



CONNECTING THE PIECES OF ENERGY EFFICIENCY



Energy efficiency plays an important role in utilities' power supply portfolios. Efficiency Smart connects its participating communities to a network of energy efficiency services, working in close collaboration to help them and their electric customers solve their energy efficiency challenges. It's the way each unique piece of the puzzle interlocks that enables this public power model to be successful.

"Energy efficiency is a smart investment for public power utilities, and one that produces long-term benefits for the entire community. Efficiency Smart provides an innovative option for AMP members to band together to offer state-of-the-art services for their retail customers. Efficiency Smart is a great economic shot in the arm for those communities that choose to participate."

Sue Kelly, President and CEO, American Public Power Association

Choosing the Right Pieces to Complete Your Power Supply Portfolio

Most public power communities have a choice whether to offer energy efficiency services to their end customers. Efficiency Smart provides a smart choice and a unique opportunity for American Municipal Power Inc.'s (AMP) member communities to provide superior services, reduce electricity use, save on capacity and transmission costs, and mitigate risks for both themselves and their end customers.

When the second Efficiency Smart contract period launched in 2014, 23 communities decided to renew their participation. Efficiency Smart also welcomed four new communities that began providing energy efficiency services to their customers for the 2014 – 2016 contract period. With the addition of Hamilton, Ohio, in 2015, we have successfully right-sized our operation to serve 28 communities, with the same high level of services to these participants. We also got off to a fast start in 2014, with many communities ahead of target for their three-year savings goals.

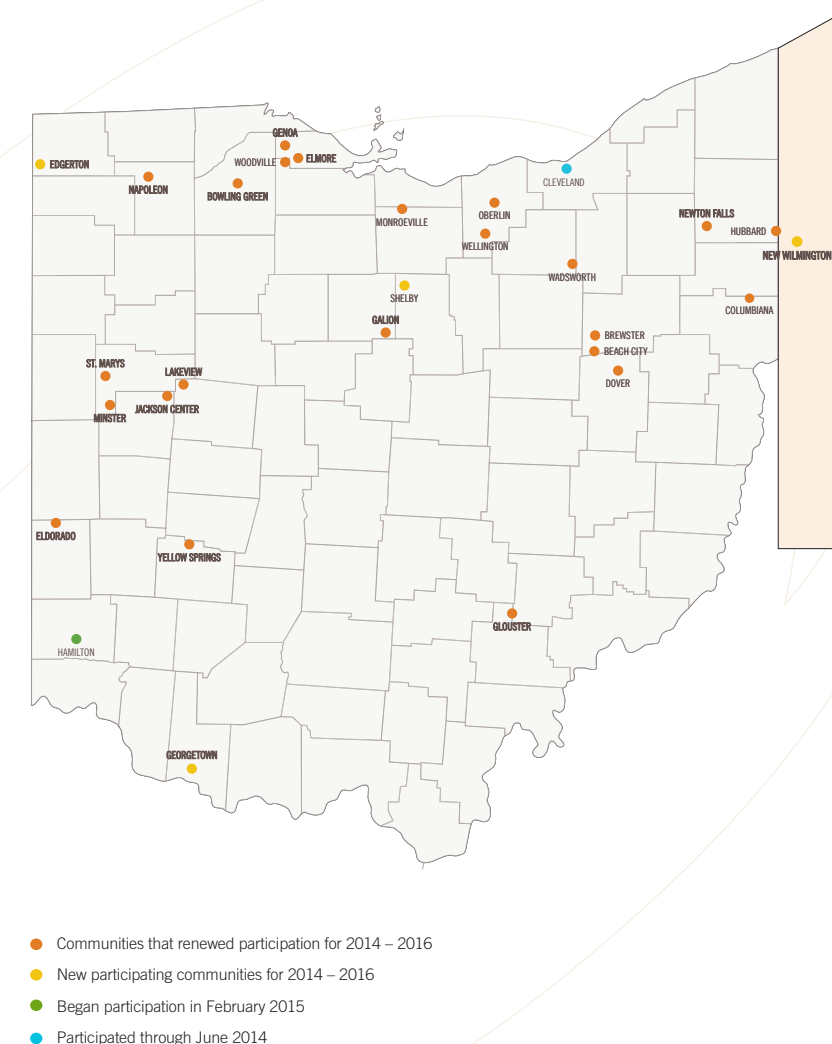
By choosing voluntary participation in Efficiency Smart, our subscribing communities and their customers expect excellent services with high levels of customization and customer support in return. To meet these expectations, we regularly evaluate and enhance our offerings by:

- > Focusing on customized solutions that take into account each community's specific energy savings goals in combination with its retail sales mix
- > Finding innovative ways to address special markets, such as financially vulnerable populations, senior housing facilities, and small businesses
- > Advancing our technical services and our staff's technical expertise as the energy efficiency industry progresses
- > Exploring new energy efficiency technologies such as lighting controls, evolving light-emitting diode (LED) technology, improved compressed air systems, and emerging cold-climate heat pumps

Efficiency Smart communities are building a strong foundation by including energy efficiency in their power supply portfolios. Many communities are offsetting new load growth with cost-effective levels of energy efficiency. As such, these communities will be well-positioned to meet environmental regulations that may come out of Washington. We are honored to help participating communities' customers take charge of their energy bills and take advantage of new technologies that will improve their comfort, productivity, and quality of life in their homes and businesses.

On behalf of the entire Efficiency Smart team,

DAVID CAWLEY
Director of Efficiency Smart



Energy Efficiency: the Perfect Fit for Public Power Communities

AMP established Efficiency Smart for the benefit of its member communities. The Vermont Energy Investment Corporation (VEIC) has held the contract for administering Efficiency Smart since it launched in January 2011. Efficiency Smart provides a broad range of energy efficiency services to AMP member utilities through a performance-based contract. The second contract period kicked off in 2014, with 27 public power communities subscribing to Efficiency Smart's services. As of February 2015, with the addition of Hamilton, Ohio, 28 communities now participate in Efficiency Smart.

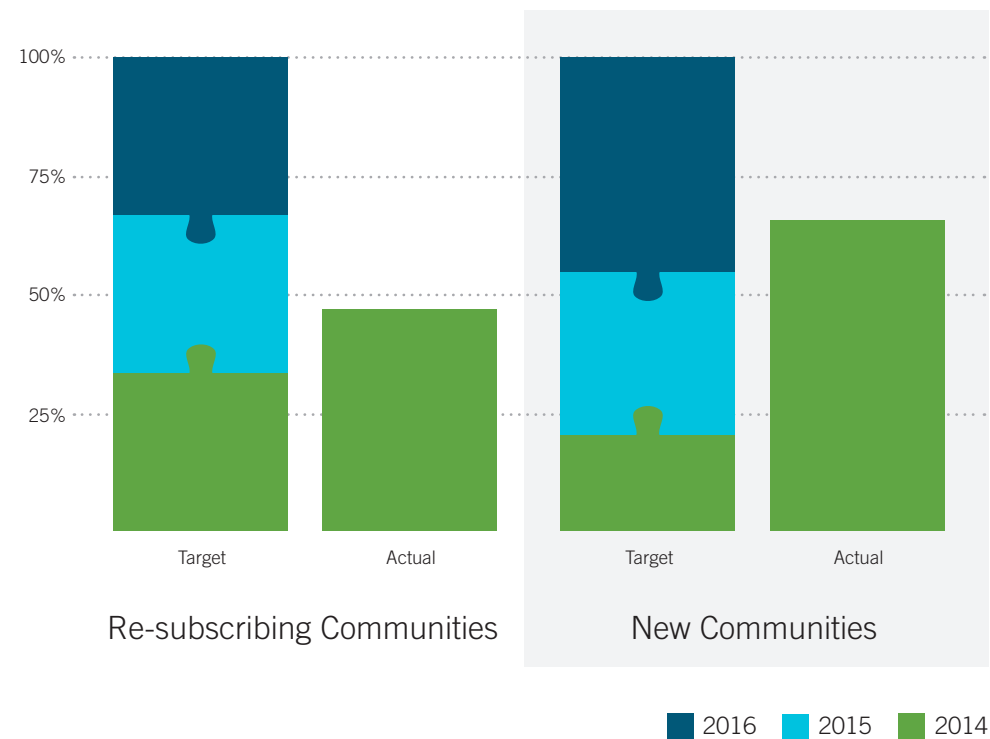
Efficiency Smart began 2014 with fluid participation levels and ended the year with strong results. At the outset, 23 communities had renewed their subscription, four new communities began participation, and one community had a subscription contract that extended through June 2014. Given this mix of participation, forecasts suggested that Efficiency Smart would achieve 14,260 megawatt-hours (MWh) of energy savings in 2014. This forecast represented 33 percent of renewing communities' targets, 20 percent of new communities' targets, and reaching over 100 percent of Cleveland Public Power (CPP)'s total goal.

The results exceeded expectations. Efficiency Smart achieved 21,823 MWh of energy savings in 2014, which was 153 percent of its aggregate annual target. The 27 communities participating in the second contract period during 2014 reached 48 percent of the cumulative three-year goal, and nearly 75 percent of participating communities were more than a third of the way to their three-year goal by year end. Additionally, CPP, whose contract ran from June 2011 to June 2014, achieved 19,069 MWh by the close of its contract period. That total accounted for 127 percent of its total goal.

Four key factors contributed to Efficiency Smart's success in 2014:

- > A project pipeline of 22,658 MWh heading into the 2014 – 2016 contract period for the 23 communities that renewed participation
- > A quick start for the four new 2014 communities, building on the foundation of established programs, experience from previous launch promotions, and early collaboration with key stakeholders
- > Nearly 30 percent of businesses that had previously had projects with Efficiency Smart completed additional energy efficiency upgrades, and 34 of these companies completed more than one project with Efficiency Smart during 2014
- > Residential customers implemented 51,148 energy efficiency improvements, taking advantage of opportunities to save energy through participation in Efficiency Smart's efficient lighting options, appliance recycling program, and efficient appliance and equipment rebates

Actual vs. Target MWh Savings

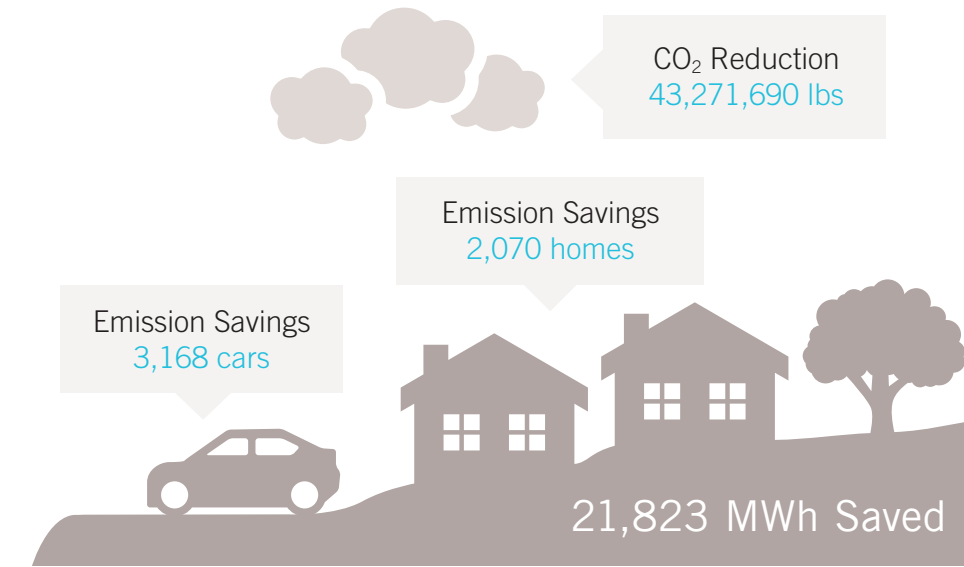


In addition, commercial and industrial customers shifted from primarily upgrading lighting in the first contract period to implementing a deeper mix of energy efficiency projects during 2014. In 2013, efficiency improvements involving compressed air, industrial process, motors, and motor controls accounted for only 22 percent of products installed. In 2014, these projects accounted for nearly 50 percent of all energy efficiency products installed.

In total, 9,483 residential and 239 commercial and industrial energy users in Efficiency Smart's participating communities installed energy efficiency measures in their homes or businesses in 2014. These improvements translated to the 21,823 MWh of energy saved for the year. This achievement is roughly equivalent to the:

- > Electricity used by 2,070 homes annually
- > Greenhouse gas emissions by 3,168 cars in a year
- > Reduction of 43,271,690 pounds of CO₂

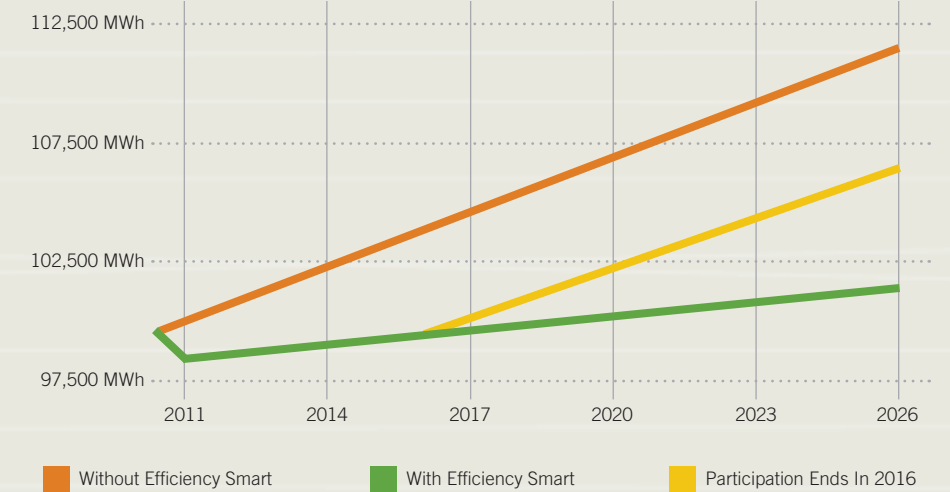
Environmental Benefits



Load Growth Scenarios for Efficiency Smart Communities

The energy savings that Efficiency Smart communities have realized have contributed to the sustainability and reliability of their electric supply. Communities that have participated since 2011 are now saving on average more than three percent of the electricity that their customers would have consumed, and have potentially offset new load growth.

Moving forward, Efficiency Smart will continue to develop community-specific solutions to help participating communities uncover additional energy savings, further reducing their electric loads.



“The City of Columbiana renewed its participation in Efficiency Smart because we saw the value it provided to our residents and businesses. Efficiency Smart's technical services are priceless, as it's a great economic development tool for business attraction and retention, and it helps our capacity and energy portfolio by assisting the city in saving energy. The City of Columbiana has developed a tremendous amount of trust with Efficiency Smart's staff. We know that they represent the city well.”

Lance Willard, City Manager, City of Columbiana, Ohio

“Shelby's investment in Efficiency Smart developed from our commercial and industrial customers' request for energy efficiency rebates and consulting services from experienced energy engineers. Efficiency Smart fit this specific model. Since the inception, its staff has provided professional services that have earned a strong, reputable name within our community. The program has also provided a valuable energy reduction resource to our energy portfolio.”

John Ensmann, Deputy Director of Public Service/Director of Utilities, City of Shelby, Ohio

Building the Framework, Filling in the Pieces

Investing in energy efficiency pays off, and often quickly. When faced with challenges such as increased energy demand, limited budgets, or environmental concerns, many municipal electric utilities are choosing to invest in energy efficiency services to offset these pressures.

For these utilities, energy efficiency provides many short- and long-term benefits, including:

- > The lowest-cost resource compared to other long-term power supply options
- > Significant cost reduction in transmission and distribution charges, which are likely to increase in value each year
- > The least risk of any resource, alleviating uncertainty associated with market variability, financial exposure to potential carbon regulations, and mitigating exposure to transmission and capacity costs
- > A reduction in power bills for end users—possibly even when energy prices go up, which frees up funds for consumers to reinvest in the economy and may ultimately induce a second round of spending and job creation
- > Local job creation assistance, supporting approximately 21 jobs for every \$1 million in related investments¹
- > A primary business retention and attraction tool that can aid in economic development by helping businesses to reduce their operating costs

PIECING TOGETHER SUCCESS: Shelby Welded Tube Consultation



Efficiency Smart Energy Consultant Ryan Calkins (right), worked with Shelby Welded Tube Plant Engineer Aaron Rothhaar (left), and Vice President of Operations Ben Willman (center), to meet their facility's energy efficiency goals. Calkins is a certified energy manager (CEM) and a Leadership in Energy and Environmental Design accredited professional in building design and construction (LEED AP BD+C).

When the city of Shelby, Ohio, partnered with Efficiency Smart in 2014, Shelby Welded Tube was one of the first companies in the community to take advantage of the newly available energy efficiency services. The welded steel tubing manufacturer is very conscious of its energy use, and had many questions for Efficiency Smart right from the start. As a result, Efficiency Smart provided a technical review of the company's facility and provided recommendations on potential energy efficiency projects.

An Efficiency Smart energy consultant worked with Shelby Welded Tube to provide an unbiased review of an air compressor project. Efficiency Smart also provided a comprehensive analysis of efficient

lighting options, assisting the company in making an informed decision for completing lighting upgrades at its facility.

Shelby Welded Tube's facility is now better lit and the new air compressors are running optimally, all while achieving the energy saving goals the company had hoped for. Based on the success of its initial projects, Shelby Welded Tube is considering additional projects, creating what seems to be a long-lasting relationship between the two organizations.

“Efficiency Smart’s energy consultants are a real asset. Knowing that our potential energy efficiency projects have been reviewed by technical experts really builds confidence within our organization to move projects forward. We have plenty of projects planned for the future, and with Efficiency Smart’s help, I hope to see big results.”

Aaron Rothhaar, Plant Engineer, Shelby Welded Tube

PROJECT FACTS AT A GLANCE

Annual kWh Savings: **323,500**

Annual Cost Savings: **\$33,200**

Lifetime Cost Savings: **\$340,200**

Simple Payback: **1.95 years**

Annual CO₂ Reduction: **636,700 pounds**

PIECING TOGETHER SUCCESS: Family Makes Smart Energy Efficiency Decisions

Many individuals are puzzled by where to start when trying to improve their home's energy efficiency. To help residential electric customers of participating utilities overcome this challenge, Efficiency Smart offers a free meter loan service to enable these customers to measure the energy use of common devices in their homes. Residents then work with an Efficiency Smart customer support specialist to review their electricity use and receive recommendations on ways to save energy.

In 2014, the meter loan service helped a family of separate homeowners in Minster, Ohio, take smart steps to make their homes more energy efficient. The first homeowner borrowed a meter and discovered how much money an old refrigerator and freezer were costing him to run. Surprised by the results, he recommended the meter loan service to other Minster homeowners in his family,

who also used meters to test the electricity use of appliances in their own homes.

As a result, one family member discovered that his refrigerator was using less energy than the average model, saving him from purchasing a new fridge that would have resulted in only marginal energy savings. Three family members learned that their older refrigerators and freezers were costing them hundreds of extra dollars on their electric bills each year. They were able to responsibly recycle two refrigerators and two freezers through Efficiency Smart's appliance recycling program and receive a \$50 incentive for each unit in addition to the savings on their monthly utility bills.

PIECING TOGETHER SUCCESS: Engaging Residential Customers and Retail Partners

In line with its commitment to support businesses in the communities it serves, Efficiency Smart regularly partners with local retail stores for events and point-of-sale promotions. Efficiency Smart also actively pursues opportunities to interact with residential customers through community-centered activities. To connect these efforts, Efficiency Smart hosts incandescent lighting trade-in events in conjunction with retailers in participating communities to engage with customers, to facilitate the use of efficient lighting products, and to encourage patronage of local retail stores.

During these events, residents can exchange up to 10 working incandescent lightbulbs for an equivalent number of new compact fluorescent light bulbs (CFLs). Efficiency Smart staff also provides kits with information on available services and rebates and is on hand to answer program and energy efficiency questions. Incandescent trade-in events bring additional business to local retailers, enable residents to reduce their electric usage by replacing inefficient light bulbs with free CFLs, and educate consumers on ways to save energy at home.

Efficiency Smart also engages with residential customers of its participating electric utilities through other community-based activities such as festivals, customer appreciation events, and



Efficiency Smart Residential Program Manager Corey Bentine, helps Galion resident Barbara, exchange her incandescent light bulbs for free CFLs during an incandescent trade-in event at a local retail store.

door-to-door initiatives. These activities provide an excellent opportunity for Efficiency Smart to increase awareness, understanding, and adoption of energy efficiency in its communities. During 2014, Efficiency Smart staff interacted with 8,119 residential customers during community activities, which directly translated to 7,059 MWh of lifetime savings for participating communities.

Interlocking Benefits for Municipalities

Efficiency Smart helps participating municipal electric systems compete with surrounding utilities, providing comprehensive energy efficiency services that rival those of investor-owned utilities. It also assists municipalities' customers to overcome common barriers to energy efficiency, such as a lack of knowledge or resources.

Additionally, Efficiency Smart offers municipal electric systems several less-common features, including:

- > Tailored services to fit the needs and resources of the municipal electric system and its customers
- > Savings guaranteed at the municipal level
- > Independent, third-party measurement, verification, and evaluation of savings claims
- > Turnkey services supported by an experienced staff with extensive technical expertise
- > A consultative approach that goes beyond simply offering rebates
- > Customized incentives and services for large commercial and industrial utility customers
- > Partnerships with local organizations, such as area economic development agencies
- > Community-based and customer-focused tactics
- > Cost-effective solutions, with an emphasis on making energy efficiency affordable to all customer classes

2014 Program Offerings



Residential Sector

Efficiency Smart's residential services offer renters and homeowners in participating communities many options to reduce their electricity use, save on energy bills, and make their homes more comfortable.

Targeted community outreach activities ensure all residential customers have ample opportunities to benefit from energy efficiency. Additionally, Efficiency Smart's customer support team provides guidance on everything from product performance to program offerings while its free meter loan service helps residents identify what household items are using too much energy so that they can make smart choices regarding energy efficiency upgrades.



Commercial and Industrial Sector

Efficiency Smart applies a consultative approach that combines technical assistance with financial incentives to help business customers of its subscribing municipal electric systems implement energy-saving improvements at their facilities.

Account managers help large commercial and industrial customers identify and assess energy efficiency opportunities while energy consultants work closely with these customers to understand the proposed technology, the amount of energy savings they can expect to realize, and the economic implications of their decisions.

Program managers and customer support specialists provide technical advice about qualifying products and projects for small to midsize businesses. Targeted business outreach provides additional assistance for businesses with economic or other resource barriers to implementing energy efficiency projects on their own.

Efficient Appliance Rebates



Rebates for purchasing qualified products promoted through local retailers. Financial incentives ranged between \$15 and \$250 for the following products:

- > Refrigerators
- > Clothes washers
- > Dehumidifiers
- > Heat pump water heaters
- > Ceiling fans with lights
- > Pool pumps
- > Furnace fans with electronically commutated motors (ECM)

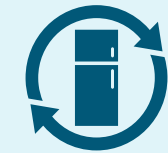
“My wife and I bought a 1929 house with very, very old appliances. The incentives of the program have been making it possible for us to gradually replace the appliances we have with energy-efficient ones. Another aspect we like is the process of learning about energy efficiency along the way. THANK YOU!”

Juan, Resident, Bowling Green

“After completing a successful lighting project with Efficiency Smart, INCA Presswood Pallets once again enlisted the help of its staff to review our plant and identify additional opportunities to save energy. In addition to recommending multiple no-cost options that are expected to save us thousands of dollars annually, they were also able to analyze several scenarios and determine the most cost-effective solution for a large compressed air project. Efficiency Smart's staff is really good at what it does and has saved me a lot of time, energy, and money with its assistance.”

Matt Doughty, Plant Manager, INCA Presswood Pallets

Appliance Recycling



A \$50 incentive and free appliance pickup for recycling an old, inefficient refrigerator or freezer. All units were responsibly recycled by JACO Environmental.

Efficient Lighting



Residents had several opportunities to make their homes more efficient by replacing incandescent lightbulbs with CFLs and LEDs, including:

- > Point-of-sale lighting campaigns in partnership with local retailers
- > An online lighting store
- > Free lightbulb distribution and exchanges through local events and targeted promotions

Custom Program



Efficiency Smart's Custom program provided tailored services to businesses that use more than 500,000 kilowatt-hours (kWh) of electricity annually. The program employed a customized approach to providing technical assistance and financial incentives for hundreds of energy efficiency projects. Efficiency Smart assisted commercial and industrial customers with both existing facility updates and expansion plans. Services included:

- > Proposal and design review
- > Energy and cost savings analysis
- > Product and control strategy optimization
- > Project verification and inspection

Business Energy Rebates (BER) Program



Efficiency Smart's BER program offered small to midsize businesses with an annual electric usage of less than 500,000 kWh rebates for completing energy saving upgrades and improvements at their facilities. More than 90 rebates were available for BER customers implementing common energy efficiency measures. Qualifying projects included:

- > Compressed air
- > Food service equipment
- > Heating, ventilation, and air conditioning (HVAC)
- > Lighting and lighting controls
- > Motors and variable frequency drives
- > Refrigeration

2014 Contract Results

Coincident Peak Kilowatt Savings



Commercial - **1,353 kW**
 Industrial - **1,879 kW**
 Residential - **306 kW**

3,538 kW

Annual MWh Savings



Commercial - **6,472 MWh**
 Industrial - **13,242 MWh**
 Residential - **2,109 MWh**

21,823 MWh

Lifetime MWh Savings



Commercial - **93,138 MWh**
 Industrial - **179,443 MWh**
 Residential - **17,514 MWh**

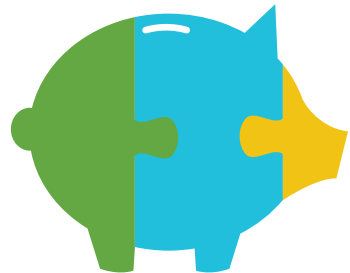
290,095 MWh

Project Completions



Total Projects - 9,722

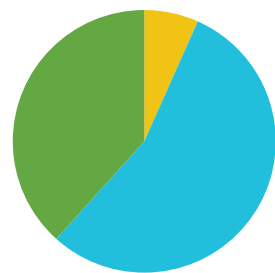
Lifetime Savings



Commercial - **\$8,181,220**
 Industrial - **\$14,718,440**
 Residential - **\$1,768,830**

\$24,668,489

Total Resource Benefits¹



Commercial - **\$5,444,686**
 Industrial - **\$10,626,872**
 Residential - **\$1,144,672**

\$17,216,230

¹Total Resource Benefits represents the present value of lifetime avoided electrical energy and demand charges as well as fossil fuel and water savings that result from energy efficiency measures.

Net Lifetime Economic Benefits²



\$18,354,887

²Net Lifetime Economic Benefits is equal to Total Resource Benefits plus operation and maintenance savings, minus the cost paid by Efficiency Smart to operate the program and the implementation cost paid by participants.

Emission Reductions

Carbon Dioxide (CO ₂)	43,271,690 lbs
Methane (CH ₄)	535 lbs
Nitrogen Oxide (NO _x)	45,025 lbs
Nitrous Oxide (N ₂ O)	678 lbs
Sulfur Dioxide (SO ₂)	176,134 lbs

Efficiency Smart Expenditures



Commercial **\$1,433,348** Industrial **\$1,627,026** Residential **\$1,646,635**

\$4,707,009

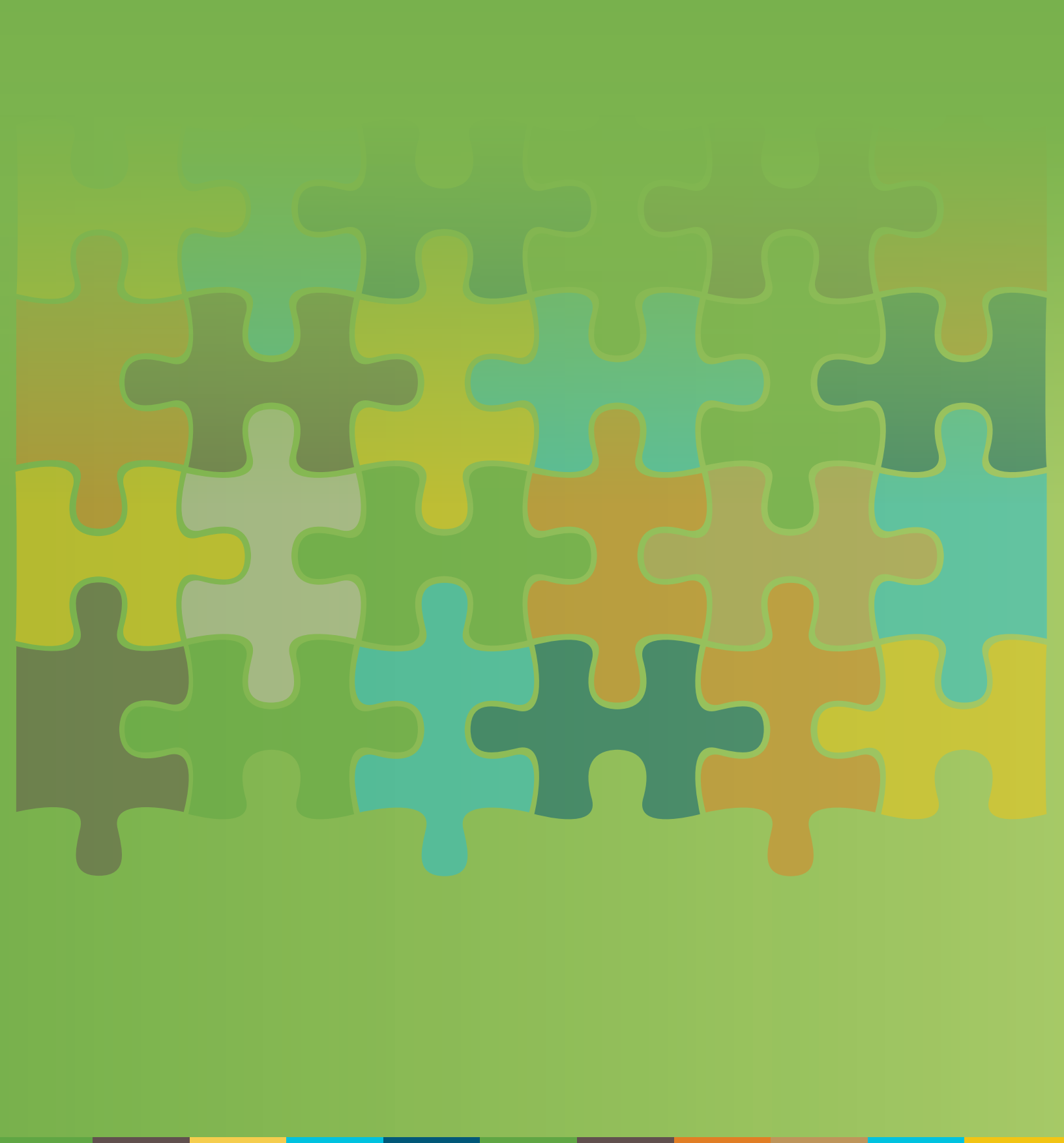
Efficiency Smart and its participating communities work together to develop the right pieces to complete their energy efficiency puzzle. When these pieces are connected, the bigger picture quickly becomes clear. It's not just one piece of the puzzle—such as technical assistance, economic development, or sustainability—but rather, it is the sum of all the pieces working together in harmony that turns this partnership from individual parts into a complete and comprehensive picture.

“Investment in energy efficiency continues to be the most cost-effective and low-risk option for utilities. Efficiency Smart plays an important role in our members’ power supply strategies, is central to our sustainability efforts, and is an effective service customized to the needs of our member communities. Efficiency Smart serves as a valuable asset for helping us navigate within the evolving landscape of the electric industry.”

Marc Gerken, President/CEO, American Municipal Power, Inc.

2014 Aggregate Benefits

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 \boxed{\$17,216,230} & \div & \boxed{\$5,095,910} = \boxed{3.38:1} \\
 \text{Total Resource Benefits} & & \text{Participant Costs Paid} \quad \text{Benefit-to-Cost Ratio}
 \end{array}$$



smart energy solutions. powerful savings.