Statewide Database of Energy Efficiency Efforts in Indiana: 2010

Prepared by:
State Utility Forecasting Group
Purdue University
West Lafayette, Indiana

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Foreword

This report reflects the initial effort by the State Utility Forecasting Group (SUFG) at Purdue University to develop a central database of energy efficiency efforts throughout the state of Indiana. The purpose of the database is to collect and quantify energy efficiency efforts in the state. The database contains information regarding energy efficiency, demand-side management, and load management programs, including participation rates, incentives, gross and net energy savings, peak demand reductions, tax incentives, and required technology and software. SUFG will also include information on the development of advanced metering infrastructure (smart grid) in Indiana, including experimental programs, and various energy efficiency education efforts.

Survey requests were sent to a number of entities involved in energy efficiency efforts, including electric and natural gas utilities, state and local government agencies, and large energy consumers, such as universities and industrial facilities. While it is likely that a substantial amount of customer-driven energy efficiency measures were undertaken at the residential and smaller commercial/industrial level, no attempt has been made to estimate those projects at the level of smaller customers. This would involve a significantly larger surveying and sampling and would be beyond the scope of this project.

The surveys requested information for calendar year 2010. Thus, this report reflects only those efforts that occurred in 2010 and does not include the effects of prior energy efficiency projects that continue to reduce the demand for energy.

SUFG appreciates the cooperation and contributions of the survey respondents to enable this summary to be a comprehensive representation of the energy efficiency efforts throughout the state of Indiana

This report was prepared by and is the responsibility of SUFG. The information contained in this report should not be construed as advocating or reflecting any other organization's views or policy position. Comments and questions should be directed to:

State Utility Forecasting Group
Purdue University
Gerald D. and Edna E. Mann Hall, Room 154
203 South Martin Jischke Drive
West Lafayette, IN 47907-1971
Phone: 765-494-4223
Fax: 765-494-6298
e-mail: sufg@ecn.purdue.edu
https://www.purdue.edu/dp/energy/SUFG/

This project was initiated as a result of a request from the Indiana Office of Energy Development that the State Utility Forecasting Group (SUFG) collect information regarding program efforts in energy efficiency (EE) in Indiana and maintains a database of programs. The survey requested data from electric and gas utility sectors encompassing investor-owned, rural electric cooperatives, and municipal utilities in addition to government agencies, universities, and large electricity consumers. SUFG has compiled the information and this report summarizes the information provided on a statewide perspective.

SUFG held an initial organizational workshop among key stakeholders from all utility sectors to guide the development of the project. The outcome was that SUFG will maintain the database that will contain information regarding energy efficiency and load management programs, including participation rates, incentives, gross and net energy savings, peak demand reductions, tax incentives, and required technology and software. Educational programming efforts were also collected as part of the data request. It will also include information on the development of advanced metering infrastructure (smart grid) in Indiana, including experimental programs, and various energy efficiency education efforts.

The data was acquired using a web-based survey instrument, Qualtrics, as well as direct distribution of the survey document. The identities of respondents were held confidential, and data was aggregated to prevent disclosure of respondent association to responses.

The degree to which the surveyed entities responded varies considerably. The electric and natural gas utilities, which may have regulatory reporting requirements and dedicated staff in the energy efficiency area, had a high response rate and provided a great deal of detailed information. A lower response rate was obtained from smaller entities such as local governments. It is likely that these entities do not have staff whose primary function involves energy efficiency. Thus, it is likely that responding to the request was considered to be too large of a burden. In certain cases, estimates have been made to account for information when responses were incomplete. For instance, if a responder provided peak demand savings but not energy savings for a program that reduces overall energy consumption, energy savings were estimated. These estimates were made using responses for similar programs from other respondents and energy efficiency reports for other areas. Such estimates were made in a conservative fashion, so as not to artificially inflate the results. Thus, the information in this report represents a lower boundary on the amount of energy efficiency activities in Indiana.

Certain programs that are designed to reduce consumption of a particular energy source may have cross benefits of reducing consumption of another source. For instance, a natural gas weatherization program is likely to reduce electric air conditioning demand in addition to its design purpose of decreasing natural gas consumption for space heating purposes. In this case, the natural gas utility would report the reduction in natural gas usage, but not the cross benefit of reducing electricity consumption. Cross benefit savings have been estimated by SUFG and are provided separately from the energy savings obtained directly.

This report focuses specifically on electricity and natural gas. Efficiency gains involving other energy sources (e.g., fuel oil) or water are not considered. In some cases, cross benefits occur with other energy sources or water, such as the installation of low-flow showerheads. This program reduces both water and energy consumption, but water usage reductions are not quantified.

Explanation of terms

A number of terms are used in this report that are common to the energy industries, but may be unfamiliar to others. The concepts of energy and power, along with the units in which they are expressed, are of primary importance. Energy is the capability to do work, while power is the rate at which energy is either produced or consumed. Energy can come in a number of different forms, such as electrical, chemical, and kinetic. While it is common to refer to the consumption of energy, it is more accurate to consider the energy as being transformed from one form to another. Thus, a light bulb converts electrical energy to light energy and thermal energy (heat).

Efficiency is the ratio of the amount of useful energy that is obtained from the amount of energy used as an input. In the light bulb example, the light energy is the useful energy (the thermal energy is usually not wanted) and the electrical energy used by the bulb is the energy input. Incandescent bulbs generally produce more heat than fluorescent or solid-state lights, so they are less efficient

The basic unit of electrical power is the watt (W). Larger quantities are often expressed in kilowatts (kW), which is 1,000 W, or in megawatts (MW), which is a million watts. Incandescent bulbs for indoor use generally range between 40 and 150 watts, while a kitchen toaster may be on the order of 1 kW.

The basic unit of electrical energy is the kilowatt-hour (kWh). It is the amount of energy used by a process or device using one kilowatt of power for one hour's time. Alternatively, it is the energy consumed by a 100 watt light bulb that is on for 10 hours. Larger amounts of

electrical energy are often reported in megawatt-hours (MWh). One MWh is the same as 1,000 kWh. There are 3,412 British thermal units (Btu) in a kWh.

The basic unit of energy in the natural gas industry is the therm, which is equivalent to 100,000 Btu. A therm is also roughly equivalent to the amount of energy contained in 100 cubic feet of natural gas. The energy in one therm of natural gas is approximately equal to 29.3 kWh.

This report examines reductions in the amount of electrical power during the periods of highest usage, also known as the peak demand. Reduction in natural gas demand at the peak demand is not considered. The electrical peak demand is of particular interest due to the inability to store electrical energy. Thus, sufficient capability to instantaneously convert energy in other forms to electrical energy must be maintained. This capability is generally derived from expensive generation equipment, so reductions in peak demand can have a significant financial impact in the electricity industry. Since the chemical energy of natural gas is stored in the molecules of the gas itself and since the conversion from chemical energy to the form desired by the customer occurs at the customer's location, there is no concern over reductions in the peak power demand.

Gross savings vs. net savings

Energy reductions are reported in terms of both gross and net savings whenever both sets of data are available. Gross energy savings represents the reduction in energy consumption occurring from the decisions that the program is promoting, regardless of whether the decision would have been made if the program was not in place. For example, the gross savings for an appliance rebate program would include the reduction in energy consumption due to the higher efficiency appliance. It would not take into consideration whether the customer would have bought the higher efficiency appliance anyway, even without the rebate.

Net savings are the reduction in energy consumption that occurs because of the program. In the previous example, the energy savings for those customers that would have purchased the higher efficiency appliance are not included in the net savings.

Another potential difference between gross and net energy savings involves reductions in energy usage that result from the existence of the program but are not directly attributable to the program. An example of this could be a program where a customer is provided with a single energy efficient device (such as a compact fluorescent light bulb) and then decides to purchase more of the devices. The gross savings would include the single device from the program while the net savings would include all of the devices.

Net energy savings are of particular importance to utility-sponsored energy efficiency programs where it is important to demonstrate the relative costs and benefits of the program. Since there is no specific program impacting customer-driven energy efficiency (which is largely limited to large industrial customers and governments for this report), there is no distinction between net and gross savings for these instances.

Estimating the net savings associated with a particular program can be a complex task involving extensive customer surveys and statistical modeling. Furthermore, there is a lack of standardization in estimating, measuring and verifying methods. In instances where only gross savings were reported, net savings were estimated using typical gross to net savings ratios for similar programs from other responses. In some cases, net savings are assumed to equal gross savings.

Time period analyzed

This report includes only those energy efficiency efforts that were undertaken during the calendar year 2010. As such, it represents a snapshot of activities during the year and does not include the effects of energy efficiency efforts from previous years. Based on filings with the Energy Information Administration, embedded energy efficiency from utility-sponsored efforts prior to 2010 was responsible for reducing the electrical energy demand in 2010 by about 600,000 MWh. Peak demand was reduced by 461 MW by these programs. Estimating the impact of embedded energy efficiency from the various programs is beyond the scope of this effort.

Similarly, the impacts of new programs or the expansion of existing programs in 2011 are not included. A follow-up study to be released in 2012 will look at energy efficiency efforts in 2011.

Number of employees involved in energy efficient programs

According to the survey responses, there are a minimum 55.32 full-time equivalent (FTE) employees involved in the many different energy efficient programs, across the state of Indiana. Many of these individuals only spent a fraction of their time on energy efficiency efforts, with other job responsibilities accounting for the remainder. A full-time employee who spends one tenth of her time on EE counts as 0.1 FTE, while one who spends one half counts as 0.5 FTE. The 55.32 FTE is determined by summing the responses from the surveys.

Leveraging financial support

Although the majority of the energy efficiency programs are not financially supported by other organizations, the Weatherization Programs are most commonly supported by local Community Assistance agencies such as Indiana Housing and Elementary Education programs. Utilities from around the state will commit Demand Side Management funding to support the installation of low-cost energy efficiency measures. This is done by leveraging federal weatherization funds. Electric utilities also run refrigerator replacement programs through existing weatherization networks. One company worked with the utility companies to host workshops in 2010, which had a value of approximately $30,000.

Collaboration with other entities

The surveys confirmed that each company collaborates with multiple energy efficient companies. Other than the obvious collaboration amongst the companies surveyed, here is an additional list of companies they collaborated with:

- **Government Agencies**
    - US Dept of Energy
    - US Environmental Protection Agency
    - US Department of Labor
    - US Dept of Commerce, National Institute of Standards & Technology, Hollings Manufacturing Extension Partnership (NIST MEP) program
    - Indiana Office of Energy Development
    - IDEM Office of Pollution Prevention & Technical Assistance

- Indiana Office of Utility Consumers Counselor
- Indiana Housing and Community Action Program (Low Income Weatherization Program
- City of Indianapolis
- City of Fort Wayne

- **Utilities**

  - American Electric Power / Indiana-Michigan Power
  - Citizens Energy
  - Citizen's Electric (MO)
  - EnerStar Power (IL)
  - Duke Energy
  - Hoosier Energy
  - Indiana Municipal Power Association
  - Indianapolis Power & Light Company
  - NIPSCO
  - Indiana Investor Owned Utilities
  - I & M Power Central Indiana Power (n.k.a NineStar Connect)
  - Vectren Energy Delivery
  - Wabash Valley Power Association
    - Boone REMC
    - Carroll County REMC
    - Fulton County REMC
    - Hendricks Power Cooperative
    - Jasper County REMC
    - Jay County REMC
    - Jasper County REMC
    - Kankakee Valley REMC
    - Kosciusko REMC
    - LaGrange County REMC
    - Marshall County REMC
    - Miami-Cass REMC
    - Midwest Energy
    - MJM Electric
    - Newton County REMC
    - Noble REMC
    - Northeastern REMC
    - Parke County REMC

- Paulding-Putnam EC
- Steuben County REMC
- Tipmont REMC
- United REMC
- Wabash County REMC
- Warren County REMC
- White County REMC

- **Other Energy Efficiency Organizations**

  - University of Illinois at Chicago (UIC) Resource Application Center
  - University of Dayton, Industrial Assessment Center
  - Purdue University – Energy Center
  - IUPUI – Lugar Center for Renewable Energy

- **Economic Development organizations**

  - INDIEC
  - Indiana Chamber
  - Indiana Office of Energy Development
  - Indiana Office of Utility Consumers Counselor Local Community Assistance Agencies
  - Neighborhood Housing & Community Development Authority Residential Energy Assessment Program
  - Residential On-Site Audit with Direct Install Program
  - Residential New Construction Program
  - School Education Program (provided both gas & electric measures in the take home kits)
  - Southwest Indiana Chamber
  - Southern Indiana Association of Manufacturers (SINAM)
  - Citizens Action Coalition
  - Individual Cities

- Also indicated were the types of programs the entities provided and collaborated in delivering which included:

  - Residential Energy Assessment Program,
  - Residential On-Site Audit with Direct Install Program,
  - Residential New Construction Program,
  - Residential Low and Moderate Income Weatherization Program,

- C&I Custom Program,
- C&I Prescriptive Program,
- School Educational Program to offer kits for gas and electricity energy efficiency measures,
- C&I Retro-Commissioning Program.

Marketing Methods

Several marketing methods were used to promote the energy efficiency programs of the respondents. The survey indicates 87.5 percent of respondents indicated they engaged in marketing efforts for promoting their energy efficiency programs. The marketing methods used were as follows:

- Bill Inserts
- Community Outreach
- Direct Mailing offers
- Event Sponsorship
- Organization Website Online Advertising
- Newsletters
- Newspaper
- Program Partner Promotion, (i.e. Low Income Home Energy Assistance Program Referrals)
- Radio
- Social Media Email
- Telephone message
- Television Ads
- Trade Alley Outreach

The following are names and descriptions of energy efficient programs being used across the state of Indiana:

Residential Programs

- *Prescriptive Rebate Programs:* Prescriptive rebate programs encourage residential customers to purchase more energy-efficient lighting, electric appliances, gas appliances and heat pumps. After purchasing the equipment, customers apply for a rebate that reimburses a portion of the cost.

- *Appliance Recycling Programs:* Residential appliance recycling programs target customers with second refrigerators and freezers and offers incentives for removing these units from service. The units must be in working condition in order to qualify, since removing a non-functioning unit would not result in any energy savings.

- *New Construction:* New construction programs provide cash incentives to local builders and developers for constructing new residential homes that meet specified ENERGY STAR® standards[1].

- *Low Income Weatherization Programs:* These programs provide weatherization[2] services to low income customers. The Indiana Community Housing and Development Authority (IHCDA) provides these services for the lowest income customers and some utilities provide these services to customers with incomes between 151% and 200% of the federal poverty guidelines. This income bracket usually falls outside the requirements for other assistance programs, but often lacks the financial resources to do their own energy efficiency upgrades. The programs select individuals as participants who own a single-family house and who are on a low-income weatherization waiting list as provided by IHCDA.

- *Home Performance/Retrofit Program:* Residential customers who participate in this program will receive a home energy audit conducted by a certified inspector to help

[1] The Energy Star program was created in the early 1990s by the United States Environmental Protection Agency in an attempt to reduce energy consumption and greenhouse gas emission by power plants. As of 2006, more than 40,000 Energy Star products are available in a wide range of items including major appliances, office equipment, lighting, home electronics, and more. The EPA estimates that it saved about $14 billion in energy costs in 2006 alone.

[2] Weatherization involves weather proofing a house/building and its interior from the elements, particularly from sunlight, precipitation, and wind. It can involve adding insulation and weather stripping. This reduces the energy consumption and improves the energy efficiency, allowing low-income families to permanently reduce their energy bill.

customers understand what measures can be installed to increase their home's energy efficiency. Each assessment may include:

- Full assessment of appliances, insulation, space heating and water heating systems
- Utility bill analysis and cost savings estimate for reducing energy usage
- Water heater adjustment for optimal safety and energy efficiency
- Free installation of energy efficient water fixtures (showerheads, kitchen & bath aerators)
- Combustion safety testing for furnace and water heater

- *Multi-family Direct Install Program*: Energy efficient water fixtures (showerhead, bathroom aerator and kitchen aerator) installed in rental units to reduce hot water consumption. The program also provides education to tenants about the energy benefits of these installed measures and behavior changes that will have a lasting impact on their energy and water consumption.

- *Educational Programs:* Educational programs include both educational outreach programs and on-line audit programs. Educational outreach programs are aimed at helping 5th-grade Indiana students learn the importance of energy efficiency and how it helps to protect our natural resources and the environment. National Energy Foundation (NEF) conducts Think! Energy Indiana on behalf of the utility. As part of the program, NEF provides an interactive, hands-on, classroom presentation and distributes take-home kits to select fifth grade classrooms across northern Indiana. The experiential program teaches the importance of energy, natural resources and environmental issues, and gives each participating student's family the technologies to start making a difference. Contents of the Think Energy! Indiana Take Action Kit includes:

  - High-Efficiency Showerhead
  - Kitchen Aerator
  - Bathroom Aerator
  - Shower Timer
  - Digital Water and Refrigerator Thermometer

  The on-line audit tool provides education on how a bill is calculated, how a customer's energy costs compare to other homes/businesses in the area, and disaggregates the various uses for natural gas in their home or business to help them understand how they are using energy. Tool provides recommendations on how to

conserve energy in the areas of no/low cost solutions, projects that require customer investment and projects that are not recommended due to cost/payback. In addition to the education component, the program includes the distribution of an energy savings kit to residential natural gas customers who complete a detailed (level 3) on-line audit. The kits are only distributed during specific times of the year when the offer is being promoted by the utility.

- *Home Audit Programs:* Customers who participate in this program will receive a home energy audit conducted by a certified inspector to help customers understand what measures can be installed to increase their home's energy efficiency. The inspector may prepare a comprehensive personal report outlining the customer's energy usage. Each assessment may include:

    - Full assessment of appliances, insulation, space heating water heating systems
    - Utility bill analysis and cost savings estimate for reducing energy usage
    - Water heater adjustment for optimal safety and energy efficiency
    - Free installation of energy efficient water fixtures and compact fluorescent lamps
    - Combustion safety testing for furnace and water heater

	Measures Implemented	Annual Gross Therms Savings	Annual Net Therms Savings	Annual Gross MWh Savings	Annual Net MWh Savings	Annual Peak Demand kW Reductions	Cost
Residential							
Home Audits	14,989	33,032	29,003	5,799	5,112	1,170	$1,162,194
Prescriptive Rebates	276,444	2,522,580	1,562,828	21,641	17,603	4,540	$12,213,655
Appliance Recycling	6,887	0	0	8,071	7,454	844	$622,377
Educational Programs	23,235	923,457	624,139	2,801	2,801	267	$727,038
New Construction	411	86,603	68,349	300	300	48	$287,718
Low Income Weatherization	19,673	2,847,515	2,841,834	3,175	3,165	648	$50,110,754
Multi-Family Direct Install	13,253	1,389,227	1,144,167	0	0	0	$92,400
Direct Load Control	53,336	0	0	41	41	43,786	$3,726,937
Total	**408,228**	**7,802,414**	**6,270,320**	**41,828**	**36,477**	**51,303**	**$68,943,073**

Commercial & Industrial Programs

- *Prescriptive Rebates:* Commercial prescriptive rebates programs offer cash rebates to customers who purchase and install higher-efficiency lighting, variable frequency drives, and select energy-efficient equipment. After purchasing the equipment, customers apply for a rebate that reimburses a portion of the cost. Customer applications may involve new construction, retrofit, and replacement of failed equipment.

- *Custom Programs*: Commercial and industrial custom programs offer incentives up to $25,000 per project for the installation of efficient technologies or implementation of process improvements that do not fit the parameters of the prescriptive rebate program. The program administrator works with the customer to assess the energy savings and eligibility of the proposed project under the program.

- *Energy Efficiency:* Non-residential retail customers submit competitive applications for energy savings projects they would like to implement. The company can receive up to 50% of the cost of the project(s).

- *Workforce Training:* The Purdue Technical Assistance Program (TAP) Energy Efficiency & Sustainability (EES) program provides workforce training to commercial, industrial, and institutional organizations. Workers are trained to identify opportunities for energy efficiency and to develop solutions. EES hosts public workshops and provides on-site training, auditing and implementation mentoring.

- *Steam & Chilled Water:* Energy savings are achieved through reducing the amount of steam and water used. Steam and water losses are reduced via testing and management of steam traps and valves. Further energy saving are achieved by increasing insulation to reduce heat transfer.

- *Miscellaneous Programs:* Miscellaneous programs represent a number of measures including air conditioning load management, new construction, and optimization of controls.

	Measures Implemented	Annual Gross Therms Savings	Annual Net Therms Savings	Annual Gross MWh Savings	Annual Net MWh Savings	Annual Peak Demand kW Reductions	Cost
Commercial / Industrial							
Prescriptive Rebates	201,284	789,397	549,252	11,086	5,.125	1,631	$2,757,589
Energy Efficiency	10	3,307,975	3,307,975	82,128	82,128	9,407	$11,404,607
Custom Programs	62	1,337,080	1,241,765	6,738	6,641	900	$3,403,353
Steam & Chilled Water	2	197,000	197,000	6,464	6,464	738	$2,093,278
Workforce Training	478	126,000	126,000	10,000	10,000	1,142	$380,000
Miscellaneous Programs	5,751	4,425	2,212	5,301	5,301	610	$942,399
Total	**207,601**	**5,761,877**	**5,424,204**	**121,717**	**115,659**	**14,428**	**$20,981,226**

Energy Efficiency and Conservation Block Grants

The American Recovery and Reinvestment Act of 2009 (ARRA) included funding to support energy efficiency and conservation measures in various communities across the country. A number of Indiana communities received funding through the Energy Efficiency and Conservation Block Grant (EECBG) Program. Larger communities (also referred to as entitlement communities) received funding directly from the U. S. Department of Energy, while funding for smaller (non-entitlement) communities was processed by the Indiana Office of Energy Development (OED).

EECBG funding could be used for energy efficiency retrofits of government owned buildings, retrofits of privately owned commercial buildings, and for grant administration[3]. Eligible building retrofits include a number of energy uses, such as heating, ventilation and air conditioning; insulation and weatherization; and appliances.

Eight counties and 23 municipalities received EECBG funds directly from the federal government. Another 56 smaller communities received funding through OED. Additionally, OED provided 59 EECBG grants to non-profit organizations, small businesses, and institutions of higher education.

EECBG funds were made available for a number of different local energy efficiency programs. Examples include energy efficiency evaluations, as well as replacement of street and building lighting, windows, and HVAC systems [2].

The energy savings achieved in Indiana through the EECBG programs is largely undetermined, as only the savings from only a small portion of the programs was available at the time this report was written. The known savings were 4,136 therms and 5,424 MWh. There is insufficient information available to attempt to estimate the remaining savings. Furthermore, the amount of money spent on energy efficiency efforts in 2010 is undetermined. The program was initiated in 2009, with many projects starting in 2010 and a number continuing into 2011. The amount of money provided for the programs is significant compared to other energy efficiency spending in the state[4].

[3] The use of funds for grant administration only applies to communities that received funds directly from DOE. The programs administered by OED did not allow funding to be used for grant administration.

[4] Grant amounts for entitlement communities came from the U. S. Department of Energy website http://www1.eere.energy.gov/wip/eecbg_allocation.html#eecbg

Grantee	Amount	Grantee	Amount
Anderson	$560,200	Noblesville	$170,000
Bloomington	$745,000	Portage	$151,100
Carmel	$633,000	Richmond	$169,200
Columbus	$190,000	South Bend	$1,046,800
Elkhart	$557,300	Terre Haute	$617,700
Evansville	$1,206,000	Allen County	$404,500
Fishers	$610,100	Clark County	$438,900
Fort Wayne	$2,474,400	Elkhart County	$629,800
Gary	$935,200	Hamilton County	$362,400
Greenwood	$193,900	Hendricks County	$546,900
Hammond	$728,100	Lake County	$2,979,700
Indianapolis	$8,032,300	LaPorte County	$462,900
Kokomo	$214,600	Porter County	$511,800
Lafayette	$659,000	St. Joseph County	$453,400
Lawrence	$176,200	Tippecanoe County	$416,700
Mishawaka	$219,000	OED Small Communities	$5,960,109
Muncie	$665,700	OED Other Grantees	$3,373,204
New Albany	$165,900	**TOTAL**	**$37,661,013**

University Ground Source Heat Pumps

DOE has provided a total of $6.3 million of ARRA funds to Ball State University and Indiana Institute of Technology to install ground source heat pumps on their campuses [2]. The Ball State project is estimated to cost between $70 million and $75 million and will replace four coal-fired boilers. The Indiana Tech project will use carbon dioxide as the cooling medium. The amount of money spent on these projects in 2010 is unknown. No energy savings are attributable to the projects in 2010 since they were not yet operational.

Cross-benefits analysis

The cross-benefits of programs that target one energy source but also impact other sources were estimated using information from the *State of Ohio Energy Efficiency Technical Reference Manual* [1]. This document was originally developed for use by Ohio's electric and natural gas utilities to assist in determining whether they were compliant with state energy efficiency laws. One of the functions of the manual is to provide formulas for estimating savings for various energy efficiency programs. For programs that impact both electricity and natural gas usage, those formulas provide a means of going from savings for one energy source to another. For instance, the natural gas savings of home insulation retrofits are estimated based on the previous

and new insulation values, average number of heating degree days, furnace efficiency, and square footage of floor space. Electricity savings are a function of the insulation values, average number of cooling degree hours, air conditioner efficiency, and square footage. Using typical air conditioning penetration and efficiency levels, as well as Indiana climatic numbers, it is possible to translate natural gas savings to electricity savings. It is conservatively estimated that approximately 70,000 MWh of electricity savings occurred due to the cross-benefits of weatherization programs that targeted natural gas consumption.

Dollars spent in 2010 on costs not attributable to a specific program

Respondents were asked to identify the costs of delivering various energy efficiency programs broken down by the following categories: Administration, Marketing, and Other. While most respondents provided information along these lines, some either provided no information or indicated that all costs were attributed to specific programs.

Administration	$3,501,944
Marketing	2,961,570
Other	1,559,528
Total Costs	$8,023,042

Summary of energy savings

Over $100 million dollars was spent on energy efficiency efforts in 2010 in Indiana. This covered over 600,000 different efficiency measures, or about one for every 10.5 residents. Approximately 2/3 of these measures were implemented with residential customers, which represents one measure per every 6.8 household. Over 13.5 million therms and 230 thousand MWh were saved on an annual basis by these programs.

	Measures Implemented	Annual Gross Therms Savings	Annual Net Therms Savings	Annual Gross MWh Savings	Annual Net MWh Savings	Annual Peak Demand kW Reductions	Cost
Residential	408,228	7,802,414	6,270,320	41,828	36,477	51,303	$68,943,073
Commercial & Industrial	207,601	5,761,877	5,424,204	121,717	115,659	14,428	$20,981,226
EECBG	146[1]	4,136[2]	4,136[2]	5,424[2]	5,424[2]	619[2]	$37,661,013[3]
Cross Benefits				70,000	70,000	50,000	
Other Costs							$8,023,042
Total	**615,975**	**13,568,427**	**11,698,660**	**238,969**	**227,561**	**116,350**	**$97,947,341**

Notes: 1 - Indicates the number of grants awarded. Actual number of measures implemented will be larger.
2 - Actual values are unknown and should be considerably larger.
3 - Total amount of EECBG dollars awarded. Some, but not all of that would be spent in 2010. This value is not included in the total.

Natural gas vs. electricity energy efficiency levels

Annual consumption of electrical energy in Indiana is approximately 100 million MWh [3]. Annual consumption of natural gas by residential, commercial and industrial customers is about 4.6 billion therms [3]. Thus, the 2010 energy efficiency savings identified through the survey

process represents 0.17 percent of the electricity consumption[5] and 0.29 percent of the natural gas consumption.

From a utility-sponsored energy efficiency perspective, Indiana natural gas utilities have been more aggressive than their electrical counterparts. This is primarily a result of their respective rate structures. Traditionally, both electric and natural gas rates contain both the operational costs of providing the service and a return on capital investments. The operational costs include the cost of procuring fuel (for electricity generation) or the commodity itself (for natural gas). Typically, the operational cost fraction of electricity rates are much smaller than for natural gas rates. The opposite is normal for the fractions accounting for the return on investment. This is largely due to the capital-intensive nature of building electricity generation, transmission and distribution facilities. Thus, a utility-sponsored energy efficiency program has the potential to reduce the company's return on their capital investments, which can limit the attractiveness of such program from the company's perspective. Due to the relative differences in operating vs. investment costs, this reverse incentive hits the electricity industry harder.

Furthermore, the largest natural gas utilities have had their rates restructured using a method known as decoupling. Rate decoupling is a mechanism whereby rates are adjusted such that the utility's revenues are separated from its sales. In essence, the return on investment portion of the rates are separated from sales, so that it receives the same amount of return whether sales are high or low, while the operating costs are passed through to the customers. This form of rate design removes the reverse incentive that may be seen under traditional ratemaking. Additionally, as part of the decoupling process, the natural gas utilities agreed to meet certain energy efficiency targets.

In December 2009, the Indiana Utility Regulatory Commission issued an order requiring electric utilities under its jurisdiction to meet certain energy efficiency goals in the future. While utilities began developing programs in 2010 to meet those requirements, the programs were not in place in time to impact energy efficiency during that year.

[5] If cross benefits of natural gas weatherization programs are included, electricity savings are 0.24 percent of consumption.

References

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