknown District:* The impacts for these participants is not mapped either because their address information is not complete or because their address falls out of the boundaries of participating utility territory according to the GIS mapping application.

Figure A-9.
Wisconsin Focus on Energy Industrial Programs
Per Capita Energy Bill Savings by Utility Territory
Program to Date (July 1, 2001–June 30, 2007)

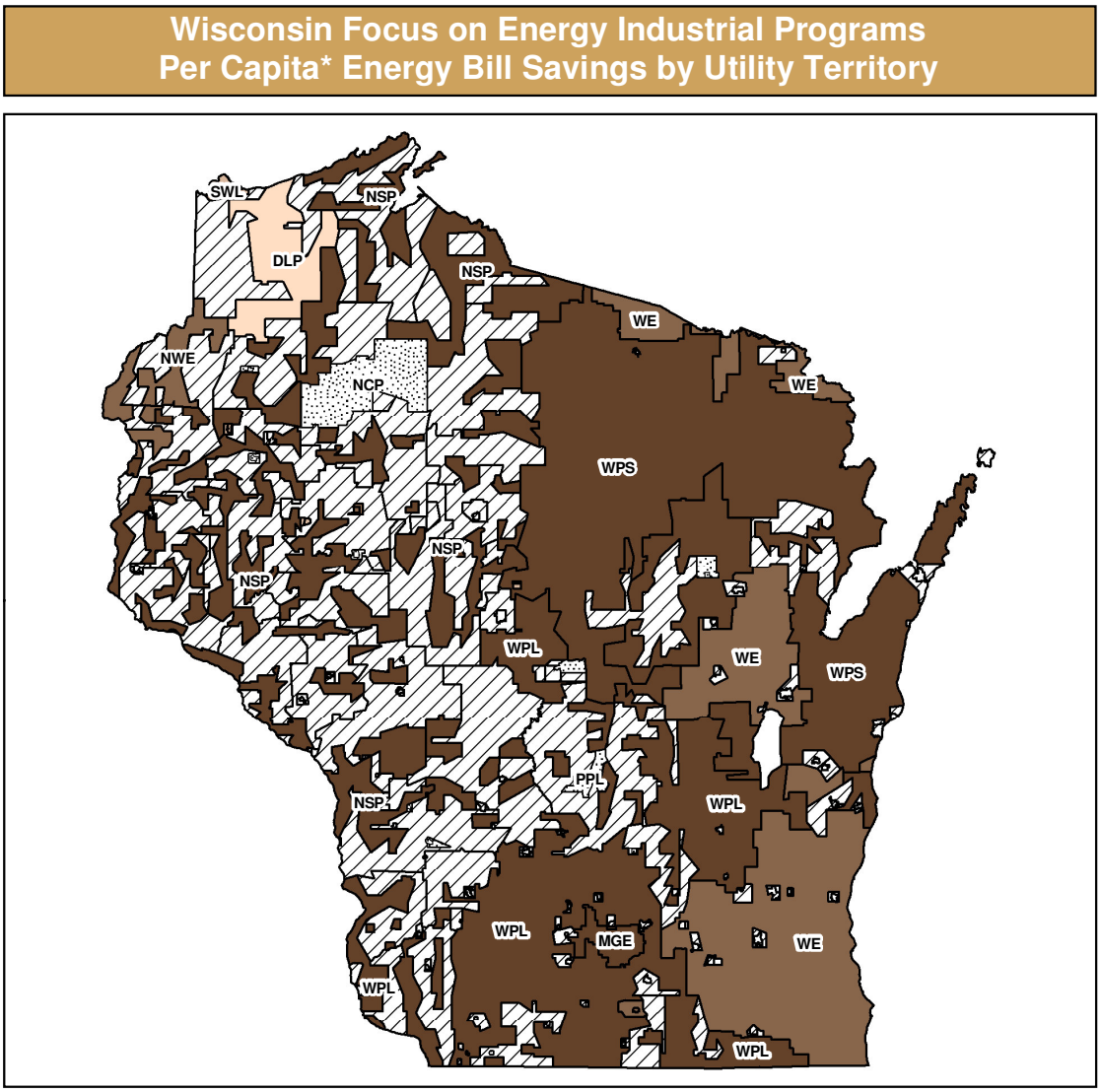


Table A-9. Industrial Program Electric Impacts
(By Participating Electric Utility)
Program to Date (July 1, 2001–June 30, 2006)

Utility	Map Code	Annual Dollars per Capita	Annual Dollars Saved	Annual kWh Saved	Annual Therms Saved	Number of Customers
Alliant Energy	WPL	$4,078	$4,045,025	68,792,939	5,570,554	992
Bloomer Electric & Water Co		$517	$26,344	448,024	1,790	51
City of Argyle		$0	$0	0	0	6
City of Barron		$0	$0	0	0	35
City of Cornell		$2,831	$28,313	481,519	284,903	10
City of Evansville		$3,337	$6,675	113,520	0	2
City of Princeton		$0	$0	0	0	17
City of Shullsburg		$0	$0	0	0	12
Consolidated Water Power Co	CWP	$0	$0	0	0	1
Cumberland City of		$215	$6,016	102,318	2,765	28
Dahlberg Light & Power Co	DLP	$57	$2,235	38,005	0	39
La Farge Municipal Electric Co		$0	$0	0	0	6
Madison Gas & Electric Co	MGE	$7,781	$412,385	7,013,352	271,708	53
North Central Power Co Inc	NCP	$0	$0	0	0	3
Northwestern Wisconsin Elec Co	NWE	$3,298	$92,339	1,570,389	2,724	28
Pioneer Power & Light Co	PPL	$0	$0	0	0	29
Spooner City of		$0	$0	0	611	16
Superior Water, Light & Power Co	SWL	$353	$44,111	750,188	114,460	125
Village of Benton		$0	$0	0	0	0
Village of Cadott		$0	$0	0	0	141
Village of Cashton		$0	$0	0	0	7
Village of Centuria		$0	$0	0	0	0
Village of Gresham		$0	$0	0	0	10
Village of Pardeeville		$0	$0	0	0	20
Village of Stratford		$1,022	$2,044	34,762	0	2
Village of Viola		$0	$0	0	0	0
We Energies	WEP	$1,803	$5,353,555	91,046,856	6,104,855	2,969
Westfield Electric Co		$0	$0	0	0	39
Wisconsin Public Service Corp	WPS	$14,279	$3,241,244	55,123,190	7,516,011	227
Wonewoc Electric & Water Util		$0	$0	0	0	3
Xcel Energy	NSP	$35,455	$2,907,335	49,444,464	6,509,678	82
Not mapped*			$1,232,845	20,966,749	4,726,008	

* *Unknown Utility:* The impacts for these participants is not mapped either because their address information is not complete or because their address falls out of the boundaries of participating utility territory according to the GIS mapping application.

Figure A-10.
Wisconsin Focus on Energy Industrial Programs
Per Capita Gas Impacts by Participating Gas Utility
Program to Date (July 1, 2001–June 30, 2007)

The next semiannual report (March 2008) will include maps and data for gas savings by utility territory

Table A-10. Industrial Program Gas Impacts
(By Participating Gas Utility)
Program to Date (July 1, 2001–June 30, 2006)

The next semiannual report (March 2008) will include maps and data for gas savings by utility territory

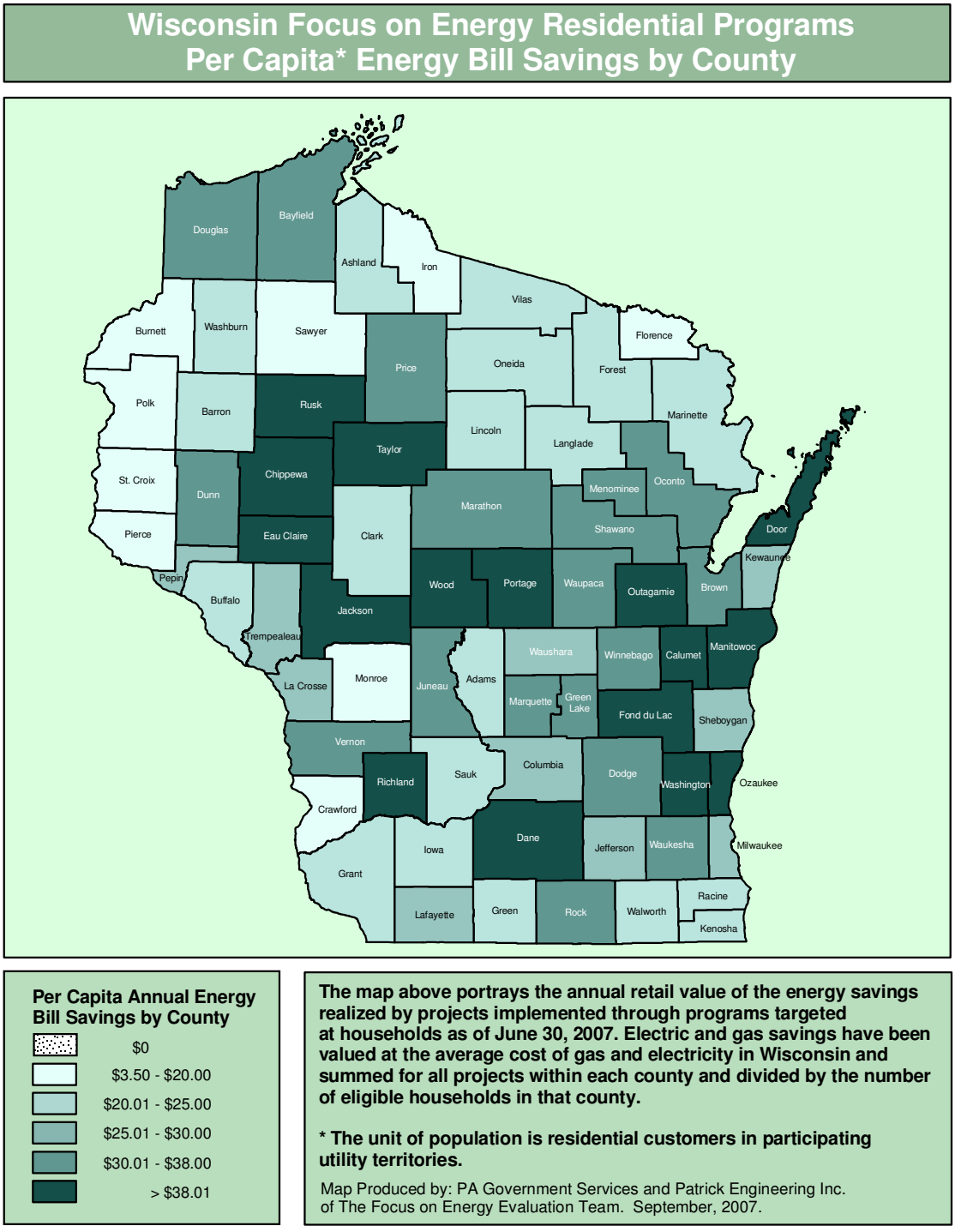
A.3 RESIDENTIAL PROGRAMS

In this section, we summarize the evaluated energy impacts across the Residential Programs through the fourth quarter of FY07 that ended on June 30, 2007. The tables and maps below provide *verified gross energy savings* that are based on the evaluators' review of participants, measures installed, and per-unit savings used by WECC program administrators.

The *"Number of Customers (Households)"* for each county was estimated by determining the proportion of the area of each census block group that was within the boundaries of a utility participating in the Focus on Energy. This proportion was then applied to the population of that census block group to estimate the number of participating households within the block group. These block group estimates were then aggregated to the county level.

The *"Number of Customers"* presented for each of the participating utilities in Table A-11 are based on the number of customers reported by the utilities in 2003.

Figure A-11.
Wisconsin Focus on Energy Residential Programs
Per Capita Energy Bill Savings by County
Program to Date (July 1, 2001–June 30, 2007)



The map above portrays the annual retail value of the energy savings realized by projects implemented through programs targeted at households as of June 30, 2007. Electric and gas savings have been valued at the average cost of gas and electricity in Wisconsin and summed for all projects within each county and divided by the number of eligible households in that county.

*** The unit of population is residential customers in participating utility territories.**

Map Produced by: PA Government Services and Patrick Engineering Inc. of The Focus on Energy Evaluation Team. September, 2007.

Table A-11. Residential Programs Energy Impacts
(by Participating County)
Program to Date (July 1, 2001–June 30, 2007)

County	Annual Dollars per Capita	Annual kWh Saved	Annual Therms Saved	Eligible Participants
ADAMS	$23	506,042	3,943	2,519
ASHLAND	$24	901,095	20,052	4,950
BARRON	$21	1,696,864	15,360	9,114
BAYFIELD	$30	806,819	27,146	3,836
BROWN	$35	22,761,750	579,375	87,295
BUFFALO	$21	306,187	14,479	2,373
BURNETT	$10	316,228	2,536	3,486
CALUMET	$43	4,527,664	81,385	13,028
CHIPPEWA	$46	5,094,205	77,516	13,563
CLARK	$23	1,568,465	14,718	7,798
COLUMBIA	$26	3,420,554	50,274	15,889
CRAWFORD	$17	644,147	5,136	4,209
DANE	$48	49,910,729	1,916,806	154,704
DODGE	$30	7,023,202	95,551	27,767
DOOR	$38	2,064,602	17,410	6,178
DOUGLAS	$30	3,514,529	72,007	14,885
DUNN	$32	2,453,530	22,917	8,903
EAU CLAIRE	$52	13,942,161	139,138	30,944
FLORENCE	$5	80,443	323	1,756
FOND DU LAC	$38	10,790,730	241,839	36,540
FOREST	$24	890,343	4,121	4,043
GRANT	$21	1,884,589	22,244	10,565
GREEN	$25	2,434,777	29,589	11,716
GREEN LAKE	$37	2,114,586	26,822	6,843
IOWA	$22	1,603,028	19,973	8,753
IRON	$13	251,893	3,536	2,384
JACKSON	$68	604,044	3,279	981
JEFFERSON	$26	5,064,147	61,464	22,669
JUNEAU	$32	720,181	13,830	2,814
KENOSHA	$22	9,769,883	166,135	56,057
KEWAUNEE	$27	1,675,100	13,964	7,163
LA CROSSE	$28	8,059,171	170,030	37,142
LAFAYETTE	$26	777,763	8,411	3,563
LANGLADE	$21	1,620,008	9,027	8,452
LINCOLN	$20	1,891,690	30,705	11,553
MANITOWOC	$40	4,473,752	52,137	13,227
MARATHON	$32	11,382,587	199,676	44,418
MARINETTE	$21	3,017,936	28,453	16,834
MARQUETTE	$30	662,942	6,737	2,534
MENOMINEE	$35	267,329	15,135	1,289
MILWAUKEE	$26	72,736,394	1,822,991	377,729

County	Annual Dollars per Capita	Annual kWh Saved	Annual Therms Saved	Eligible Participants
MONROE	$14	1,309,101	14,681	11,207
OCONTO	$32	2,255,135	22,686	8,063
ONEIDA	$22	2,792,026	35,377	15,211
OUTAGAMIE	$45	17,655,976	223,757	46,720
OZAUKEE	$38	7,980,308	115,933	25,245
PEPIN	$28	455,682	5,515	1,916
PIERCE	$17	629,465	3,145	3,977
POLK	$17	1,050,186	24,171	8,142
PORTAGE	$43	7,731,811	171,026	23,159
PRICE	$30	758,468	4,431	2,801
RACINE	$25	15,416,121	129,290	70,819
RICHLAND	$47	868,947	7,456	2,099
ROCK	$34	14,804,495	272,094	54,206
RUSK	$49	1,431,372	12,337	3,369
SAUK	$25	3,342,211	40,732	16,064
SAWYER	$16	630,171	7,924	4,683
SHAWANO	$31	2,421,753	31,824	9,375
SHEBOYGAN	$27	7,381,913	158,060	34,842
ST. CROIX	$18	2,094,782	24,178	13,910
TAYLOR	$128	850,444	4,460	733
TREMPEALEAU	$28	692,294	5,707	2,785
VERNON	$34	1,290,654	13,470	4,360
VILAS	$25	1,808,396	23,873	8,793
WALWORTH	$24	6,450,040	70,631	31,728
WASHBURN	$21	692,305	3,712	3,684
WASHINGTON	$44	13,068,943	286,074	38,827
WAUKESHA	$32	35,334,273	395,140	128,672
WAUPACA	$35	4,284,081	51,937	14,439
WAUSHARA	$29	1,520,261	17,906	6,153
WINNEBAGO	$37	15,865,623	336,492	55,533
WOOD	$45	3,513,027	48,034	9,378
Not mapped*		3,821,439	631,207	

* *Unknown County:* The impacts for these participants are not mapped either because their address information is not complete or because their address falls out of the boundaries of participating utility territory according to the GIS mapping application.

Figure A-12.
Wisconsin Focus on Energy Residential Programs
Implemented Energy Bill Savings by Senate District
Program to Date (July 1, 2001–June 30, 2007)

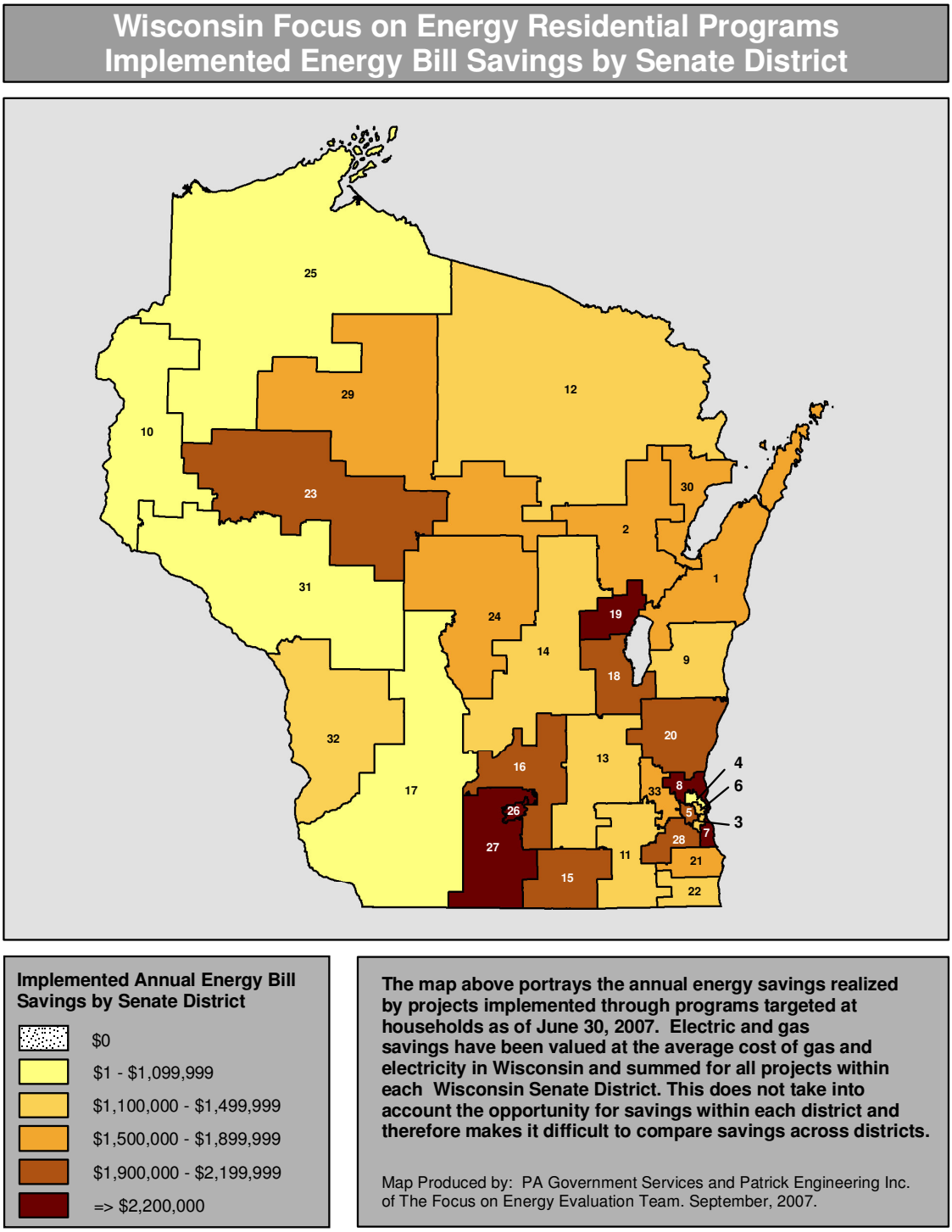


Table A-12. Residential Programs Energy Impacts
(By Senate District)
Program to Date (July 1, 2001–June 30, 2007)

Senate District	Annual Dollars Saved	Annual kWh Saved	Annual Therms Saved
1	$1,886,024	15,509,965	231,523
2	$1,726,865	13,387,791	285,175
3	$1,285,016	10,048,647	204,437
4	$1,008,357	7,263,053	216,412
5	$2,012,748	16,514,738	250,441
6	$1,301,626	7,719,516	428,370
7	$2,491,308	17,949,718	534,213
8	$2,275,382	17,821,124	359,481
9	$1,149,028	8,968,580	184,301
10	$608,235	5,049,122	70,416
11	$1,458,969	12,151,590	165,278
12	$1,406,161	12,017,925	131,744
13	$1,499,596	12,335,313	183,799
14	$1,486,850	12,394,393	167,485
15	$2,001,105	16,156,667	272,618
16	$2,081,605	14,349,049	504,745
17	$916,328	7,696,292	98,020
18	$2,198,780	16,381,460	422,946
19	$2,477,204	20,478,175	294,505
20	$2,006,646	15,818,287	307,850
21	$1,511,608	13,242,307	112,541
22	$1,363,136	10,840,215	200,605
23	$2,159,714	18,589,597	190,525
24	$1,513,389	11,945,610	230,770
25	$1,066,717	8,527,454	152,980
26	$3,525,400	22,829,252	987,325
27	$2,391,246	16,971,531	535,906
28	$2,120,783	18,243,839	188,050
29	$1,639,875	13,386,557	210,230
30	$1,825,476	13,657,573	345,980
31	$919,494	7,576,680	111,515
32	$1,304,009	10,294,528	198,697
33	$1,830,240	15,197,919	211,473
Not mapped*	$683,570	3,119,322	309,081

* *Unknown district:* The impacts for these participants are not mapped either because their address information is not complete or because their address falls out of state boundaries according to the GIS mapping application.

Figure A-13.
Wisconsin Focus on Energy Residential Programs
Implemented Energy Bill Savings by Assembly District
Program to Date (July 1, 2001–June 30, 2007)

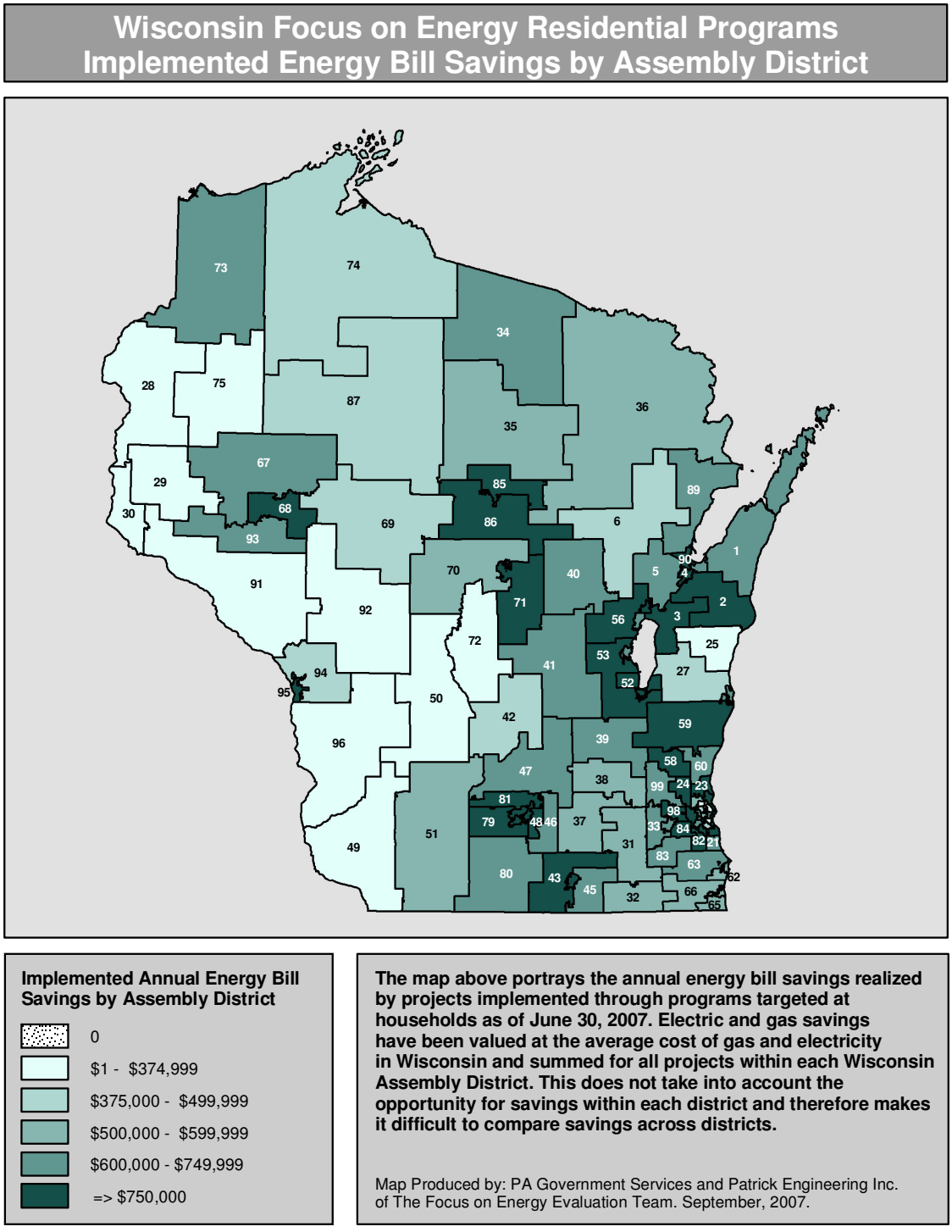


Table A-13. Residential Programs Energy Impacts
(By Assembly District)
Program to Date (July 1, 2001–June 30, 2007)

Assembly District	Annual Dollars Saved	Annual kWh Saved	Annual Therms Saved
1	$502,720	4,353,919	41,939
2	$682,018	5,488,028	94,579
3	$701,331	5,668,453	95,006
4	$735,304	5,858,319	107,232
5	$600,865	4,260,584	135,019
6	$390,646	3,268,413	42,925
7	$707,780	5,433,670	121,699
8	$209,660	1,612,759	35,763
9	$367,568	3,002,140	46,975
10	$299,060	2,241,603	56,307
11	$253,757	1,769,958	59,663
12	$455,486	3,251,187	100,421
13	$541,200	4,467,472	64,920
14	$859,477	7,087,801	103,727
15	$612,046	4,959,228	81,793
16	$501,314	2,197,563	234,778
17	$344,251	2,782,641	46,610
18	$456,062	2,739,312	146,981
19	$1,115,262	6,598,467	368,457
20	$751,276	6,038,412	104,806
21	$624,770	5,312,840	60,950
22	$730,299	5,539,949	131,564
23	$767,782	6,078,217	115,465
24	$777,380	6,203,500	112,472
25	$266,781	2,235,910	28,969
26	$496,311	3,613,882	103,005
27	$385,966	3,119,079	52,326
28	$160,500	1,244,843	26,456
29	$295,356	2,445,718	34,743
30	$152,380	1,358,561	9,217
31	$465,026	3,890,833	51,089
32	$415,462	3,398,078	52,668
33	$578,469	4,862,560	61,522
34	$514,611	4,290,165	57,935
35	$450,352	3,817,214	45,053
36	$441,198	3,910,546	28,756
37	$444,570	3,705,994	50,073
38	$433,501	3,373,736	70,423
39	$621,609	5,256,382	63,303
40	$536,489	4,525,872	55,600
41	$564,706	4,746,622	60,080
42	$385,660	3,121,939	51,805

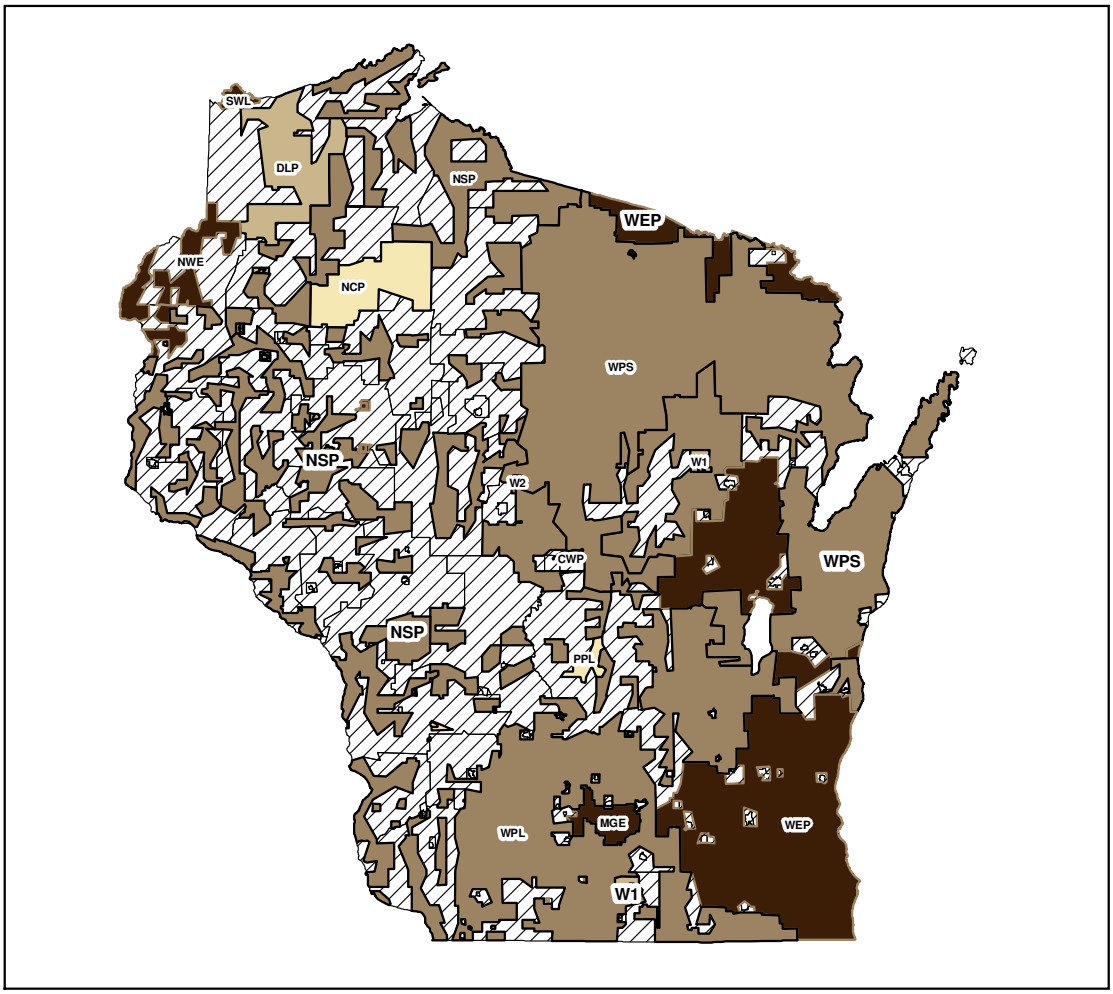
Assembly District	Annual Dollars Saved	Annual kWh Saved	Annual Therms Saved
43	$709,488	6,193,947	54,753
44	$735,279	5,506,021	138,914
45	$556,338	4,456,699	78,951
46	$505,373	3,345,060	135,016
47	$590,392	4,781,981	79,061
48	$985,660	6,220,286	290,668
49	$243,629	2,050,234	25,703
50	$233,326	1,934,819	27,199
51	$439,374	3,711,240	45,118
52	$817,571	6,066,080	159,515
53	$766,375	5,877,145	132,346
54	$614,834	4,438,235	131,084
55	$580,716	4,808,950	68,285
56	$1,084,122	8,869,219	137,241
57	$812,367	6,800,007	88,978
58	$778,037	5,917,177	138,806
59	$655,348	5,045,468	111,394
60	$573,215	4,855,207	57,650
61	$486,478	4,664,119	9
62	$467,710	3,824,620	59,363
63	$557,419	4,753,567	53,168
64	$463,380	3,338,159	99,405
65	$451,685	3,779,673	49,581
66	$448,071	3,722,383	51,619
67	$498,443	4,340,541	39,452
68	$1,287,038	11,345,982	89,432
69	$374,233	2,903,074	61,641
70	$425,323	3,503,121	51,724
71	$829,885	6,331,964	146,213
72	$258,181	2,110,525	32,833
73	$497,754	3,942,532	74,674
74	$330,519	2,517,153	58,654
75	$238,444	2,067,768	19,652
76	$1,158,901	7,146,199	356,819
77	$1,069,193	7,872,358	214,069
78	$1,297,343	7,811,045	416,437
79	$1,027,309	6,899,257	265,502
80	$556,826	4,580,900	68,196
81	$807,170	5,491,947	202,208
82	$764,680	6,518,888	73,132
83	$623,847	5,303,225	61,019
84	$732,264	6,421,806	53,899
85	$636,388	4,892,724	108,781
86	$639,399	5,262,243	78,125
87	$364,087	3,231,591	23,324
88	$594,437	4,408,537	116,158
89	$504,483	4,102,694	66,067

Assembly District	Annual Dollars Saved	Annual kWh Saved	Annual Therms Saved
90	$726,556	5,146,342	163,756
91	$204,032	1,649,118	27,635
92	$224,062	2,039,741	9,765
93	$491,399	3,887,822	74,115
94	$385,003	3,293,250	35,821
95	$665,932	4,819,865	140,828
96	$253,074	2,181,414	22,047
97	$510,019	4,188,600	63,113
98	$719,264	5,966,817	83,628
99	$600,985	5,042,764	64,732
Not mapped*	$683,570	3,119,322	309,081

* *Unknown District*: The impacts for these participants is not mapped either because their address information is not complete or because their address falls out of state boundaries according to the GIS mapping application.

Figure A-14.
Wisconsin Focus on Energy Residential Programs
Per Capita Energy Bill Savings by Utility Territory
Program to Date (July 1, 2001–June 30, 2007)

Wisconsin Focus on Energy Residential Programs
Per Capita* Energy Bill Savings by Utility Territory



Per Capita Annual Energy Bill Savings by Utility Territory

- $0
- $0.01 - $6.00
- $6.01 - $14.00
- $14.01 - $20.00
- > $20.01
- Non Participating Utility Territories

The map above portrays the annual electricity bill savings realized by projects implemented through programs targeted at households as of June 30, 2007. Electric savings has been valued at the average cost of electricity in Wisconsin and summed for all projects within each utility territory and divided by the number of residential customers in that utility territory.

*** The unit of population is residential customers as reported by the utilities in 2003.**

Map Produced by: PA Government Services and Patrick Engineering Inc. of The Focus on Energy Evaluation Team. September, 2007.

Table A-14. Residential Programs Electric Impacts
(By Participating Electric Utility)
Program to Date (July 1, 2001–June 30, 2007)

Utility	Map Code	Annual Dollars per Capita	Annual Dollars Saved	Annual kWh Saved	Annual Therms Saved	Number of Customers
Alliant Energy	WPL	$19	$7,355,966	70,527,003	1,358,607	384,563
Bloomer Electric & Water Co		$13	$20,650	197,990	1,326	1,570
City of Argyle		$21	$8,451	81,026	272	396
City of Barron		$8	$11,788	113,021	1,069	1,488
City of Cornell		$38	$26,448	253,577	9,823	701
City of Evansville		$14	$49,375	473,398	10,572	3,528
City of Princeton		$11	$7,342	70,392	670	667
City of Shullsburg		$8	$5,437	52,129	381	679
Consolidated Water Power Co	CWP	$19	$18,868	180,903	2,823	987
Cumberland City of		$14	$16,133	154,682	1,693	1,113
Dahlberg Light & Power Co	DLP	$8	$80,248	769,392	9,790	9,644
La Farge Municipal Electric Co		$3	$1,385	13,283	145	449
Madison Gas & Electric Co	MGE	$31	$3,654,597	35,039,283	1,511,231	116,977
North Central Power Co Inc	NCP	$6	$24,136	231,405	2,715	4,185
Northwestern Wisconsin Elec Co	NWE	$551	$39,670	380,344	11,706	72
Pioneer Power & Light Co	PPL	$5	$8,790	84,279	682	1,937
Spooner City of		$10	$12,438	119,253	2,094	1,254
Superior Water, Light & Power Co	SWL	$22	$273,757	2,624,709	67,863	12,462
Village of Benton		$2	$784	7,518	150	432
Village of Cadott		$27	$18,095	173,489	2,746	660
Village of Cashton		$16	$7,396	70,915	1,141	472
Village of Centuria		$2	$765	7,330	1,120	387
Village of Gresham		$10	$9,564	91,692	426	924
Village of Pardeeville		$15	$18,302	175,474	915	1,199
Village of Stratford		$32	$21,599	207,084	2,038	673
Village of Viola		$2	$806	7,730	388	336
We Energies	WEP	$21	$20,202,996	193,700,823	3,603,235	953,667
Westfield Electric Co		$0	$0	0	0	572
Wisconsin Public Service Corp	WPS	$20	$7,247,587	69,487,895	1,409,235	367,836
Wonewoc Electric & Water Util		$6	$2,800	26,847	385	438
Xcel Energy	NSP	$19	$3,893,254	37,327,463	552,974	201,970
Not mapped*			$3,315,015	31,783,461	731,221	

* *Unknown Utility:* The impacts for these participants is not mapped either because their address information is not complete or because their address falls out of the boundaries of participating utility territory according to the GIS mapping application.

Figure A-15.
Wisconsin Focus on Energy Residential Programs
Per Capita Gas Impacts by Participating Gas Utility
Program to Date (July 1, 2001–June 30, 2007)

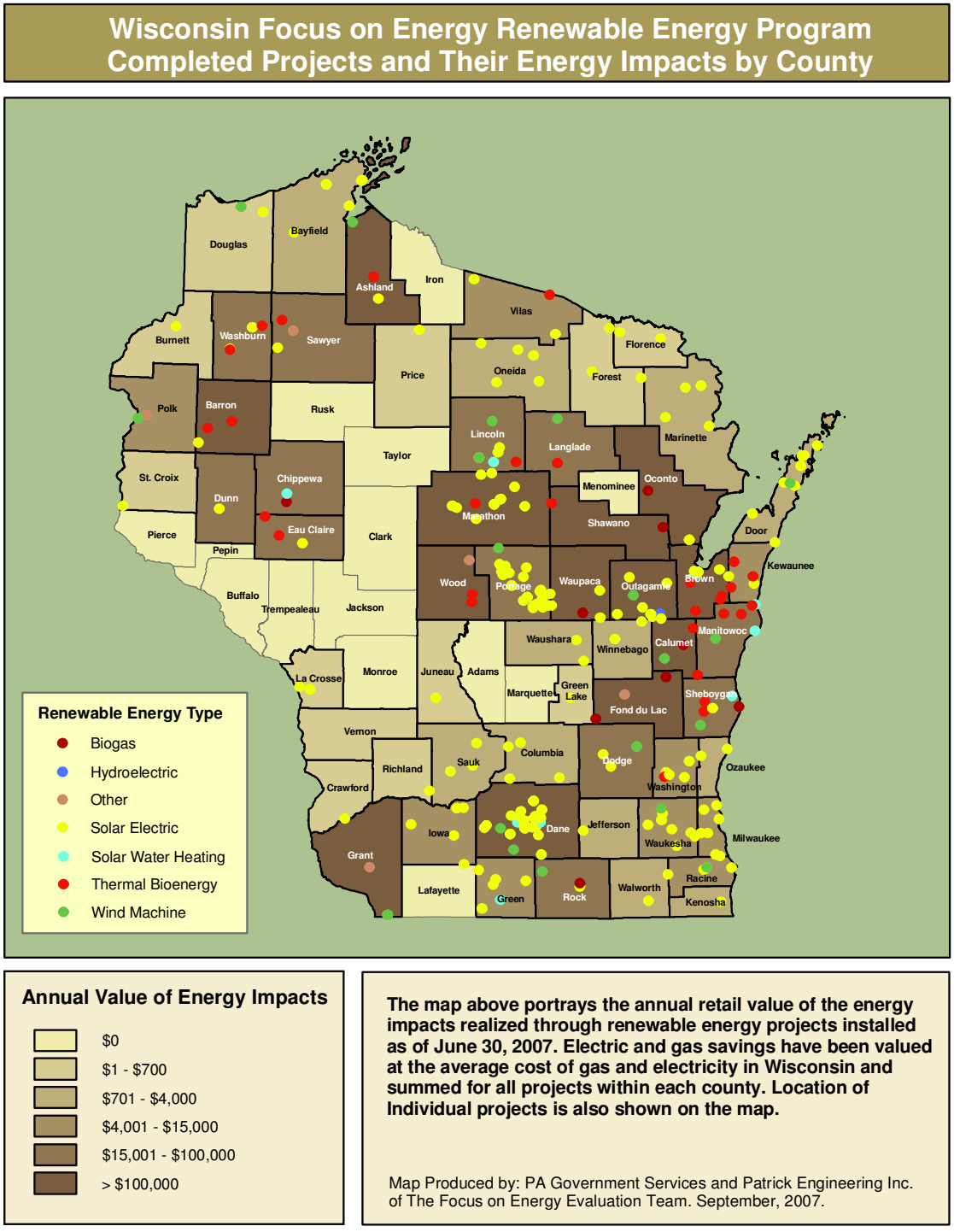
The next semiannual report (March 2008) will include maps and data for gas savings by utility territory

Table A-15. Residential Programs Gas Impacts
(By Participating Gas Utility)
Program to Date (July 1, 2001–June 30, 2007)

The next semiannual report (March 2008) will include maps and data for gas savings by utility territory

A.4 RENEWABLE ENERGY PROGRAM

Figure A-16.
Wisconsin Focus on Energy Renewable Energy Program
Completed Projects and Their Energy Impacts by County
Program to Date (July 1, 2001–June 30, 2007)



Annual Value of Energy Impacts

- $0
- $1 - $700
- $701 - $4,000
- $4,001 - $15,000
- $15,001 - $100,000
- > $100,000

The map above portrays the annual retail value of the energy impacts realized through renewable energy projects installed as of June 30, 2007. Electric and gas savings have been valued at the average cost of gas and electricity in Wisconsin and summed for all projects within each county. Location of Individual projects is also shown on the map.

Map Produced by: PA Government Services and Patrick Engineering Inc. of The Focus on Energy Evaluation Team. September, 2007.

Table A-16. Renewable Programs Energy Impacts
(By County)
Program to Date (July 1, 2001–June 30, 2007)

County	Annual Dollars
ASHLAND	318,683
BARRON	158,831
BAYFIELD	1,494
BROWN	496,015
BURNETT	43
CALUMET	200,748
CHIPPEWA	22,383
COLUMBIA	2,486
CRAWFORD	134
DANE	1,422,337
DODGE	17,710
DOOR	3,941
DOUGLAS	464
DUNN	214
EAU CLAIRE	38,362
FLORENCE	143
FOND DU LAC	1,036,442
FOREST	404
GRANT	27,319
GREEN	8,922
GREEN LAKE	666
IOWA	1,222
JEFFERSON	252
JUNEAU	50
KENOSHA	1,265
KEWAUNEE	4,788
LA CROSSE	548
LANGLADE	18,369
LINCOLN	19,323
MANITOWOC	15,820
MARATHON	323,652

County	Annual Dollars
MARINETTE	872
MILWAUKEE	2,994
OCONTO	210,450
ONEIDA	758
ONEIDA	159
OUTAGAMIE	680,451
OZAUKEE	777
POLK	4,592
PORTAGE	14,857
PRICE	260
RACINE	5,781
RICHLAND	143
ROCK	30,472
SAUK	1,913
SAWYER	20,461
SHAWANO	554,683
SHEBOYGAN	83,856
ST. CROIX	84
UNKNOWN	294,201
VILAS	7,473
WALWORTH	1,686
WASHBURN	40,121
WASHINGTON	12,954
WAUKESHA	9,095
WAUPACA	177,864
WAUSHARA	955
WINNEBAGO	550
WOOD	1,297,744
NOT MAPPED	294,201

APPENDIX B: RESIDENTIAL DEFAULT SAVINGS VALUES USED FOR FY07

The following table lists default/deemed energy savings by measure (used for FY07) for the Residential Programs, as of June 30, 2007.

Table B-1. Residential Programs: Default/Deemed Energy Savings By Measure (as of June 30, 2007)

Program	Program Initiative	Measure	Qualifier	Deemed Gross kWh	Deemed Gross kW	Deemed Gross Therms	Deemed Verified kWh	Deemed Verified kW	Deemed Verified Therms	Deemed Net kWh	Deemed Net kW	Deemed Net Therms
EHCI	EHCI	>=90% modulating hot water	N/A	0	0	98	0	0	98	0	0	98
EHCI	EHCI	>=90% non-modulating hot water	N/A	0	0	98	0	0	98	0	0	98
EHCI	EHCI	90+ AFUE Boiler	N/A	0	0	98	0	0	98	0	0	98
EHCI	EHCI	90+ AFUE with ECM	N/A	773	0.1	20	773	0.1	20	618	0.08	16
EHCI	EHCI	SEER 14	N/A	82	0.2	0	82	0.2	0	82	0.2	0
EHCI	EHCI	SEER 15	N/A	154	0.37	0	154	0.37	0	154	0.37	0
EHCI	EHCI	SEER 16	N/A	216	0.52	0	216	0.52	0	216	0.52	0
EHCI	EHCI	SEER 17	N/A	271	0.65	0	271	0.65	0	271	0.65	0
EHCI	EHCI	SEER 18	N/A	321	0.77	0	321	0.77	0	321	0.77	0
EHCI	EHCI	SEER 19	N/A	364	0.87	0	364	0.87	0	364	0.87	0
EHCI	EHCI	SEER 20	N/A	404	0.97	0	404	0.97	0	404	0.97	0
EHCI	EHCI	SEER 20+	N/A	917	2.2	0	917	2.2	0	917	2.2	0
ENERGY STAR	Customer Rewards	CFL	N/A	66	0.002	0	66	0.002	0	66	0.002	0
ENERGY STAR	Customer Rewards	Clothes Washer	N/A	266	0	22	266	0	22	266	0	22
ENERGY STAR	Customer Rewards	Dehumidifier	N/A	50	0.05	0	50	0.05	0	50	0.05	0
ENERGY STAR	Customer Rewards	Freezer	N/A	42	0	0	42	0	0	42	0	0
ENERGY STAR	Customer Rewards	Indoor Fixture/Lamp	N/A	40.1	0	0	40.1	0	0	40.1	0	0
ENERGY STAR	Customer Rewards	Refrigerator	N/A	66	0.01	0	66	0.01	0	66	0.01	0
ENERGY STAR	Sales Rewards	Clothes Washer	N/A	242	0	8	242	0	8	188.76	0	6.24
ENERGY STAR	Sales Rewards	Dishwasher	N/A	90	0	5	90	0	5	90	0	5
ENERGY STAR	Sales Rewards	Refrigerator	N/A	66	0.01	0	66	0.01	0	66	0.01	0
HPES	EHCI	Water Heater - Fuel Switch	N/A	3680	0.3	-195	3680	0.3	-195	3680	0.3	-195
HPES	Whole House	Attic Insulation	N/A	160	0.118	100	160	0.118	100	99.2	0.07316	62

Program	Program Initiative	Measure	Qualifier	Deemed Gross kWh	Deemed Gross kW	Deemed Gross Therms	Deemed Verified kWh	Deemed Verified kW	Deemed Verified Therms	Deemed Net kWh	Deemed Net kW	Deemed Net Therms
HPES	Whole House	Chimney Liner	N/A	0	0	81	0	0	81	0	0	81
HPES	Whole House	Floor Insulation	N/A	126	0.093	79	126	0.093	79	107	0.079	67
HPES	Whole House	Foundation Insulation	Exterior	59	0	49	59	0	49	51	0	41
HPES	Whole House	Foundation Insulation	Interior	172	0	140	172	0	140	146	0	119
HPES	Whole House	High Pressure Sodium Lighting	N/A	173	0	0	173	0	0	173	0	0
HPES	Whole House	Sidewall Insulation	1 inch Foam Continuous	60	0.049	41	60	0.049	41	30	0.0245	20.5
HPES	Whole House	Sidewall Insulation	1/2 inch Foam Continuous	36	0.029	25	36	0.029	25	18	0.0145	12.5
HPES	Whole House	Sidewall Insulation	Cavity	326	0.264	225	326	0.264	225	163	0.132	112.5
HPES	Whole House	Sill Box Insulation	N/A	53	0	39	53	0	39	45	0	33
HPES	Whole House	Water Heater - Poor Draft	N/A	0	0	114	0	0	114	0	0	114
THPES	Whole House	Home Weatherization	N/A	1192	0.96	295	1192	0.96	295	1192	0.96	295
WESH	Reward Items	90+ AFUE with ECM	N/A	773	0.1	20	773	0.1	20	618	0.08	16
WESH	Reward Items	Ceiling Fan	N/A	175	0	0	175	0	0	175	0	0
WESH	Reward Items	Clothes Washer	N/A	76	0	29	230	0	9	179.4	0	7.02
WESH	Reward Items	Light Fixtures (INDOOR ENERGY STAR)	N/A	104	0.004	0	104	0.004	0	104	0.004	0
WESH	Reward Items	Refrigerator	N/A	66	0.01	0	66	0.01	0	66	0.01	0
WESH	Reward Items	SEER 12	N/A	0	0	0	0	0	0	0	0	0
WESH	Whole House	Certified Home	N/A	0	0	100	0	0	100	0	0	100

APPENDIX C: MEASURE LIFETIME AND NET INCREMENTAL COSTS BY PROGRAM BY B/C MEASURE CATEGORY

Table C-1. Measure Lifetime and Net Incremental Costs by Program by B/C Measure Category

BCI_ID	Program	Measure Category BC	Measure Life	NIC Value	NIC Unit
1101	Agriculture	CFL	6	2.2	avoided cost
1102	Agriculture	HVAC	15	2.5	avoided cost
1103	Agriculture	Manufacturing Process	12	1.29	avoided cost
1104	Agriculture	Motor	16	1.29	avoided cost
1105	Agriculture	Other Lighting	15	2.2	avoided cost
1107	Agriculture	Other	17	2.9	avoided cost
1201	Commercial	CFL	6	2.2	avoided cost
1202	Commercial	HVAC	15	2.5	avoided cost
1203	Commercial	Manufacturing Process	12	1.29	avoided cost
1204	Commercial	Motor	16	1.29	avoided cost
1205	Commercial	Other Lighting	15	2.2	avoided cost
1206	Commercial	Building Shell	10	6.18	avoided cost
1207	Commercial	Other	19	2.9	avoided cost
1301	Industrial	CFL	6	2.2	avoided cost
1302	Industrial	HVAC	15	2.5	avoided cost
1303	Industrial	Manufacturing Process	12	1.29	avoided cost
1304	Industrial	Motor	16	1.29	avoided cost
1305	Industrial	Other Lighting	15	2.2	avoided cost
1306	Industrial	Building Shell	10	6.18	avoided cost
1307	Industrial	Other	28	2.9	avoided cost
1401	Schools & Government	CFL	6	2.2	avoided cost
1402	Schools & Government	HVAC	15	2.5	avoided cost
1403	Schools & Government	Manufacturing Process	12	1.29	avoided cost
1404	Schools & Government	Motor	16	1.29	avoided cost
1405	Schools & Government	Other Lighting	15	2.2	avoided cost
1406	Schools & Government	Building Shell	10	6.18	avoided cost
1407	Schools & Government	Other	10	2.9	avoided cost
1501	Channel EHCI	CFL	6	2.2	avoided cost
1502	Channel EHCI	HVAC	15	2.5	avoided cost
1503	Channel EHCI	Manufacturing Process	12	1.29	avoided cost
1504	Channel EHCI	Motor	16	1.29	avoided cost
1505	Channel EHCI	Other Lighting	15	2.2	avoided cost
1506	Channel EHCI	Building Shell	10	6.18	avoided cost
1507	Channel EHCI	Other	19	2.9	avoided cost
1601	Channel Lighting	CFL	6	2.2	avoided cost
1602	Channel Lighting	HVAC	15	2.5	avoided cost
1603	Channel Lighting	Manufacturing Process	12	1.29	avoided cost
1604	Channel Lighting	Motor	16	1.29	avoided cost
1605	Channel Lighting	Other Lighting	15	2.2	avoided cost
1606	Channel Lighting	Building Shell	10	6.18	avoided cost
1607	Channel Lighting	Other	19	2.9	avoided cost
2107	ACES	Other	8	0.05207	kWh

BCI_ID	Program	Measure Category BC	Measure Life	NIC Value	NIC Unit
2207	EHCI	Other	20	1.16155	kWh
2208	EHCI	ECM Furnace	23	850	unit
2212	EHCI	SEER 12	20	350	unit
2213	EHCI	SEER 13	20	700	unit
2214	EHCI	SEER 14+	20	350	unit
2301	ENERGY STAR	CFL	6	4	unit
2305	ENERGY STAR	Other Lighting	25	0.06734	kWh
2307	ENERGY STAR	Other	12	0.75188	kWh
2309	ENERGY STAR	Clothes Washers	12	200	unit
2407	HPES	Other	25	6.41556	therm
2408	HPES	ECM Furnace	23	850	unit
2412	HPES	SEER 12	20	350	unit
2413	HPES	SEER 13	20	700	unit
2414	HPES	SEER 14+	20	1050	unit
2420	HPES	Air Sealing	25	375	home
2421	HPES	Attic Insulation	25	900	home
2422	HPES	Sidewall Insulation	25	1800	home
2507	THPES	Other	25	6100	home
2607	WESH	Other	12	0	unit
2608	WESH	ECM Furnace	23	0	unit
2612	WESH	SEER 12	20	0	unit
2613	WESH	SEER 13	20	0	unit
2614	WESH	SEER 14+	20	0	unit
2630	WESH	Home Certification	50	2445	home
4101	Renewables	Solar Electric	25	6.8	kWh
4102	Renewables	Wind	20	1.37	kWh
4103	Renewables	Solar Water Heating	20	16.1	therm
4104	Renewables	Biomass	20	3.06	kWh
4105	Renewables	Biomass-Combustion	20	1.92	therm
4107	Renewables	Other	25	0.2	kWh

APPENDIX D: ENDNOTES

Endnotes include sources and references supporting this report.

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[i] *Economic Development Benefits: FY07 Economic Impacts Report*. Lisa Petraglia, Glen Weisbrod, Brian Baird. Final: February 23, 2007.

[ii] *Estimating Seasonal and Peak Environmental Emissions Factors.* With Carmen Best, David Sumi, Bryan Ward, Bryan Zent, and Karl Hausker. Report for the Wisconsin Department of Administration, Division of Energy Focus on Energy statewide evaluation. May 2004.

[iii] The Renewable Energy Program savings are evaluation-verified gross, not net.

[iv] *Interim Benefit-Cost Analysis: FY07 Evaluation Report*. Miriam L. Goldberg, Chris Clark, Sander Cohan. Final: February 26, 2007.

[v] The two most significant limitations of the POS system will be addressed by including: 1) a large and representative sample of both participating and nonparticipating Wisconsin retailers; and 2) all market channels known to sell residential lighting products.

[vi] State of Wisconsin, Department of Administration, Division of Energy. Focus on Energy Public Benefits Evaluation: FY07 Detailed Evaluation Plans. June 2006 (Revised).

[vii] Amendment 11 to the Cooperative Agreement between the State of Wisconsin, Department of Administration–Division of Energy, and Wisconsin Energy Conservation Corporation (Contract 81310, Amendment 11).

[viii] State of Wisconsin Department of Administration, Division of Energy. Focus on Energy Public Benefits Evaluation: FY06 Net-to-Gross Savings Adjustments for ENERGY STAR® Qualified Clothes Washers. Memorandum issued by Tom Talerico and Rick Winch, Glacier Consulting Group. Critical review by Ralph Prahl, Prahl and Associates. July 25, 2007.

[ix] State of Wisconsin Department of Administration, Division of Energy. Focus on Energy Public Benefits Evaluation: Comprehensive CFL Market Effects Study—Final Report. Report issued by Rick Winch and Tom Talerico, Glacier Consulting Group. Critical review by Ralph Prahl, Prahl and Associates. July 30, 2007.

[x] State of Wisconsin Department of Administration, Division of Energy. Focus on Energy Public Benefits Evaluation: FY06 Metrics Performance—Residential Programs. Memorandum issued by Tom Talerico and Rick Winch, Glacier Consulting Group. Critical review by Ralph Prahl, Prahl and Associates. December 1, 2006.

[xi] Wisconsin market share increased by 3.7 percentage points from FY05 to FY06 (46.4% to 50.1%), which is comparable to the 3.6 percentage point increase in average market share across the three baseline groups from FY05 to FY06 (39.3% to 42.9%).

[xii] In the past, there was little evidence to suggest that participating retailers were having success selling large quantities of CFLs in states that were not running Focus-like promotions. The data presented in this report indicates that, for at least some market channels, this is no longer the case.

[xiii] We understand that this move toward multi-packs may need to be done on an incremental basis so as not to lose retailers who have become accustomed to receiving $2 per CFL. To facilitate the transition, the program could consider stipulating that (for example) 20% of all proposed CFLs must be sold in multi-packs of 3 or more (and reflect market pricing). Then, over a series of years, the program could begin to move this 20% requirement up until two-thirds of all CFLs are sold in multi-packs of 3 (or perhaps 6) or more.

[xiv] This information was the focal point of the evaluation team's "evaluation issues" presentation to WECC staff in January 2007. It is important to note that we did not see this aggressive multi-pack pricing structure within the hardware channel. Thus, our suggested change is somewhat simplistic as any change in incentive levels would need to ensure equality across all retailers involved.

[xv] The calendar year net-to-gross ratios were weighted by the number of rewards paid in each year. A total of 2,194,168 rewards were paid in calendar year 2005 and 2006. Of this total, 46.5% (1,020,397) were paid in calendar year 2005 and 53.5% (1,173,771) were paid in calendar year 2006. Thus, the FY06 net-to-gross ratio is 1.01 [(1.24 * 0.465) + (0.81 * 0.535)]

[xvi] The metric was originally specified as "Increase statewide (ENERGY STAR) clothes washer market share by 4 percentage points from the market share reported in the 3rd calendar quarter of 2005 using data from WECC retailer sales data and D&R International." We modified the comparison period from the 3rd to the 2nd quarter because the 3rd quarter would include progress that occurred in FY07, whereas the 2nd quarter would encompass only FY06.

[xvii] WECC collects market share data among a sample of independent retailers in Wisconsin. This data is used to supplement the D&R International data, which covers national retailers but under-represents independent retailers.

[xviii] Bill McNary of D&R International expects the data to be available during the fourth quarter of 2006.

[xix] It is important to note that the metrics measurement process is not assessing attribution. It simply involves measuring the total change in ENERGY STAR clothes washer market share. Separating the change in ENERGY STAR clothes washer market share into its component pieces (i.e., program-induced versus naturally occurring) is addressed through the net-to-gross analysis (State of Wisconsin Department of Administration, Division of Energy. Focus on Energy Public Benefits Evaluation: FY05 Net-to-gross Savings Adjustments for ENERGY STAR® Qualified Clothes Washers. Memorandum issued by Tom Talerico and Rick Winch, Glacier Consulting Group. July 14, 2006).

[xx] State of Wisconsin Department of Administration, Division of Energy. Focus on Energy Public Benefits Evaluation: FY06 Metrics Performance—Residential Programs. Memorandum issued by Tom Talerico and Rick Winch, Glacier Consulting Group. Critical review by Ralph Prahl, Prahl and Associates. December 1, 2006.

[xxi] http://www.wisbuild.org/wisbuild/resource+center/construction+data/default.asp

[xxii] Please refer to the following memo for a discussion of these guidelines: State of Wisconsin Department of Administration, Division of Energy, Focus on Energy Public Benefits Evaluation: Guidelines for Measuring Future WESH Infiltration-Based Metrics, memorandum issued by Tom Talerico, Glacier Consulting Group, November 4, 2005.

[xxiii] In the event that at least five homes were not certified by a builder in the previous fiscal year, we sequentially include homes from each preceding fiscal year until the total number of homes certified by the builder meets or exceeds five.

[xxiv] A possibility is to have a metric that establishes a goal for keeping builders in this range (e.g., Retain high performance status among builders such that at least XX percent of the builders who averaged less than 0.15 CFM@50 per square foot in FY06 will average less than 0.15 CFM@50 per square foot in FY07).

[xxv] This means that 96 percent of the 738 builders did not meet the criteria of building at least five WESH homes in FY06 and at least five WESH homes in all program years prior to FY06.

[xxvi] The evaluation team has provided the program manager with a spreadsheet containing the detailed results from the WESH consultant and builder interviews.

[xxvii] State of Wisconsin Department of Administration, Division of Energy. Focus on Energy Public Benefits Evaluation: Home Performance with ENERGY STAR® Program Net Analysis. Memorandum issued by Tom Talerico and Rick Winch, Glacier Consulting Group. Critical review by Ralph Prahl, Prahl and Associates. July 26, 2007 (*Revised Draft*).

[xxviii] State of Wisconsin Department of Administration, Division of Energy. Focus on Energy Public Benefits Evaluation: FY06 Metrics Performance—Residential Programs. Memorandum issued by Tom Talerico and Rick Winch, Glacier Consulting Group. Critical review by Ralph Prahl, Prahl and Associates. December 1, 2006.

[xxix] An inherent disadvantage to FACTS is that not all distributors in Wisconsin provide data, resulting in coverage of only 50–60 percent of the Wisconsin market. For the purposes of measuring this metric, we assume that the market share of ECM furnaces sold by distributors outside of FACTS is the same as that sold by distributors involved with FACTS.

[xxx] It is important to note that the metrics measurement process is not assessing attribution. It simply involves measuring the total change in ECM furnace market share. Separating the change in ECM furnace market share into its component pieces (i.e., program-induced versus naturally occurring) is addressed through the net-to-gross analysis (State of Wisconsin Department of Administration, Division of Energy. Focus on Energy Public Benefits Evaluation: FY05 Net-to-Gross Savings Adjustments for 12/13+ SEER Central Air Conditioners and ECM Furnaces. Memorandum issued by Tom Talerico and Rick Winch, Glacier Consulting Group. June 27, 2006).

[xxxi] State of Wisconsin Department of Administration, Division of Energy. Focus on Energy Public Benefits Evaluation: CY2 METRICS PERFORMANCE—RESIDENTIAL PROGRAMS. Memorandum issued by Rick Winch and Tom Talerico, Glacier Consulting Group. October 24, 2003.

[xxxii] The metric was originally specified as “Increase the number of remodeling/home improvement companies with whom consultants and qualified contractors have developed relationships to 55 in FY06.” The goal of 55 for FY06, however, was erroneously specified by the program manager. This is because the FY06 metric was established based on the FY05 metric, which in turn was based on an erroneous estimate for FY04. The estimate of 34 in FY04 specified by the program manager was lower than the actual number, which was 72. Therefore, we adjusted the numbers specified in the FY06 metric accordingly to reflect the actual numbers. This resulted in a goal of 116, not 55, for FY06 {(55 ÷ 34) x 72}.

[xxxiii] The metric was originally specified as: “Increase the number of referrals received by consultants and qualified contractors from remodeling/home improvement companies to 250 in FY06.” The goal of 250 for FY06, however, was erroneously specified by the program manager. This is because the FY06 metric was established based on the FY05 metric, which in turn was based on an erroneous estimate for FY04. The estimate of 148 in FY04 specified by the program manager was higher than the actual

number, which was 87. Therefore, we adjusted the numbers specified in the FY06 metric accordingly to reflect the actual numbers. This resulted in a goal of 147, not 250, for FY05 {(250 ÷ 148) x 87}.

[xxxiv] The metric was originally specified as "Increase the number of ratings and assessments performed by consultants and qualified contractors to 970 in FY06." The goal of 970 for FY06, however, was erroneously specified by the program manager. This is because the FY06 metric was established based on the FY05 metric, which in turn was based on an erroneous estimate for FY04. The estimate of 759 in FY04 specified by the program manager was lower than the actual number, which was 1,220. Therefore, we adjusted the numbers specified in the FY06 metric accordingly to reflect the actual numbers. This resulted in a goal of 1,559, not 970, for FY05 {(970 ÷ 759) x 1,220}.

[xxxv] Major building performance-related measures are defined as those rebated and tracked through the HPWES program. These include air sealing, attic insulation, sidewall insulation, foundation insulation, floor insulation, sillbox insulation, and exhaust fans.