



Demand Side Management and Demand Response Report
Fiscal Year 2011 Data

March 2012

Columbia Water & Light's

2011 Demand Side Management and Demand Response Report

Demand Side Management programs consist of the planning, implementing, and monitoring activities of electric utilities that are designed to encourage consumers to modify their level and pattern of electricity usage. Energy efficiency programs reduce the overall electric consumption while demand response programs help control the electric load during times of peak usage or electric supply emergencies.

Demand Side Management programs are the lowest cost power supply option that was outlined in the 2008 Integrated Resource Plan (IRP). Programs reviewed in 2008 IRP projected potential demand reductions from the existing forecast of approximately 5 to 10 percent over the next 10 years. By expanding efficiency programs, Columbia could reduce the electric load by 33 megawatts within the next twenty years. The Columbia City Council approved the expansion of both residential and commercial energy efficiency programs to help meet these goals. The energy efficiency programs also fall under the City of Columbia's Visioning Goals approved in 2008 by the Columbia City Council.

Columbia had 45,943 electric customers at the end of fiscal year 2011 in the following classifications:

- Residential: 39,622
- Small General Service: 5,250
- Large General Service: 1,041
- Industrial: 31

2011 Summary

The City of Columbia's energy efficiency efforts have been successful and have many community benefits. In fiscal year 2011 Columbia Water & Light's energy efficiency programs saved the city over 3.4 million kilowatt hours and have reduced capacity by over 840,000 kilowatts. The biggest drivers of energy savings are the residential Home Performance with Energy Star program and the commercial Lighting Incentive program. In 2011, customers spent over \$6 million dollars in the local economy on energy efficiency upgrades with over \$10 million dollars spent over the last two years. Energy efficiency programs reduce the amount of power the utility needs to produce or purchase, they save the customers money, money is being invested in the local economy and the programs reduce greenhouse gases.

Energy Efficiency Programs Overview Chart

Fiscal Year 2011

Program	Participation	Expenditure	Capacity Reduction	Energy Reduction
Home Performance with Energy Star	906	\$515,369	245 KW	842,580 KWh
Air Conditioner or Heat Pump Rebates	368	\$141,230	133 KW	563,776 KWh
Residential Loans	224	(\$2,057,913)*	NA	NA
Online Energy Audit	605	\$8,260		163,350 KWh
Energy Audits	576	1 staff person		105,250 KWh
New Home Energy Star Rebates	11	\$11,000		
Tree Power & landscape audit	98	\$7,400	1.5 KW	102,085 KWh
Window Air Conditioner Exchange Program	30	no new expenditures this year		21,900 KWh
Lighting Incentive Program	50	\$127,407	460 KW	1,448,892 KWh
Energy Assessments	65	1 staff person		
Commercial Loans	3	(\$25,564)*	NA	NA
Infrared Scans	8,265	1 staff person		
City buildings	3	grant funding		88,290 KWh
Photovoltaic	1	\$1,900	0.76 KW	5,130 KWh
Solar water	11	\$8,400	NA	27,500 KWh
Audit incentives*	1,701	<\$373,570**>	NA	NA

*The loan expenditures are paid back by the customer

**Audit incentives are part of the administrative costs and are for market transformation. Dollar figure for both pre and post assessments are combined. Please see the section for the Home Performance program on these expenditures.

Cumulative Energy Savings (FY2007 through FY2011)

Only programs with verifiable energy savings are detailed in this chart.

Program	Total participation	Average incentive	Total energy savings	Total peak reduction	Total expenditures
Home Performance	1,915	\$484	2,505,986 kWh	479 KW	\$1,539,347
AC/HP incentive	1,261	\$334	2,540,636 KWh	396 KW	\$360,325
Lighting incentive	74	\$2,782	9,681,999 KWh	1,396 KW	\$205,884
Window AC Exchange Program	265	no new expenditures this year	140,400 KWh		\$43,500
City buildings	3		88,290 KWh		
Photovoltaic	6	\$1,147	37,319 KWh	1.9 KW	\$4,780
Solar water	14	\$771	57,500 KWh	NA	\$10,800
Audit incentives*	4,213	<\$222*>	NA	NA	\$935,280*

*Audit incentives are part of the administrative costs and are for market transformation. Dollar figure for both initial and post assessments are combined. Please see the section for the Home Performance program for details on these expenditures.

Residential Energy Efficiency Program Details

Home Performance with Energy Star

This is a national program that brings existing homes up to Energy Star standards. After a detailed home assessment by a certified contractor, electric customers can qualify for rebates and a loan for the suggested improvements. There are incentives up to \$1,200 for air sealing, insulation, duct sealing, doors/windows and heat pumps. The incentives are based on the energy saved and the utility cost benefit. There were some small revisions to the incentives in 2011. The changes had to do with the rental property requirements and that all customers must have a minimum of a 15% energy savings to participate in the program.

This single program implements most of the suggested Integrated Resource Plan residential efficiency measures and has resulted in 479 kilowatt and 2.5 million kilowatt hour savings over the life of the program. The program continues to see increased participation numbers. In FY09, 187 homes completed the program, in FY10 667 completed the program and in FY11 906 homes were completed.

It is important to note the economic impact of Columbia Water & Light's energy efficiency programs. There was \$3.8 million spent by Home Performance with Energy Star customers in 2011. Along with this there have been new businesses and 45 jobs created through this program. Before the utility started this program, there was a very limited market for this type of service. In order to assist in transforming the energy efficiency market, Columbia Water & Light has offered contractor incentives. The certified contractors help the utility administer the program and provide utility data about the participating homes. They have also produced new business in Columbia which is important for local economic development.

In 2011, \$89,900 was paid to contractors for 899 initial Home Performance with Energy Star incentives and \$283,670 for 802 the final assessments. The contractor incentives are performance based. Columbia Water & Light splits the payment to contractors so they are motivated to complete the jobs. Final assessments are also important since they provide valuable data on the energy efficiency upgrades. As this program has evolved the contractor incentives have changed. To be eligible for incentives in 2011, the participating home had to achieve a 15% energy reduction. Columbia Water & Light also requires that gas appliances that are located outside of the home's thermal envelope cause a reduction in the incentive by \$70. The contractor incentive will remain the same in 2012 since the utility will be participating in the Department of Energy's Energy Home Scoring pilot program. Providing the rating will require additional work on behalf of the certified contractors.

Customer satisfaction with this program is very high which has a positive impact on the utility as a whole. 59% said they would have not made the energy efficiency improvements without the utility's program and 94% would recommend it to others. 97% gave the contractor they worked with a rating of four or five, on a scale of one to five. 99% gave the utility staff they worked with a rating of four or five. 60% said their utility bills were lower or about what was estimated during the energy assessment while 26% said there had not been enough time to evaluate the savings. 74% cited increased comfort of their home after completing the energy efficiency projects.

Columbia Water & Light is the program coordinator for the Home Performance with Energy Star program. The utility staff reports Columbia and Boone Electric's data for the program to the Environmental Protection Agency. In 2011 two Columbia certified contractors received the Century Club Award from the Environmental Protection Agency for completing over 100 homes in one year. Nemo Insulation Company and Chapman Heating and Air Conditioning were two of fifteen award recipients nationally.

VISIONING GOAL: Meets the 9.3.1 Goal & Strategy. Also, this program was specifically mentioned in the Priority Strategy 1) g.

See the appendix for a chart of program incentives and a map of completed homes.

Air Conditioner or Heat Pump Rebates

Air conditioner or heat pump incentives are based on the size of the system and the SEER (efficiency rating) of the system. The amount of the incentive is based on the amount of energy saved and the utility cost benefit as outlined in the Integrated Resource Plan. This program also has high targeted energy savings due to cooling systems being one of the largest drivers of peak electric demand in the summer. This rebate program has a cumulative savings of 396 kilowatts and over 2.5 million kilowatt hours.

The number of air conditioner or heat pump rebates in 2011 was 368 which were similar to the rebates in 2010. More research needs to be completed to see what motivates customers to replace a system so marketing efforts can be focused on those drivers. If customers mainly take advantage of the rebate when their system needs to be replaced, the participation numbers could remain steady each year. If comfort is a factor in changing out a system, then more people could be directed to also participating in the Home Performance with Energy Star program.

VISIONING GOALS: Meets the 9.3.1 Goal & Strategy. This program was specifically mentioned in the Priority Strategy 1) j & k.

Residential Loans

Columbia Water & Light offers residential and commercial electric customers low interest loans to make energy efficiency improvements. Participants are required to have a detailed energy efficiency assessment so the maximum amount of energy savings can be achieved. The energy savings for the loan program are not detailed in the overview chart of this report since the energy savings are embedded in the Home Performance with Energy Star results.

Participation in the loan program on the residential side dropped from 297 in 2010 to 224 in 2011. It is hard to draw many conclusions from these statistics since the amount of people participating in the Home Performance with Energy Star program increased. For the first time in 2011, commercial customers took advantage of the loan program. In 2012 the Climate Showcase grant is expected to increase the number of commercial loans in the downtown area.

The loan program is an important tool for the utility to offer electric customers. Data has shown that loan customers finish more energy efficiency projects and save more energy than those that only take advantage of the rebate program. This program is funded by the electric utility's designated loan fund and the money is paid back to the utility by the customers. There is limited liability to the utility since a property deed is required for all loan customers.

VISIONING GOALS: This program assists customers in financing the suggested energy efficiency measures mentioned in the 9.3.1 Goal & Strategy

Online Energy Audit

Columbia Water & Light started a free online energy audit and carbon calculator on the city's website in the fall of 2008. Customers can conduct an assessment and receive recommendations based on the input. There is also an energy efficiency reference library. In 2011 there were 605 customers who used this service.

VISIONING GOALS: 9.3.1 Goal & Strategy

Energy Audits

Columbia's free evaluation provides energy and water efficiency tips specific to each location. Energy savings are harder to calculate for this program since it is not as in-depth as the Home Performance with Energy Star assessment. Seventeen of the audits turned into Home Performance with Energy Star participants. It remains a popular program, especially with customers who want to reduce their high utility bills. There were 266 home visits completed in 2011 and 310 phone consultations, which is similar to the participation rate for 2010. It is estimated that each home visit results in a reduction of 250 kilowatt hours a year and each phone consultation saves 125 kilowatt hours a year. There was an estimated savings of over 100,000 kilowatt hours in 2011 with a minimal expenditure since one staff person administers the program.

The customer feedback on this program is very favorable. 90% of the survey respondents said they made the suggested energy efficiency improvements. The energy savings question results were mixed with 31% saying they didn't have enough time to evaluate and 24% saying their bills were lower than expected, 23% saying they were about the same and 14% said the bills were not as low as they expected. 54% of the survey respondents said their homes were more comfortable. 64% gave the staff person a rating of 5 on a scale of 1 to 5 (with 5 being the highest) and 28% gave him a rating of 4. This program helps Columbia Water & Light satisfaction ratings and the survey shows that the level of customer service is exemplary.

VISIONING GOALS: 9.3.1 Goal & Strategy

New Home Energy Star Rebates

This is a national program in conjunction with the Environmental Protection Agency's Energy Star program. Energy Star homes are 20% to 30% more efficient than standard homes. The amount of new homes being built in Columbia has gone down over the last several years so participation in this program has been small. There are 125 homes in Columbia that meet Energy Star standards according to the Department of Energy's website. Eleven customers received an incentive of \$1,000 for participating in the program in 2011.

VISIONING GOALS: 9.3.1 Goal & Strategy, starting this program was specifically mentioned in the Priority Strategy 1) h.

Tree Power

This program promotes energy conservation through energy efficient landscaping. Customers receive a landscape audit which indicates where they should plant their free 6- to 8- foot tall shade tree. Three properly placed shade trees, at maturity, can reduce cooling costs by 30%. There were 98 landscape audits completed in 2011 and 90 tree coupons redeemed.

Measuring the amount of energy savings is more difficult with the Tree Power program than with the Home Performance with Energy Star program or the Air Conditioner/Heat Pump rebate so advertising efforts have been concentrated on those programs over the last several years. The amount of new homes being built has been lower the last several years which has also reduced participation since that used to be a targeted market.

VISIONING GOAL: 9.3.1 Goal & Strategy

Low-Income Energy Efficiency

Energy efficiency for Columbia's low-income customers has been greatly assisted over the last few years by the Central Missouri Community Action's weatherization program. Using federal funds, low-income residents of Boone County can qualify for a free weatherization program. Both Columbia Water & Light and Boone Electric brought forward initiatives to augment the funding of this program when the federal funding runs out. Another idea being researched is a program where Columbians could donate to a low-income weatherization fund.

VISIONING GOAL: Goal and Strategy 9.3.1

Window Air Conditioner Exchange Program

To reduce summer electric bills for low-income customers that use window air conditioning units, an exchange program was started in 2007. Columbia Water & Light collaborates with Central Missouri Community Action Agency and Boone Electric on this program. An income qualified person brings in an older, inefficient unit and is given a new, Energy Star rated window unit provided by the utility. In 2011, there were 30 window air conditioners distributed for a total of 265 over the life of the program. The average savings per unit is 730 kilowatt hours or \$90 per year for the customer.

VISIONING GOAL: Goal and Strategy 9.3.1

Building Codes

Both the Building Construction Codes Commission and the Environmental and Energy Commission reviewed the building code regulations and provided input to the City Council about the adoption of new codes. In March of 2011, the City adopted the 2009 International Building Code with amendments. Of particular note, the City also adopted Chapter 11 of the 2009 International Residential Code regarding energy efficiency essentially verbatim with very minor amendments.

Commercial Energy Efficiency Program Details

Lighting Incentive Program

Columbia Water & Light encourages commercial customers to reduce their electric usage with a \$300 per kilowatt reduction in their lighting systems. The Integrated Resource Plan identified lighting as the area where the most energy

efficiency could be gained in the commercial sector. The program ramped up considerably in 2011 and it has provided the utility with more energy savings than any other program. There has been a reduction of 9.7 megawatt hours since the program began.

Customers participating in the Lighting Incentive program benefit from the reduction of their electric bills and an increase in the quality of light. The new lighting systems make it easier for workers to see and make the product look better for the customers. Testimonials about the positive aspects of the program were used in 2011 as a way to drive up participation numbers. There are limited media outlets specifically for businesses so this program heavily relies on the staff's contact with the customers. Research has shown that businesses also prefer direct contact since each business needs a customized approach to energy efficiency.

In 2011 the Lighting Incentive Program was changed to accommodate the use of efficient lighting that was not hard wired. Now eligible under the rebate are approved LED bulbs, cold cathode, or GU-24 base lamps. These rebates are calculated on a one-to-one replacement of the existing lamps. Any wattage reduction from the reduction in the number of lamps (such as the removal of track heads), does not factor into rebate award calculations.

VISIONING GOALS: 9.3.1 Goal & Strategy, this program also meets Priority Strategy 1) m.

Energy Assessments

Columbia Water & Light provided 65 commercial energy assessments in 2011. These assessments ranged from assisting the customer in understanding their utility bills and how their business uses energy, to full ASHRAE level II energy audits. Assistance to businesses in 2011 included churches, hotels, offices, restaurants, retail outlets and industrial customers. The four ASHRAE level II energy audits included an industrial customer, two office buildings and a city owned building. Currently there is not a measured energy savings attributed to the assessments however there have been behavioral changes and some lighting upgrades completed.

VISIONING GOALS: 9.3.1 Goal & Strategy, this program also meets Priority Strategy 1) m.

Commercial Loans

Columbia Water & Light offers commercial electric customers low interest loans to make energy efficiency improvements. This program enables businesses to finance suggested energy efficiency measures recommended in the Integrated Resource Plan. The loan program requires detailed energy assessment of the building. This program is not as popular with the commercial sector as it is for the

residential sector since many businesses do not own their buildings. There were three commercial loans in 2011.

VISIONING GOAL: 9.3.1 Goal & Strategy

Infrared Scans

This program provides a means for commercial customers to inspect mechanical components, electrical cabinets, electrical distribution systems and building envelopes to save energy and reduce mechanical failure. There is one staff member that runs the program. He also assists the Electric Distribution Division in identifying problems on the Columbia system which improves reliability and reduces losses. In 2011 there were 8,265 infrared scans completed. There were 730 anomalies, 416 of which were potential problems in the power distribution system and 314 were found on customers' systems. The following clients were served by the Infrared Program in 2011: Columbia Water & Light electric distribution, Kraft Foods, Pepsico, J M Eagle, Forum Development Group, Traxia, Columbia Country Club, Fire Station #1 & #2, Columbia College, Perry Legend, Linen King, Studio B and five residential customers.

Partnership with University of Missouri: The Missouri Industrial Assessment Center (part of the Engineering Department of the University of Missouri) has conducted energy audits for Columbia's industrial customers for the last two years. This partnership helps the utility save staff time while providing the students experience with onsite assessments and the customers are informed of ways to save energy.

Solar Programs

Columbia Water & Light encourages both photovoltaic and solar hot water projects through electric customer incentives. The utility offers a rebate of \$500 per kilowatt for qualifying photovoltaic systems and up to \$800 in rebates for customers installing solar water heating systems. Since 2007, \$5,830 has been awarded for photovoltaic systems and \$10,800 has been awarded for solar water heaters. For 2011, there was a 1.18 kilowatt reduction and a 35,465 kilowatt hour savings from solar projects.

Behind-the-meter solar systems work in many ways like energy efficiency projects. At locations where there are photovoltaic systems and solar water heaters, the utility does not have to provide as much power. However, only photovoltaic systems provide a reduction in peak energy use. Solar systems produce targeted energy savings during daylight hours, especially in summer when power costs are usually higher than average. It is estimated that photovoltaic systems can produce 20% of their rated power during the utility's peak demand periods. The energy savings from solar water heaters are not counted by the utility as a capacity reduction.

There are other utility solar projects, such as Columbia Water & Light’s Solar One program, that are connected directly to the utility as a power producer and do not serve as a behind-the-meter application. Solar One energy production is directly metered and accounted for separately as a utility electric supply. It is not considered a source that reduces Columbia’s electric demand.

Grants

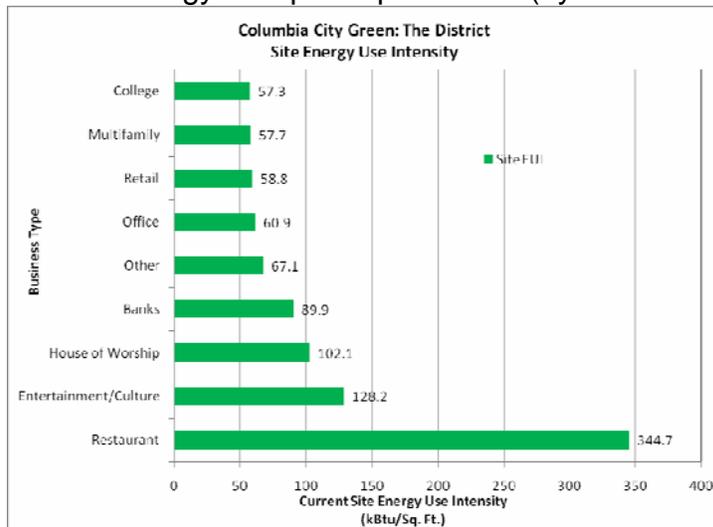
Columbia Water & Light’s staff has assisted in the writing, collaboration and completing the work of over \$1 million worth of energy efficiency grants. The grants ranged from increasing the efficiency of commercial buildings to extensive modeling of motor usage at the Water Treatment Plant.

Climate Showcase Communities Grant

In February 2011, the City of Columbia received a \$285,000 grant from the Climate Showcase Communities office of the Environmental Protection Agency for the “City Green: The District” project. The focus of this grant is to reduce greenhouse gas emissions in commercial buildings downtown through energy efficiency measures. During the first phase of the project, 109 building descriptions and utility usage data were collected and entered into the Energy Star Portfolio Manager program to establish the initial benchmarks.

On September 1, 2011 the energy usage benchmarks were presented to participating building and business owners. Participants were urged to apply for grant funding to help pay for the energy audits and efficiency retrofits. The implementation phase of this grant will continue in 2012 to achieve the goals of reducing greenhouse gases through energy efficiency.

Annual Energy Use per Square Foot (by commercial sector)



VISIONING GOALS: This grant helps meet Visioning Goal and Strategy 9.3.1 and is mentioned specifically in Priority Strategy 1) r.

Energy Efficiency and Conservation Block Grant

This \$1,018,300 grant is for energy assessments and efficiency improvements of City of Columbia buildings along with funding the Office of Sustainability. Columbia Water & Light staff has helped gather data and assist the contractor during the audits that encompassed over 600,000 square feet of city-owned facilities. There is a potential savings of 338 kilowatts and almost 2 million kilowatt hours if all the energy efficiency projects are completed. The projects at the Parks Management Center, the Armory gymnasium and the Material Recovery Facility at the landfill completed in 2011 have an estimated savings of 88,290 kilowatt hours. The energy efficiency upgrades are continuing in 2012.

Demand Response Programs

Columbia Water & Light has initiated Demand Response Programs designed to reduce electrical demand when needed by the utility. There are incentives for customers to participate in these voluntary programs.

Load Management

Load Management is a residential and small commercial customer demand response program. The intent of the program is to reduce peak electric demand by controlling air conditioning loads when the cost of electricity is at its highest, typically on hot summer afternoons. Due to the cool weather, the switches were not activated in 2008 or 2009. The customer electric discount was raised in 2009 to 5% and reduced to 3% in 2010. At the end of 2011, there were 19,751 switches installed on the Columbia system with an estimated cumulative capacity reduction of 7.5 megawatts an hour. On July 21, 2011 an all-switch test was conducted and the load reduction was 29 megawatts. Under normal circumstances all the switches are not activated at once but in case of an emergency, there could be a substantial curtailment of Columbia's electric load.

Load Shedding Program

This is a peak electric load reduction program for large commercial and industrial customers that have demand levels of 250 kilowatts or higher during the summer are eligible for an incentive. Credits are paid to the customer in monthly credits, of \$3 per kilowatt, starting with the October billing. A maximum of 50% of the load is eligible for load shedding credits. There are 26 customers participating in the Load Shedding program with an estimated capacity reduction of 4.5 megawatts.

Education, Training and Outreach

Building Performance Institute (BPI): BPI certification is the industry standard for home energy assessments. This certification is a requirement for becoming a certified Home Performance with Energy Star contractor in Columbia. Expanding training opportunities locally helps reduce training costs and the economy by developing new jobs. Columbia Water & Light staff along with Central Missouri Community Action trained and certified 54 new contractors. In 2011, staff trained two individuals to be BPI trainers and proctors.

Housing Rehabilitation Program: This City of Columbia program is funded by the Department of Housing and Urban Development (HUD) Community Development Block Grant and HOME programs. It promotes neighborhood stability by providing funds to help low-income property owners make necessary improvements to their homes. Columbia Water & Light staff has helped the Community Development Department with this program by providing energy assessments.

Advancing Renewables in the Midwest Conference: On March 30, 2011, speakers from the American Wind Energy Industry Association, the American Council for an Energy Efficient Economy, Missouri's Public Service Commission and other national agencies addressed 180 attendees about the state of renewable energy. The theme of the conference was the economic development aspect of renewable energy and the topics ranged from attracting renewable energy manufacturing jobs to biomass energy development. This 6th annual conference was hosted by Columbia Water & Light, the University of Missouri's Department of Soil, Environmental and Atmospheric Sciences and the Missouri Department of Natural Resources.

Energy Expo: Columbia Water & Light, Boone Electric and six other electric co-ops hosted this free event in October at the Boone County Fairgrounds. Hundreds of people came to learn about making their homes more energy efficient. Attendees took advantage of the opportunity to visit with energy experts from central Missouri. There were representatives from local companies specializing in heating and cooling, insulation, lighting, windows and more. The event also featured seminars and more than 30 exhibits.

Energy Choices: Each year Columbia Water & Light staff members teach all of the Columbia Middle School science students about energy efficiency. The project shows how much energy is needed to heat water for a shower and the associated cost of a shower. The students are then challenged to reduce energy consumption in their homes. Staff taught about 1,400 students at Lange, Gentry, Smithton, Columbia Independent School and Columbia Catholic School in 2011.

Calendar Contest: Each year junior high art departments work with Columbia Water & Light to produce an energy efficiency calendar. This process teaches children energy efficiency principles and markets the utility's programs throughout the year.

Saturday Science: Each winter, students that have a special interest in science can sign up for an extra curricular learning experience. 100 students from Jefferson, Oakland and West Junior Highs were taught science theories that are involved with energy production and usage in 2011.

Summer School: Columbia Water & Light staff taught 75 fourth and fifth graders about the water cycle along with presenting information on how a water utility operates during the Columbia Public School's summer school.

Marketing

The objective of Columbia Water & Light's marketing program is to reduce electric consumption by encouraging customers to participate in the utility's Demand Side Management programs. In 2010, the Powerful Partnership theme was established so the utility would be viewed as an energy efficiency resource to empower customers to save money. It also allows customers to feel like they are part of something significant. This theme was continued in 2011 along with some new marketing ideas to continue to drive up the energy efficiency program participation numbers.

National and local research led the Columbia Water & Light staff to realize that saving money is not a driver for all sectors of the community. According to the Shelton Group Energy Pulse report, when people were asked how much their bill would have to increase to become more energy efficient, 33% said \$76 to \$100 and 31% said more than \$100. However, being comfortable at home ranked as a high priority across many demographics of the population. Therefore, the 2011 advertising campaign focused on both saving money and being more comfortable.

The 2011 advertising campaign used an ant as a spokesperson in the television ads. The concept was that if one completes air sealing for energy efficiency, the added benefit is that it keeps pests out as well. The series of three animated commercials showed ants moving into a home through cracks in the foundation. The next spot had the ants noticing that there had been a lot of commotion with the addition of adding insulation and air sealing. The final spot had the family of ants moving out because access to the house had been blocked. Within each of these commercials the following messages were included: Home Performance with Energy Star improvements, saving money along with the utility's rebate and loan program. By focusing on the Home Performance program in the paid advertising outlets, customers are driven to the program with the highest utility cost benefits.

To view the television commercials visit the following websites:

Rebates

<http://www.youtube.com/watch?v=JJZHTro6V8&feature=plcp&context=C360a358UPOEgsToPDskK0sKR6o47wXS6YQcXqVKqo>

Home Performance Rebates and Loans

<http://www.youtube.com/watch?v=C0kOfOgyM44&feature=context&context=C360a358UPOEgsToPDskK0sKR6o47wXS6YQcXqVKqo>

Benefits of Home Performance

<http://www.youtube.com/watch?v=ZxuEZkVMM0&feature=context&context=C360a358UPOEgsToPDskK0sKR6o47wXS6YQcXqVKqo>

Outreach for the commercial customers continued to mainly be driven by staff interaction. Restaurant and hotel focus groups conducted in 2011 showed that this remains the best way to engage this sector. The Climate Showcase grant is a good example of this. City staff met with downtown business owners to encourage participation in the energy assessments and the participation rate met the goals of the grant.

Target Markets

Residential: Residential customers represent the largest and most demographically diverse group of customers. Columbia Water & Light's energy efficiency programs are marketed towards customers over the age of 25 in the city limits (65201, 65202 and 65203) that are likely to make efficiency improvements. Ads are placed according to the media outlets' ability to target these customers. The customers are reached through a combination of different media outlets.

Commercial and Industrial: The energy efficiency programs for this sector are best marketed through direct customer contact with a staff member. Columbia Water & Light has seen some good results with direct mail campaigns but it is a challenge to get the names of the individuals in charge of the energy efficiency decisions in the organization. The Columbia Business Times and the CEO magazine are the only publications where the rate of return for paid advertising is high enough to warrant the expense. In 2011, the ads used testimonials about the Lighting Incentive program from local customers. This concept generated more return than any other commercial program ad so it will be continued in 2012.

Advertising

Ads are placed through a free media buying service that targets the residential electric customer demographic. Ad placement is concentrated in the spring through the early fall since this is the period of peak electric consumption. It has been found that the following outlets were the best in 2011 for the residential customer demographic:

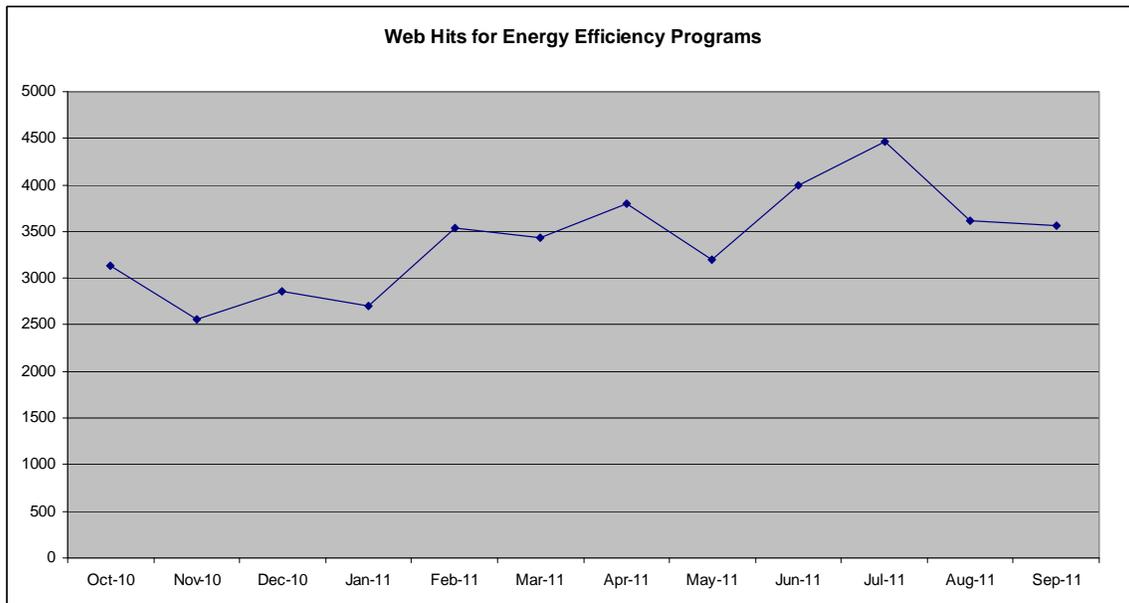
- TV: local news on NBC, ABC, CBS, FOX, KMOS and cable television spots
- radio ads on KBIA, KFRU, KSSZ and KPLA
- radio ads during Mizzou football and basketball games
- print ads
 - Columbia Business Times (for commercial programs)
 - CEO (for commercial programs)
 - Inside Columbia
 - Columbia Home
- Web site ads: Facebook, the Columbia Daily Tribune, the Columbia Missourian and KOMU

Outreach

The following outlets were also utilized to promote all of Columbia Water & Light's energy efficiency programs:

- City Source, the city's newsletter included with the utility bills
- Conservation Tips television show
- informational screens on the City Channel
- city's website
- public speaking events
- press releases and news coverage
- calendar with efficiency tips
- direct mail pieces
- trade allies
- direct customer contact
- booths at trade shows, conferences and community events

Website: It was found during customer surveys, focus groups and direct contact with the customer that it was hard for people to find information about Columbia Water & Light's energy efficiency programs. It was decided to launch a microsite so information about the energy efficiency programs could easily be found. The ColumbiaPowerPartners.com website name reinforces the ad campaign concept.



Facebook: A Facebook page helps get out information to customers about energy efficiency. The Facebook page has information about the utility's programs along with energy tips. This page along with the advertising placed on Facebook has been the main driver to the Columbia Power Partners website.

Conservation Tips on YouTube: Conservation Tips is a monthly video program on the City Channel. It has been a very popular show that drives people to the

free energy audit program. The show is a do-it-yourself type program that features easy energy efficiency projects. The last several years, more and more people are using the YouTube website to view videos. It was decided to put the Conservation Tips videos on this site so customers could access them easier. Although it is hard to find out how many Columbia customers are viewing the programs, the number of hits has been surprisingly large and the comments are very positive. Some videos have had so many hits that YouTube has offered an ad sharing agreement to share profits with the city. Here is a sample of the hits:

- 289,241 total views of Conservation Tips videos since May 2010
- Most viewed videos: How to Install a Window Air Conditioner (107,326), Garage Door Weather Seal Tips (35,510), Garage Door Insulation Tips (37,718), Lawn Aeration Tips (20,523) and Window Glazing Tips (13,822)

Future Programs

In the 2008 Integrated Resource Plan, Demand Side Management (DSM) programs were identified as the least cost power supply option. Many of suggested measures from the Integrated Resource Plan have been implemented. Most of the residential items are included in the Home Performance with Energy Star program. The commercial lighting program has grown substantially over the last year and is providing large savings. Some of the programs that have been researched but deemed too expensive are the refrigerator change out, the air conditioning tune-up and the load control thermostat programs. There are some programs that the utility's staff will continue to research although funding and staff considerations might be needed to implement the project.

- Electric Consumption Feedback: This will help staff evaluate how effective an in-home display of a customer's energy use is in reducing energy demand. A pilot program from Galtronics for 100 customers is planned for 2012.
- Home Energy Score: Columbia Water & Light was one of ten utilities selected by the Department of Energy to participate in this federal program. Home Performance with Energy Star customers will be given an energy efficiency score by the certified contractor. The homes' energy performance will be rated on a scale from 1 to 10, with 10 representing a home with excellent energy performance.
- Online Data Management Software: It is anticipated that the online data management system will streamline contractor (residential and commercial) interaction with the utility. Contractors will be able to enter assessment information from the field, reducing Columbia Water & Light staff time for data input and capturing more accurate data, plus streamlining and increasing reliability. The intent is that once the system is fully dynamic, the Home Performance with Energy star contractor incentive could be reduced. There have been two Requests for Proposals for a data management system sent out by Columbia Water & Light. There seem to be more developments of this type of system for utilities but the cost is still too high. The utility's staff will continue to look for a data

management system in 2012 and may issue another Request for Proposal.

- Commercial Motors: a rebate for more efficient motors has been reviewed by staff and could be implemented in 2012 if staffing to implement the program is available.

Appendix

1. Chart of energy efficiency incentives

2. Map of all the completed Home Performance with Energy Star participants

Columbia Water & Light Energy Efficiency Programs

Residential Incentives

Program	Incentive	Rebate Maximum
REBATES		
AC and heat pump (SEER 14 or above)	\$50 to \$1,600	\$1,600
Window AC units	Free exchange program for low-income	
Solar water heaters	\$400 to \$800	\$800
Photovoltaic systems	\$500 per kilowatt	\$5,000
HOME PERFORMANCE REBATES		
Attic insulation Option 1: Adding R-19 to meet R-38 standard	1 cent/R-value per sq ft (if starting less than R-27)	\$500
Attic insulation Option 2: Adding R-27 to meet R-38 standard	½ cent/R-value per sq ft (if starting at greater than R-27)	\$500
Wall insulation: R-13	3 cent/R-value per sq ft	\$500
Wall insulation in crawl space: R-10	5 cent/R-value per sq ft	\$500*
Floor insulation in crawl space: R-19	1½ cent/R-value per sq ft	\$500*
Rim joist insulation: R-13	\$20	\$20
Duct insulation: R-13 to unconditioned space	Prorated by % of envelope	\$300
Windows or doors	\$100/window or door (0.30 U-value)	\$500
Heat pump	\$200 (plus regular rebate)	\$200
Air sealing (minimum 0.5 ACH reduction)	Prorated \$84 per ACH reduction	\$420
Duct sealing (minimum 50 cfm reduction)	Prorated \$50 per 100 cfm reduction	\$300
HOME PERFORMANCE LOANS	See other chart	
ONLINE ENERGY AUDIT & STAFF HOME REVIEW	Free	
TREE POWER	Free 6' to 10' shade tree	

*Customer is only eligible for one of these rebates, either adding insulation to the walls or the floor of the crawl space.

Columbia Water & Light 2011 Demand Side Management Report

PLEASE NOTE: These overview charts do not contain all the parameters for participation in the programs.

Columbia Water & Light Energy Efficiency Programs Commercial/Industrial Incentives

Program	Incentive	Rebate Max
Commercial and Industrial HVAC	\$570 to \$3,770 (based on size and EER rating)	\$3,770
Commercial and Industrial lighting	\$300/kw of reductions	\$22,500

Columbia Water & Light Loan Program

Loan parameters

Residential or Commercial electric customer

Property owner

Minimum insulation requirements

Good credit history

Detailed residential building assessment (\$250 - \$400 by an approved contractor)

ASHRAE Level II audit for commercial loans (except for HVAC)

\$15,000 maximum loan with 10 year payback for residential structures

\$30,000 maximum loan for multi-family & commercial buildings for up to 10 years

DEED of Trust required

Subordination of loan under special circumstances

Interest rates

Up to 3 years: 1%

4 to 5 years: 3%

6 to 10 years: 5%

Efficiency items eligible for loans

Required energy efficiency assessment

Air conditioner or heat pump (minimum SEER rating of 14 or 7.7 HSPF)

Natural Gas Furnace (with AC or heat pump)

Insulation (attic, walls, floor joists, ductwork)

Upgrade electric wiring to install insulation

Solar water heater

Heat pump water heater

Air sealing

Windows & doors

Energy efficiency assessments

Columbia Water & Light 2011 Demand Side Management Report

PLEASE NOTE: These overview charts do not contain all the parameters for participation in the programs.

Columbia Water & Light Air Conditioner/ Heat Pump Rebate Chart

Residential

Due to the increased costs of higher SEER units, the amount of the rebate goes up with the efficiency rating.

SEER	1 TON	1.5 TON	2 TON	2.5 TON	3 TON	3.5 TON	4 TON	5 TON
14	\$50	\$75	\$100	\$100	\$100	\$150	\$200	\$300
14.5	\$75	\$125	\$150	\$175	\$200	\$250	\$300	\$450
15	\$100	\$150	\$200	\$250	\$300	\$350	\$400	\$600
15.5	\$125	\$175	\$250	\$325	\$400	\$450	\$500	\$700
16	\$150	\$225	\$300	\$400	\$500	\$550	\$600	\$800
16.5	\$175	\$250	\$350	\$450	\$550	\$625	\$700	\$900
17	\$200	\$300	\$400	\$500	\$600	\$700	\$800	\$1000
17.5	\$225	\$325	\$450	\$550	\$650	\$775	\$900	\$1100
18	\$250	\$375	\$500	\$600	\$700	\$850	\$1000	\$1200
18.5	\$275	\$400	\$550	\$650	\$750	\$900	\$1050	\$1300
19	\$300	\$450	\$600	\$700	\$800	\$950	\$1100	\$1400
19.5	\$325	\$475	\$650	\$750	\$850	\$1000	\$1150	\$1500
20	\$350	\$500	\$700	\$800	\$900	\$1050	\$1200	\$1600

The seasonal energy efficiency ratio or SEER is defined as the total cooling output (in British thermal units or BTU) provided by the unit during its normal annual usage period divided by its total energy input (in watt-hours) during the same period.

Columbia Water & Light Air Conditioner/ Heat Pump Rebate Chart

Commercial

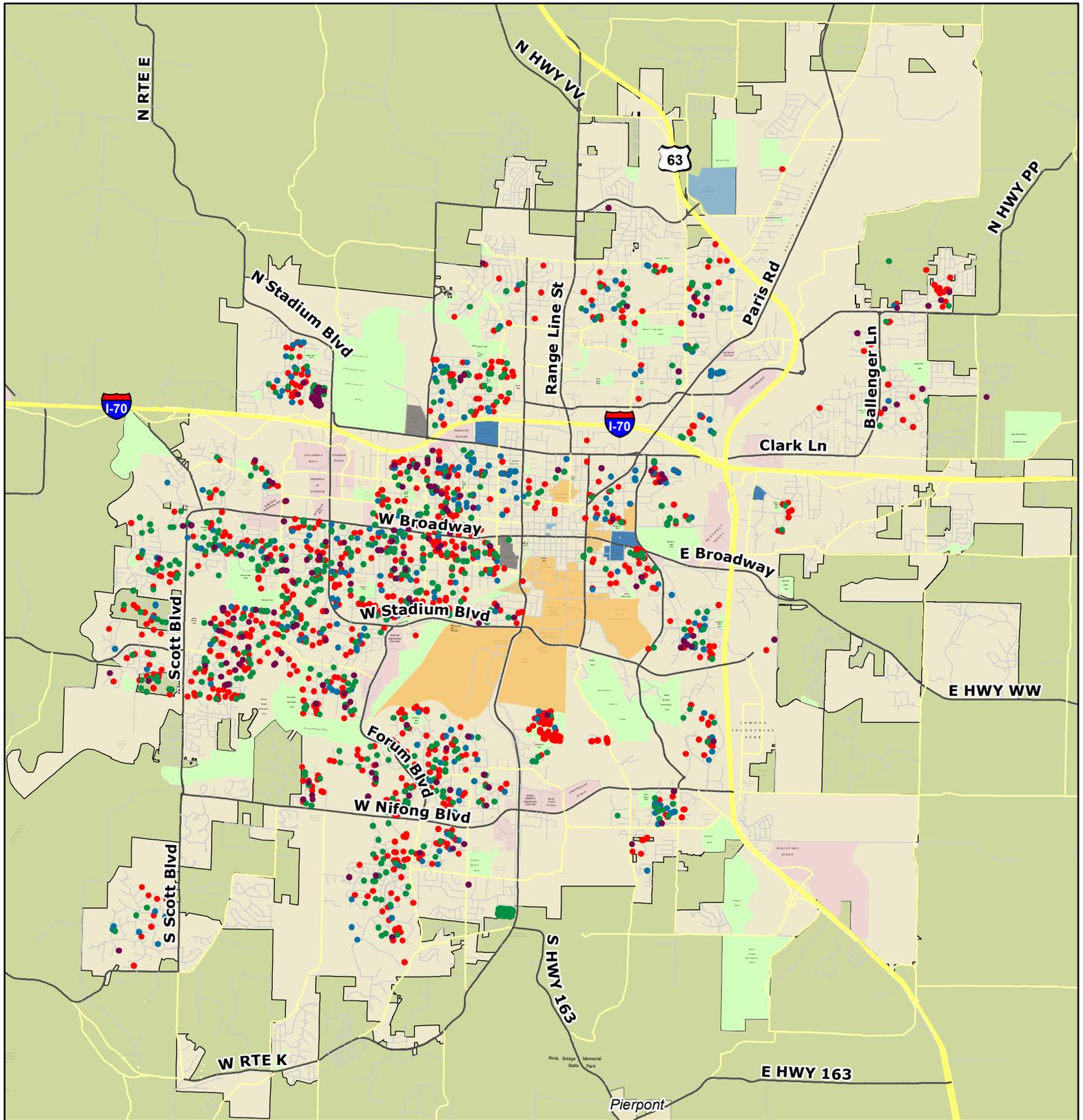
Due to the increased costs of higher EER units, the amount of the rebate goes up with the efficiency rating.

	11 EER	11.2 EER	11.4 EER	11.6 EER	11.8 EER	12 EER	12.2 EER	12.4 EER
6 tons	\$570	\$660	\$750	\$830	\$910	\$980	\$1,060	\$1,130
7 tons	\$675	\$775	\$875	\$965	\$1,055	\$1,145	\$1,235	\$1,315
8 tons	\$770	\$880	\$1,000	\$1,100	\$1,210	\$1,310	\$1,410	\$1,500
9 tons	\$865	\$995	\$1,125	\$1,245	\$1,365	\$1,475	\$1,585	\$1,695
10 tons	\$960	\$1,110	\$1,250	\$1,380	\$1,510	\$1,640	\$1,760	\$1,880
11 tons	\$1,055	\$1,215	\$1,375	\$1,525	\$1,665	\$1,805	\$1,935	\$2,065
12 tons	\$1,150	\$1,330	\$1,500	\$1,660	\$1,820	\$1,970	\$2,120	\$2,260
13 tons	\$1,245	\$1,435	\$1,625	\$1,795	\$1,965	\$2,135	\$2,295	\$2,445
14 tons	\$1,350	\$1,550	\$1,750	\$1,940	\$2,120	\$2,300	\$2,470	\$2,640
15 tons	\$1,445	\$1,665	\$1,875	\$2,075	\$2,275	\$2,465	\$2,645	\$2,825
16 tons	\$1,540	\$1,770	\$2,000	\$2,210	\$2,420	\$2,630	\$2,820	\$3,010
17 tons	\$1,635	\$1,885	\$2,125	\$2,355	\$2,575	\$2,795	\$2,995	\$3,205
18 tons	\$1,730	\$1,990	\$2,250	\$2,490	\$2,730	\$2,960	\$3,180	\$3,390
19 tons	\$1,825	\$2,105	\$2,375	\$2,635	\$2,875	\$3,115	\$3,355	\$3,575
20 tons	\$1,930	\$2,220	\$2,500	\$2,770	\$3,030	\$3,280	\$3,530	\$3,770

These rebates are for prepackaged & split systems.

Home Performance with Energy Star Projects

Completed Projects by Fiscal Year



Parks Campus Cemetery Commercial Government Hospital City of Columbia

Fiscal 2009 Fiscal 2010 Fiscal 2011 Fiscal 2012

0 0.45 0.9 1.8 2.7 3.6 Miles



Total Projects: 2006

March 21, 2012