

Municipal Utility Energy Efficiency: Successful Examples around the Nation

Martin Kushler, Brendon Baatz, Seth Nowak, and Patti Witte

November 2015

Report Number U1510

© American Council for an Energy-Efficient Economy
529 14th Street NW, Suite 600, Washington, DC 20045
Phone: (202) 507-4000 • Twitter: @ACEEEDC
Facebook.com/myACEEE • aceee.org

Contents

About the Authors.....iii

Acknowledgments.....iii

Executive Summaryiv

Introduction..... 1

Methodology 2

 Sample 2

 Data Collection..... 2

 Survey 3

 Utility Reports 3

 Interviews..... 3

Survey Results..... 4

 City and State Requirements for Municipal Energy Efficiency 4

 Factors Influencing Public Power Utilities to Provide Strong Programs 5

 History of Providing Energy Efficiency Programs..... 6

 Energy Efficiency Program Spending and Savings..... 7

 Other Factors Affecting Savings Accomplishments..... 9

 Recent Trends in Level of Energy Efficiency Effort 9

Discussion..... 10

 Municipal Utilities Can Deliver Energy Efficiency Results 10

 Why Do Municipal Utilities Pursue Energy Efficiency? 11

 Other Factors Supporting Energy Efficiency Involvement..... 12

 Factors Inhibiting Commitment to Energy Efficiency 13

References..... 15

Appendix A. Case Studies of Leading Municipal Utilities..... 17

Burlington Electric Department 17

Fort Collins Utilities..... 19

Glendale Water and Power..... 21

Los Angeles Department of Water and Power 23

Lansing Board of Water and Light 25

Seattle City Light..... 27

Sacramento Municipal Utility District 30

Snohomish County Public Utility District No. 1 32

Tacoma Public Utilities/Tacoma Power 34

Appendix B. Questionnaire..... 37

About the Authors

Marty Kushler is a senior fellow at ACEEE, where he previously served as director of the utilities program for 10 years. He has been directing research and evaluation regarding energy efficiency and utilities for three decades, and has provided consultation to numerous states and the federal government. Prior to joining ACEEE in 1998, he directed the evaluation section at the Michigan Public Service Commission for 10 years.

Brendon Baatz joined ACEEE in the fall of 2014. Brendon's research focuses on state energy efficiency policy, utility regulation, energy markets, utility resource planning, and utility-sector efficiency programs. Prior to joining ACEEE, Brendon worked for the Federal Energy Regulatory Commission, the Maryland Public Service Commission, and the Indiana Office of Utility Consumer Counselor.

Seth Nowak conducts analysis and writes reports on energy efficiency programs and policies in the electric and natural gas utility sector. Focus areas of his research include exemplary programs, best practices, and program evaluation, measurement, and verification. He joined ACEEE in 2010.

Patti Witte serves as a research consultant to ACEEE. She has over two decades of experience researching utility energy efficiency programs.

Acknowledgments

This report was made possible through the generous support of Seattle City Light, the Los Angeles Department of Water and Power, the Lansing Board of Water and Light, Traverse City Light & Power, and the Burlington Electric Department.

The authors gratefully acknowledge external reviewers, internal reviewers, colleagues, and sponsors who supported this report. External review and support does not imply affiliation or endorsement. Internal reviewers included Maggie Molina and Steve Nadel.

The authors also gratefully acknowledge the assistance of the municipal utility personnel who generously shared their time and expertise in completing surveys, participating in interviews, and providing other related information. Lastly, we would like to thank the ACEEE editing staff for their assistance in the publication process.

Executive Summary

This report presents the results of a survey of municipal utilities with strong energy efficiency achievements. The intent of this project is to focus attention on a segment of the US utility industry that has been relatively underappreciated in the usual assessments of the recent utility energy efficiency advancements in the United States.

While the rapid growth in utility energy efficiency efforts and accomplishments over the past decade has been widely recognized and reported upon, most of that attention has been devoted to investor-owned utilities (IOUs). This is perhaps understandable given that IOUs account for such a large share of utility electricity sales, and the fact that they are state regulated may make it easier to access data for analysis and reporting purposes. Yet for the United States to achieve its economic and environmental objectives in the area of energy efficiency, public power utilities must be strong partners. Over a quarter of all customers and a quarter of all electric sales in the United States are from the public power sector.

The purpose of this project was twofold: (1) to document that there are many examples of municipal utilities with strong customer energy efficiency achievements; and (2) to identify and discuss the key factors that motivate and enable municipal utilities to have strong energy efficiency efforts and accomplishments.

Toward those ends, this project identified and surveyed a total of 23 municipal utilities with substantial energy efficiency achievements. Overall, this group had an average annual energy efficiency spending of 2.44% of revenues, and an average annual electricity savings of 1.0% of sales. While not intended to be a statistically representative sample (utilities were targeted based on the suggestions of industry experts for utilities with successful energy efficiency efforts), this group clearly demonstrates that substantial energy efficiency achievements are happening in this sector.

Moreover, nine of the highest-performing municipal utilities in our sample are individually profiled in Appendix A. For that group, the average annual spending on energy efficiency programs was 3.1% of revenues, and the average electricity savings was 1.4% of sales. That is competitive with many of the best-performing investor-owned utilities in the nation.

This study also gathered information on the major factors motivating municipal utilities to engage in substantial energy efficiency efforts. Aside from broad acknowledgement that their customers appreciate energy efficiency services, the highest-rated factors influencing utilities to provide strong energy efficiency programs tended to be the value of energy efficiency as a resource, the economic benefits to the local community, and whether their local governing board had a strong policy position on energy efficiency. The most inhibiting factor tended to be concern over revenue loss.

In summary, the intent of this report is to highlight the fact that there are many good examples of municipal utilities with strong energy efficiency accomplishments, and thereby enable and inspire additional public power utilities to increase their efforts in this area.

Introduction

Over the past decade, utility energy efficiency policies and programs in the United States have seen tremendous growth. During this time, much attention has been focused on investor-owned utilities, since they account for the majority of electricity sales in the nation and are regulated by state utility commissions. Investor-owned utilities have greatly expanded energy efficiency programs for their customers, and regulators and policymakers have worked to make the utility business model more favorable for the use of energy efficiency as a utility resource. Most states have adopted regulatory approaches to support investor-owned utilities' energy efficiency programs, such as full revenue decoupling and shareholder performance incentives.

However many of these approaches for investor-owned utilities are not necessarily suitable for public power utilities. Utilities in the public power sector have different economic structures, and in most states they are not regulated by the state in the same manner as investor-owned utilities. Yet for the United States to achieve its economic and environmental objectives in the area of energy efficiency, public power utilities must be strong partners. Over a quarter of all customers and a quarter of all electric sales in the United States are from the public power sector.¹ We believe that it is time to devote more attention to policies and programs tailored to the unique needs and structures of public power utilities. Toward that end, we focus this report on a key segment of the public power sector: municipal utilities.

With the above perspective in mind, in this report we

- Present the results of a survey of 23 leading municipal utilities from around the nation that have strong energy efficiency programs and accomplishments
- Identify and profile nine municipal utilities with exemplary energy efficiency efforts
- Discuss economic and other benefits from the use of energy efficiency as a resource to the customers and communities served by municipal utilities, including consideration of the proposed Clean Air Act section 111(d) requirements for carbon dioxide emissions reductions
- Discuss some of the unique economic and institutional challenges faced by municipal utilities with regard to providing energy efficiency programs, as well as successful strategies that have been adopted to overcome those challenges
- Identify key factors that may help facilitate strong energy efficiency efforts and accomplishments by municipal utilities

¹ This includes municipal, state, and federal public power utilities (approximately 15% of sales) and cooperatives (approximately 11% of sales) (EIA). According to the American Public Power Association (APPA), 73% of public power utilities offer energy efficiency and/or demand-side management programs to their customers (APPA).

Methodology

SAMPLE

The intent of this study is to examine public power utilities² with noteworthy energy efficiency activities and accomplishments. We began our research with 30 municipal utilities suggested to us by their peers and energy efficiency experts as leaders in customer energy efficiency programs. Three of the utilities stated that they were not interested in participating in the study. ACEEE eliminated an additional four utilities because they did not meet our electricity savings threshold for leadership in energy efficiency.³ As a result, our final sample was 23 municipal utilities, with the geographic distribution shown in figure 1.

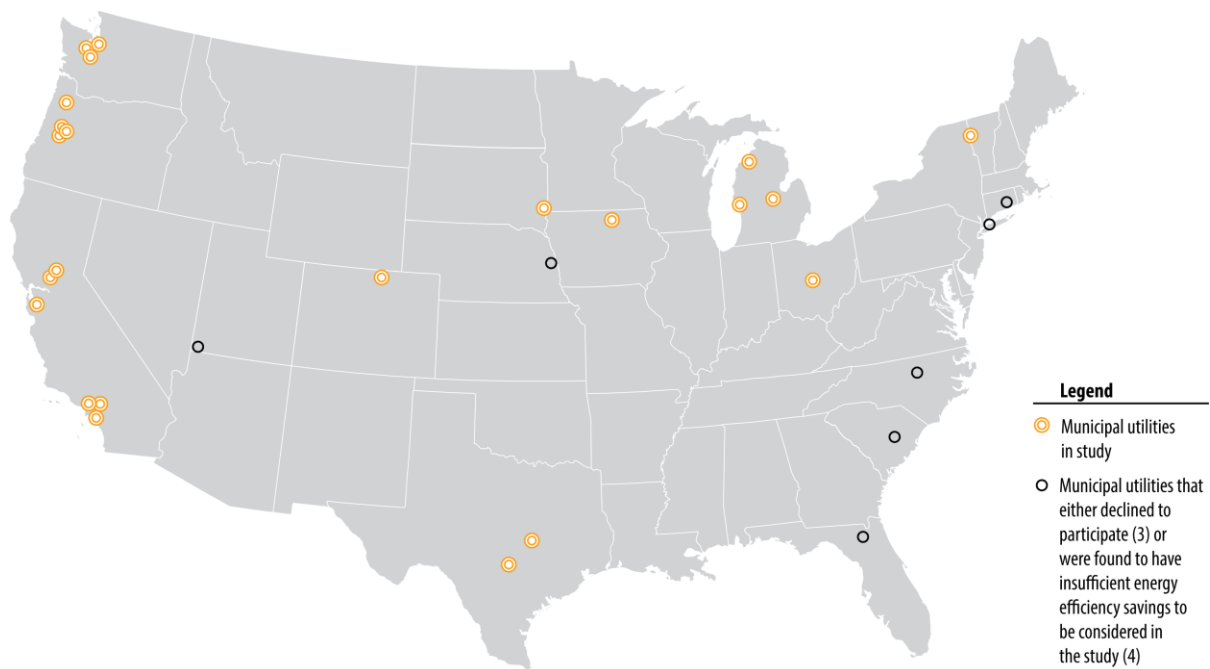


Figure 1. Geographic distribution of municipal utilities in the study

DATA COLLECTION

We used three methods to collect data for this study: (1) surveys, (2) utility reports, including energy efficiency annual reports and program evaluations, integrated resource plans, and utility annual reports, and (3) phone interviews.

² We studied municipal utilities and a public utility district. We did not attempt to focus on electric cooperatives. Snohomish Public Utility District wished to express that it is technically not a municipal utility but rather a public utility district that reports to an elected body and is separate from the county government. In addition, two of the entities, Missouri River Energy Services and American Municipal Power, represent groups of municipal utilities rather than being stand-alone utilities.

³ Utilities with annual energy efficiency program savings below 0.3% of sales were removed from the study.

A copy of the survey is presented in Appendix B. After a contact was identified at each utility, we emailed that contact a brief description of the study with the survey. We asked contacts to complete the survey and to return it within two weeks with copies of the latest examples of any of the following materials that were available: (1) the utility's annual energy efficiency report, (2) its energy efficiency program evaluation, (3) an integrated resource plan, and (4) the utility's annual report. Twenty-seven utilities completed the project survey (although four were eliminated due to insufficient energy efficiency savings to be included in the study).

SURVEY

The survey provided information regarding the municipal utilities including (1) state policies or regulatory requirements for energy efficiency programs, (2) municipal government and/or municipal utility governing board policy requirements for energy efficiency programs, (3) factors influencing municipal utilities to provide strong programs, (4) the longevity of the utility's energy efficiency program, (5) energy efficiency program spending as a percentage of total annual revenues, (6) energy efficiency annual kWh savings as a percentage of total annual kWh sales, and (7) whether the utility believed it would spend more, less, or about the same on 2015 energy efficiency programs as in 2014.

We used survey data to provide a general overview of the regulatory and governmental energy efficiency policies of the utilities, review factors the utilities feel have or have not contributed to their successful energy efficiency programs, and describe the utilities in terms of longevity of energy efficiency programs, annual energy efficiency spending, and annual energy efficiency savings. The data were described through simple frequency distributions and data averages.

UTILITY REPORTS

Along with the survey data, we used information from the utility reports to create profiles of nine leading examples from our group of municipal utilities with successful energy efficiency programs (see Appendix A).⁴ Examples of the type of information extracted from the utility reports include (1) descriptions of the utility (e.g., number of customers and generation and distribution assets), (2) a basic understanding of how energy efficiency contributes to the utility's fuel mix, (3) a description of the utility's energy efficiency program portfolio, (4) the utility's level of commitment to energy efficiency, and (5) the reasons for providing energy efficiency services to customers.

INTERVIEWS

In addition to the written surveys, we interviewed senior management at eight municipal utilities that were among the leaders in energy efficiency accomplishments in our sample. These utilities are profiled in Appendix A, along with a ninth utility with which we were unable to schedule an interview. The purpose of these interviews was to obtain a more in-

⁴ Criteria for selection for profiles included above average electricity savings performance, geographic diversity, and willingness to provide supplemental information.

depth view of the factors that influence municipal utilities in their decision making regarding energy efficiency efforts.

Survey Results

This section summarizes responses to each survey question.

CITY AND STATE REQUIREMENTS FOR MUNICIPAL ENERGY EFFICIENCY

Two initial survey questions were designed to assess whether the utility was operating in a situation where there were state and/or local policy or regulatory requirements for energy efficiency (EE) programs. Tables 1 through 4 provide the utilities' responses to these questions.

Table 1. Are there any state policies or regulatory requirements that require you as a municipal utility to provide energy efficiency programs and/or meet particular energy efficiency goals?

State EE policies or regulatory requirements?	Number (percentage) of utilities
Yes	15 (65%)
No	8 (35%)

Examples of specific state policies and regulatory requirements reported by survey respondents are listed in table 2.

Table 2. Examples of state policies or regulatory requirements that require the municipal utility to provide energy efficiency programs and/or meet particular energy efficiency goals

Utility	State EE policy or regulatory requirement (examples)
City of Glendale Water and Power (CA)	<p>As part of the restructuring of California's electric utility industry, as implemented by AB 1890 (1996), requirements were added directing publicly owned utilities to collect a public benefits charge to fund specific categories of programs.</p> <p>California SB 1037 (2005) requires any publicly owned utility to annually report to its customers and the California Energy Commission on its investments in energy efficiency and demand reduction programs.</p> <p>AB 2021 (2006) directs publicly owned utilities to identify all potentially achievable cost-effective, reliable, and feasible electricity efficiency savings and establish 10-year statewide energy efficiency savings targets.</p>
Traverse City Light & Power (MI)	State statute (PA295) sets an Energy Efficiency Resource Standard for all utilities, including municipals, of 1% savings per year.

Utility	State EE policy or regulatory requirement (examples)
Seattle City Light (WA)	I-937, a voter initiative passed in 2006, requires major utilities (serving >25,000 customers) in Washington state to pursue cost-effective conservation. Each utility must identify its achievable cost-effective conservation potential and update this assessment at least every two years. This conservation potential assessment establishes a biennial target, and the utility must achieve energy savings equal to that target. I-937 is outlined in RCW 19.285 and the guidelines for implementing I-937 are outlined in WAC 194.

Table 3. Does your municipal government and/or your municipal utility governing board have a policy requiring energy efficiency programs and/or establishing efficiency goals?

Muni EE policies?	Number (percentage) of utilities
Yes	16 (70%)
No	7 (30%)

Examples of specific municipal policies and regulatory requirements reported by survey respondents are listed in table 4.

Table 4. Examples of municipal government and/or municipal utility governing board policy requirements that require the municipal utility to provide energy efficiency programs and/or meet particular energy efficiency goals

Municipal utility	Municipal government and/or municipal utility governing board EE policy (examples)
CPS (City of San Antonio) (TX)	CPS Energy's Save for Tomorrow Energy Plan (STEP) is an aggressive energy conservation program. The goal of the program is to save 771 MW of electricity between 2009 and 2020. The total cost of the program for this duration will be approximately \$849 million with annual costs ranging from \$12.3 million to over \$77 million.
Emerald People's Utility District (OR)	Emerald's board of directors has a policy that the utility spend an average of 3% of total electric revenues on public purpose programs. This includes conservation, renewable energy, and low-income billing assistance programs. The policy is modeled after Oregon SB1149.
Fort Collins Utilities (CO)	Fort Collins Energy Policy sets an annual target savings for the electric efficiency portfolio at 1.5% of the community's total annual electricity use.

Sources: CPS Energy 2015; survey results; Fort Collins 2015.

FACTORS INFLUENCING PUBLIC POWER UTILITIES TO PROVIDE STRONG PROGRAMS

We asked utility contacts to rate eight factors on their relative importance in influencing their utility to provide strong energy efficiency programs for their customers. Respondents were asked to rate each factor on a scale of 0 to 10, with 0 being not important at all and 10 being most important. Table 5 shows the average rating for each factor over all of the utilities.

Table 5. Average utility ratings of the importance of factors influencing them to provide strong energy efficiency programs

Factor	Average rating	Range
That energy efficiency is a resource your customers like	8.5	5–10
The value of energy efficiency as a resource in your resource supply mix	7.8	4–10
The economic benefits to the local economy and your service territory	7.7	5–10
A municipal government/ governing board policy/ requirement to provide EE	7.6	0–10
Reducing greenhouse gases (e.g., part of a climate policy or goal)	6.5	0–10
A state policy or regulatory requirement to provide energy efficiency	6.3	0–10
That energy efficiency reduces your other supply costs	6.3	0–10
Other environmental benefits of energy efficiency	6.3	0–10

The average values in the table provide an indication of the overall relative importance of these factors. However the very wide range observed (literally 0 to 10) on many of these factors illustrates the great variability in the individual situations among these municipal utilities. For example, utilities that have a state policy for energy efficiency that affects them tended to rate that factor very highly. Other utilities with no such state policy requirement rated it a zero, thus lowering the overall average. One variable that was fairly highly rated by just about everyone was the idea that energy efficiency is a service that their customers like.

HISTORY OF PROVIDING ENERGY EFFICIENCY PROGRAMS

Not surprisingly, many of the utilities reported that they have been providing substantial customer energy efficiency programs—more than just informational programs—for 20 years or more. On the other hand, a notable fraction (30%) reported that they have been providing programs for 10 years or less. Overall, the sample averaged 21 years providing substantial energy efficiency programs. The number of years providing programs is displayed in figure 2.

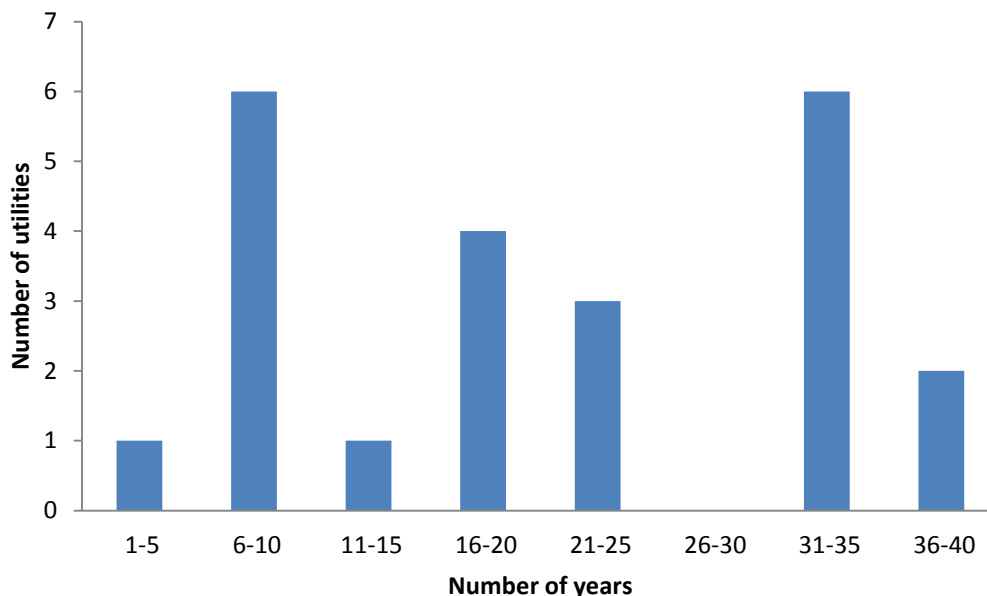


Figure 2. Number of utilities providing significant energy efficiency programs by years provided

ENERGY EFFICIENCY PROGRAM SPENDING AND SAVINGS

Table 6 shows the relative level of energy efficiency spending and savings for the utilities in the report. For the group, average spending as a percentage of total revenue was 2.44%. Average annual kWh savings as a percentage of total kWh sales was 1.00%.⁵

Table 67. Energy efficiency spending and savings for the most recent program year based on survey responses

Utility	Spending as a % of total revenue	kWh savings as a % of total kWh sales
AMP (OH)	1.56	0.94
Austin Energy (TX)	1.38	0.88
Burlington Electric (VT)	4.00	1.75
Emerald People's Utility District (OR)	2.60	1.00
Eugene Water & Electric Board (OR)	2.10	0.60
Fort Collins Utilities (CO)	3.50	1.60
Glendale Water & Power (CA)	3.60	1.40
Holland Board of Public Works (MI)	1.60	1.04

⁵ The values in table 6 represent the values reported to us by the utilities in the survey or obtained from archival data. As a validity check, we compared their reported savings percentages with data available from the US Energy Information Administration. Although there was some individual variability, the average values for energy efficiency spending percentage and energy efficiency savings percentage were nearly identical across the two data sources.

Utility	Spending as a % of total revenue	kWh savings as a % of total kWh sales
LADWP (CA)	1.50	1.06
Lansing Board of Water & Light (MI)	2.00	1.00
McMinnville Water & Light (OR)	2.30	0.40
Riverside Public Utilities/City of Riverside (CA)	2.85	1.00
Roseville Electric (CA)	2.80	0.62
Sacramento Municipal Utility District (SMUD—CA)	3.00	1.60
San Antonio (TX)—Now CPS Energy	2.80	0.30
Seattle City Light (WA)	4.70	1.70
Silicon Valley Power (Santa Clara, CA)	1.10	0.50
Snohomish Public Utility District (WA)	3.77	1.58
Springfield Utility Board (OR)	2.30	0.51
Tacoma Power (WA)	1.90	1.16
Traverse City Light & Power (MI)	1.30	1.00
Waverly Light & Power (IA)	1.00	0.45
Average	2.44	1.00

Figure 3 plots utility spending as a percentage of total revenue by kWh savings as a percentage of kWh sales. For the most part, the pattern is as expected, showing higher energy savings associated with higher spending on energy efficiency programs.

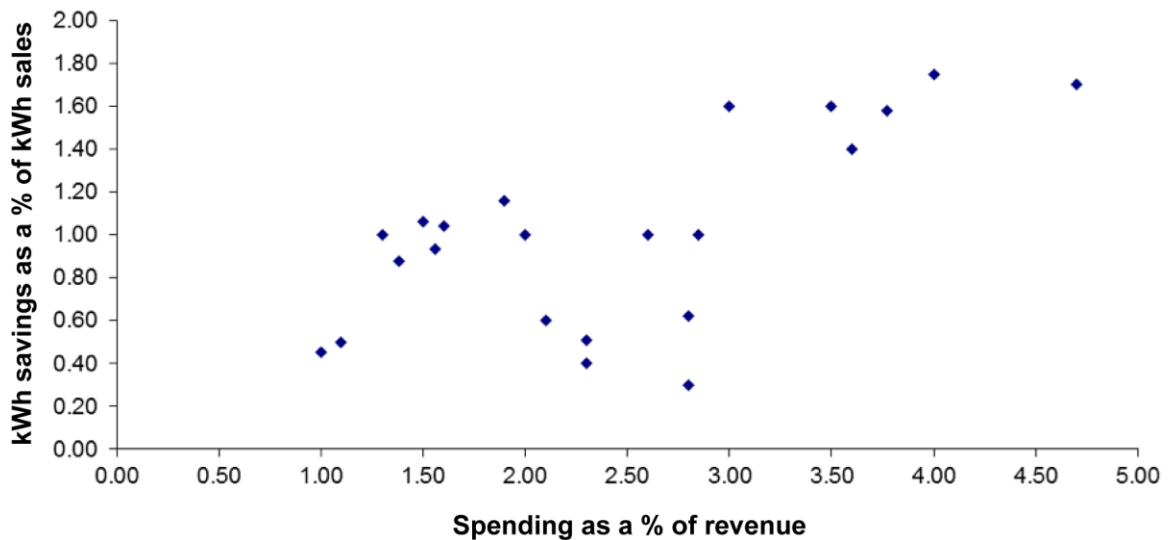


Figure 3. Scatter plot of energy efficiency spending as a percentage of total revenue by kWh savings as a percentage of kWh sales

OTHER FACTORS AFFECTING SAVINGS ACCOMPLISHMENTS

To examine whether energy savings is related to the existence of state policies or regulations regarding energy efficiency requirements for municipal utilities, we compared the energy savings of utilities with such requirements against energy savings of utilities without such requirements. Utilities with state policies or regulatory requirements for energy efficiency programs or goals (n=15) had an average kWh savings as a percentage of total kWh sales of 1.13%. Utilities without such policies or regulatory requirements (n=6) had an average kWh savings as a percentage of total kWh sales of 0.71%.

Similarly, we compared the energy savings of municipal utilities that have integrated resource planning (IRP) with the savings of municipal utilities that do not have IRP. Utilities with IRP (n=14) had an average kWh savings as a percentage of total kWh sales of 1.24%. Utilities without IRP (n=7) had an average kWh savings as a percentage of total kWh sales of 0.55%.

Last, we compared utilities with state policies requiring energy efficiency *and* IRP against utilities with neither. Utilities with both factors (n=11) had an average kWh savings percentage of 1.26%. Utilities without either factor (n=4) had an average kWh savings of 0.42%.

RECENT TRENDS IN LEVEL OF ENERGY EFFICIENCY EFFORT

When asked if they expected 2015 spending on energy efficiency programs to be more, about the same, or less than 2014 spending, the majority (70%) of the utilities reported “about the same,” although nearly a third (30%) felt they would be spending more (see figure 4). No respondents said they expected to spend less than the current program year.

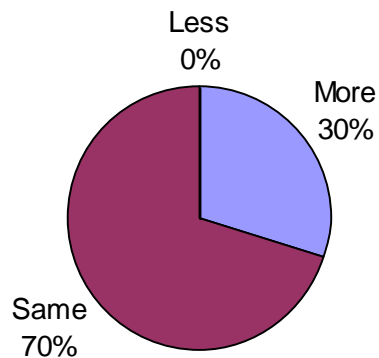


Figure 4. Percentage of utilities reporting that they expect 2015 spending on energy efficiency programs to be more, about the same, or less than 2014 spending

MULTIFAMILY PROGRAMS

To address ACEEE’s growing body of research on the multifamily housing sector, we specifically asked about the prevalence of these programs in our survey.⁶ Most of the utilities responding to our questions regarding multifamily programs did not have any programs specifically targeted to the multifamily sector. Many did offer the comment that multifamily owners and tenants were eligible to participate in their standard program offerings.

An example of a program specifically targeted to the multifamily sector is the Multifamily Weatherization Program offered by Snohomish Public Utility District. The utility provides incentives for weatherization measures and common area lighting to owners of multifamily properties with five or more attached units and up to three stories in height. The program has spent an average of approximately \$500,000 per year over the last two years, with approximately 1,000,000 kWh saved annually.

Seattle City Light also offers an energy efficiency program specifically targeted to multifamily buildings. Seattle City Light’s Built Smart program encourages multifamily developers of five or more units to incorporate energy efficient technologies and equipment into building design, construction, and operation. The Built Smart program offers financial incentives and technical assistance from design through project completion.

Discussion

Across the nation, there is wide variability among municipal utilities in the level of effort devoted to energy efficiency programs for their customers, and in the amount of energy efficiency achieved. Energy efficiency activity by municipal utilities ranges from virtually nothing to some of the most aggressive and successful efforts in the entire utility industry.

By design, this study focused on municipal utilities with at least moderately strong energy efficiency performance (e.g., annual savings of 0.3% or more), and the purpose was to provide descriptive information about municipal utilities that fall into that category (i.e., “leading municipal utilities on energy efficiency”). Using suggestions from experts in the field, we ended up with a total of 23 municipal utilities in our survey. This is definitely a convenience sample rather than anything statistically representative, but we did take care to include a wide range of municipal utility size and geographic location.

MUNICIPAL UTILITIES CAN DELIVER ENERGY EFFICIENCY RESULTS

The first-order purpose of this study was to identify and document municipal utility success with energy efficiency. We provide summary data on 23 municipal utilities from around the nation, as well as more detailed profiles on nine of the top performers in that group.

As can be seen in the data provided in the Results section, that first-order purpose has been accomplished. As a group, the municipal utilities in our study spend an average of 2.44% of revenues on energy efficiency programs, and achieve an average annual savings of 1.00%

⁶ See aceee.org/multifamily-project.

(based on data from their most recent program year). The three top-performing municipal utilities had an average annual savings of 1.7% in that most recent program year.⁷

WHY DO MUNICIPAL UTILITIES PURSUE ENERGY EFFICIENCY?

Aside from documenting and profiling municipal utility successes with energy efficiency, perhaps the primary objective of this study was to gather information about the motivations of municipal utilities regarding the provision of energy efficiency programs for their customers. In our survey, we asked respondents to rate (on a 10-point scale) the relative importance of eight different factors. The highest-rated factor was that their customers like them to provide energy efficiency programs, and the lowest-rated factors were the CO₂ reduction benefits and other environmental benefits achieved by energy efficiency programs.⁸

Municipal government policies were the second-highest-rated factor, closely followed by economic cost savings to the utility and economic benefits to the community. There were some variations in the pattern, reflecting the wide variation in specific circumstances (e.g., state and local policies, current supply arrangements, etc.) facing individual municipal utilities. However all of the factors had average ratings somewhere between 6.1 and 8.5 on the 10-point scale, suggesting that they all carried some level of importance.

We supplemented that survey information with in-depth interviews with a subset of our sample (roughly a third), which we were considering for individual profiles (the profiles ultimately produced are provided in Appendix A). In these interviews we were able to explore the motivation issue in more depth.

Based on all of these sources, we would identify four major motivating factors that appear to be the most important in influencing municipal utilities to provide strong energy efficiency programs.

- Compliance with state policies where applicable, such as energy efficiency resource standards (EERS)
- Reflecting the policies and direction of their local governing body (e.g., city council, municipal utility governing board)
- Enhancing customer satisfaction/providing popular services
- Reducing utility supply costs by acquiring energy efficiency as a resource

The relative importance of each of those factors varies considerably across municipal utilities, depending on their individual circumstances. However there are two key takeaway findings from our observations.

⁷ For comparison, in our 2015 state scorecard, only three states had overall utility savings of more than 1.7% of sales in the most recent year.

⁸ Other research has also found that customers rate their electric provider's overall performance higher depending on how many energy efficiency programs they have participated in. See E Source, pages.esource.com/rs/922-TXQ-171/images/DSM-CX-Whitepaper-final.pdf, which cites their E Source Residential Energy-Use Study 2012.

First, the perspective of the municipal utility's local governing body, such as the city council or utility board of directors, is critically important in affecting the level of effort, both funding allocated and staff motivation, that the utility devotes to customer energy efficiency. Strong support from the local governing body was repeatedly identified as a crucial factor among the leading utilities.

Second, perhaps the single most important factor separating the very top tier performers on energy efficiency from those that are moderately good is the extent to which the municipal utility truly regards energy efficiency as a real resource. In other words, is energy efficiency embraced because it reduces their overall supply costs, or is it something that is done more for compliance with state policy requirements or because it is a customer service that their customers like? We find that most municipal utilities (as well as most investor-owned utilities) appear to fall in that latter category. In contrast, essentially all of the very highest-performing municipal utilities in our sample convincingly expressed a true commitment to energy efficiency as a resource that reduces their overall system costs. This commitment was also apparent in key documents such as demand-side management annual reports and integrated resource plans.

OTHER FACTORS SUPPORTING ENERGY EFFICIENCY INVOLVEMENT

Local Economic Development

An additional element that holds potential to be a factor in how municipal utilities view customer energy efficiency programs is local economic development. Virtually all municipal utilities are heavily, if not totally, dependent upon generating fuels (or electricity itself) imported from outside their service territory. This dollar drain for imported energy can be quite substantial, and reducing that drain through improved energy efficiency can benefit the local economy—both by retaining more of those dollars within the service territory as well as by stimulating local employment to install the energy efficiency measures. By their nature, publicly owned municipal utilities have an enhanced interest in these types of benefits that help their community.

Many of the municipal utilities we interviewed acknowledged this local economic benefit as a factor that had received some recognition within their utility and/or their local government. However studies to quantify the impact can be complex and expensive, so most had not conducted any type of quantitative analysis of these effects.

One notable exception was the Los Angeles Department of Water and Power (LADWP). In 2014 LADWP teamed with university researchers at UCLA to conduct a study of the local economic effects of its energy efficiency programs. They found that for the overall portfolio, each \$1 million invested in energy efficiency programs produced a total of 16 jobs when direct, indirect, and induced employment effects were considered.⁹ These types of local economic benefits are an area worthy of consideration by municipal utilities across the nation.

⁹ *Efficiently Energizing Job Creation in Los Angeles*, UCLA Luskin School of Public Affairs and the Los Angeles Department of Water and Power, 2014.

The EPA Clean Power Plan (CPP)

One more recent development that is influencing municipal utility interest in customer energy efficiency is that it is also a very promising strategy for state compliance with the Environmental Protection Agency's Clean Power Plan (EPA 2015). EPA identifies a variety of energy efficiency strategies that municipal utilities can count toward compliance, including utility energy efficiency programs targeted at the residential, commercial, and industrial sectors (e.g., behavioral programs, appliance replacement and recycling programs, and combined heat and power, among others). Regardless of which compliance pathway a state chooses, energy efficiency will be a key component for constructing low-cost plans. Several municipal utilities, including CPS Energy, Sacramento Municipal Utility District, and Los Angeles Department of Water and Power, have voiced support for the rule and plan to increase investments in energy efficiency programs.¹⁰

FACTORS INHIBITING COMMITMENT TO ENERGY EFFICIENCY

The most commonly mentioned factor working against strong energy efficiency efforts by municipal utilities is the same problem commonly discussed in the investor-owned utility (IOU) industry: the loss of sales revenue when customers reduce their electricity use. While municipal utilities do not have shareholders to please, they nevertheless are concerned about their revenue stream, and about potential upward pressure on rates if revenue needs must be spread over fewer kWh sold.¹¹

Fortunately, the concern tends to be more philosophical than tangible. As a long-time executive at a municipal utility with a very aggressive energy efficiency portfolio commented, "I've never seen a utility go bankrupt because they ran too aggressive of an energy efficiency program." Others added that the best way to counter concerns about possible rate impacts is to document the substantial cost savings to the utility and its customers from energy efficiency programs.

Over the last decade, regulators have worked in the IOU industry to implement regulatory mechanisms such as decoupling to address revenue loss concerns. While the economic structure and business model for municipal utilities are different than for IOUs, the fundamental logic of decoupling can still apply. In fact, one of our profiled municipal utilities, LADWP, was a pioneer in the public utility market in experimenting with decoupling, which it found to be very successful. LADWP has proposed to permanently adopt decoupling in its currently pending rate case. As one of the executives noted in our interview, "Pursuing a rate case to raise rates for a municipal utility can be even more

¹⁰ LADWP: switchboard.nrdc.org/blogs/dmurrow/power_companies_respond_positi.html and www.ladwpnews.com/go/doc/1475/2574926/LADWP-s-Statement-About-the-US-EPA-s-Clean-Power-Plan. SMUD: www.fierceenergy.com/story/grumblings-industry-reacts-clean-power-plan/2015-08-04. CPS Energy: www.bizjournals.com/sanantonio/news/2015/08/03/cps-energy-on-board-with-obamas-clean-power-plan.html and www.kens5.com/story/news/local/2014/07/08/11136128/.

¹¹ APPA discusses the lost sales issue in *The Effect of Energy Efficiency Programs on Electric Utility Revenue Requirements*. See www.publicpower.org/files/PDFs/EffectofEnergyEfficiency.pdf.

contentious and politically charged than for IOUs. So decoupling can be a very desirable mechanism for a municipal utility.”

Conclusion

While there is considerable variation in the level of energy efficiency activity across the municipal utility sector, this study has documented that there are many excellent examples around the nation of municipal utilities demonstrating strong energy efficiency achievements. This project examined a total of 23 municipal utilities suggested by industry experts as having noteworthy energy efficiency efforts. Across the group surveyed, the utilities show an average annual spending of 2.44% of annual revenues, and an average annual electricity savings of 1.00% of total sales.

Nine of the highest-performing municipal utilities in our sample are individually profiled in Appendix A. For that group, the average annual spending on energy efficiency programs was 3.1% of revenues, and the average savings was 1.4% of sales. Those results are competitive with the best-performing investor-owned utilities in the nation.

This study also gathered information on the major factors motivating municipal utilities to engage in substantial energy efficiency efforts, as well as concerns that tend to inhibit such efforts. In addition to the fact that customers like their utilities to provide energy efficiency services, the highest-rated factors influencing utilities to provide strong energy efficiency programs tended to be the value of energy efficiency as a resource, the economic benefits to the local community, and whether their local governing board had a strong policy position on energy efficiency. For municipal utilities that were covered by a state policy requirement (e.g., an energy efficiency resource standard), that was also rated as a very important factor. The most important factor inhibiting strong energy efficiency efforts tended to be concern over revenue loss.

In summary, this report has highlighted the fact that there are good examples of major energy efficiency achievements in the municipal utility sector, and has identified a number of key factors that help facilitate and motivate strong energy efficiency efforts by those municipal utilities. We hope that providing this information might help enable additional public power utilities to increase their efforts in this area.

References

- Anderson, M. 2014. "SMUD to Extend Energy Efficiency Programs to Save Businesses Money." *Sacramento Business Journal*. August 20.
www.bizjournals.com/sacramento/news/2014/08/20/smud-to-extend-energy-efficiency-programs-to-save.html.
- BED (Burlington Electric Department). 2014. *2014 Energy Efficiency Annual Report*.
www.burlingtonelectric.com/sites/default/files/Documents/Energy_Eff/2014-energyefficiencyannualreport.pdf.
- California AB 1890. 1996. [ftp://www.leginfo.ca.gov/pub/95-96/bill/asm/ab_1851-1900/ab_1890_bill_960924_chaptered.html](http://www.leginfo.ca.gov/pub/95-96/bill/asm/ab_1851-1900/ab_1890_bill_960924_chaptered.html).
- California AB 2021. 2006.
www.energy.ca.gov/pou_reporting/documents/AB_2021_chapter_734_20060929.pdf.
- California SB 1037. 2005. [ftp://www.leginfo.ca.gov/pub/05-06/bill/sen/sb_1001-1050/sb_1037_bill_20050929_chaptered.html](http://www.leginfo.ca.gov/pub/05-06/bill/sen/sb_1001-1050/sb_1037_bill_20050929_chaptered.html).
- CPS Energy. 2015. "CPS Energy's Save for Tomorrow Energy Plan." Accessed September 8.
www.sanantonio.gov/sustainability/Environment/SaveForTomorrow.aspx.
- EPA (Environmental Protection Agency). 2015. Final rule, Section VIII.K, page 1244.
www.epa.gov/airquality/cpp/cpp-final-rule.pdf.
- Fort Collins (City of Fort Collins Utilities). 2015. *Energy Policy: 2014 Annual Update*. June.
www.fcgov.com/utilities/img/site_specific/uploads/Fort_Collins_2014_Energy_Policy_annual_update.pdf.
- Glendale. 2015. *Integrated Resource Plan*. Glendale, CA: City of Glendale. www.prpa.org/wp-content/uploads/2013/03/irp.pdf.
- Michigan Public Act 295 of 2008. 2008. www.legislature.mi.gov/documents/2007-2008/publicact/pdf/2008-PA-0295.pdf.
- PRPA (Platte River Power Authority). 2012. *Integrated Resource Plan*. Fort Collins, CO: PRPA.
www.prpa.org/wp-content/uploads/2013/03/irp.pdf.
- RCW (Revised Code of Washington) 19.285. apps.leg.wa.gov/rcw/default.aspx?cite=19.285.
- Seattle (Seattle City Light). 2012. *Seattle City Light 2012 Integrated Resource Plan*.
www.seattle.gov/light/news/issues/irp/docs/SCL_2012_IRP.pdf.
- . 2014. *Seattle City Light Integrated Resource Plan: Update and Progress Report*.
www.seattle.gov/light/news/issues/irp/docs/SeattleCityLight2014_IRPUpdateandProgressReport.pdf.

SMUD (Sacramento Municipal Utility District). 2015. "SMUD 2014 Power Content Label." Sacramento: SMUD. www.smud.org/assets/documents/pdf/Power-Content-Label-full.pdf.

Tacoma Power. 2013. *Tacoma Power's 2013 Integrated Resource Plan*. www.mytpu.org/file_viewer.aspx?id=27545.

WAC (Washington Administrative Code) 194. apps.leg.wa.gov/WAC/default.aspx?cite=194.

Appendix A. Case Studies of Leading Municipal Utilities

BURLINGTON ELECTRIC DEPARTMENT

Background

The Burlington Electric Department (BED) is the largest municipal power provider in Vermont, providing electric service to approximately 20,000 customers. BED relies mostly on purchased power to meet customer demand and owns a 50% share of the McNeil Generating Station, a wood-fired 50 MW power plant. BED has been actively pursuing clean energy options such as renewable sources of power and energy efficiency for decades. The agency's core mission is based on principles of sustainability and environmental protection. In early 2015 BED announced that Burlington recently became the first city in the country to source 100% of its power needs with renewable energy resources.

Energy Efficiency

BED first began offering energy efficiency programs in 1990 when voters approved an \$11.3 million referendum to fund programs through 2003. BED's programs have been very successful in reducing customer demand. Figure A1 shows the impact of energy efficiency programs on total electricity use in Burlington.

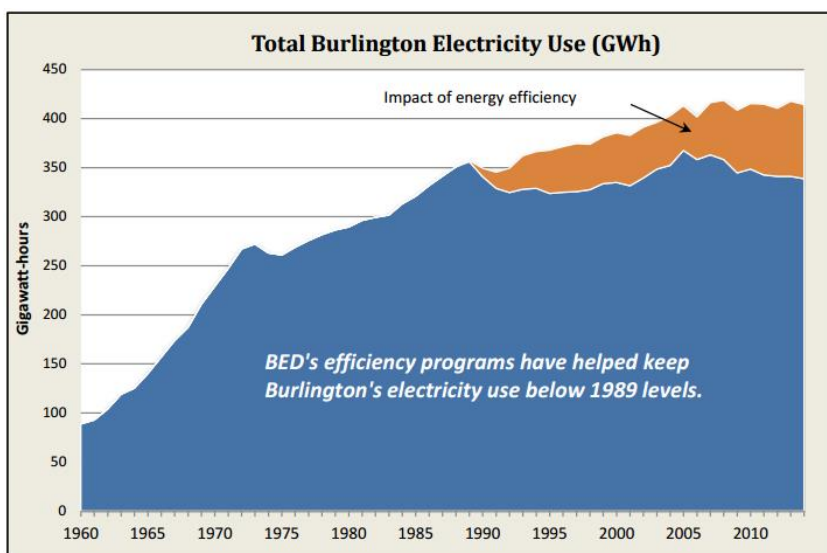


Figure A1. Impact of energy efficiency on total electric use in Burlington. *Source:* BED 2014.

From 1990 to 2003, programs were funded through the local referendum referenced above. After 2003, programs were funded through a small fee collected in customer electric bills. The programs have been very successful to date. BED has been able to reduce 2014 electric consumption to levels 5.3% below 1989 levels while statewide electric sales increased by 9%. Burlington also saw increases in both job growth (5%) and population (8%) during this time. In 2014, BED spent approximately \$2,204,329 to achieve first-year savings of 5,399 MWh. This level of spending is equivalent to approximately 4% of BED's annual revenues to achieve savings equal to 1.5% of retail sales.

Commitment to Energy Efficiency

The Burlington Electric Department has consistently shown a strong and unwavering commitment to energy efficiency. Figure A2 shows the historical spending and savings by year since 1991.

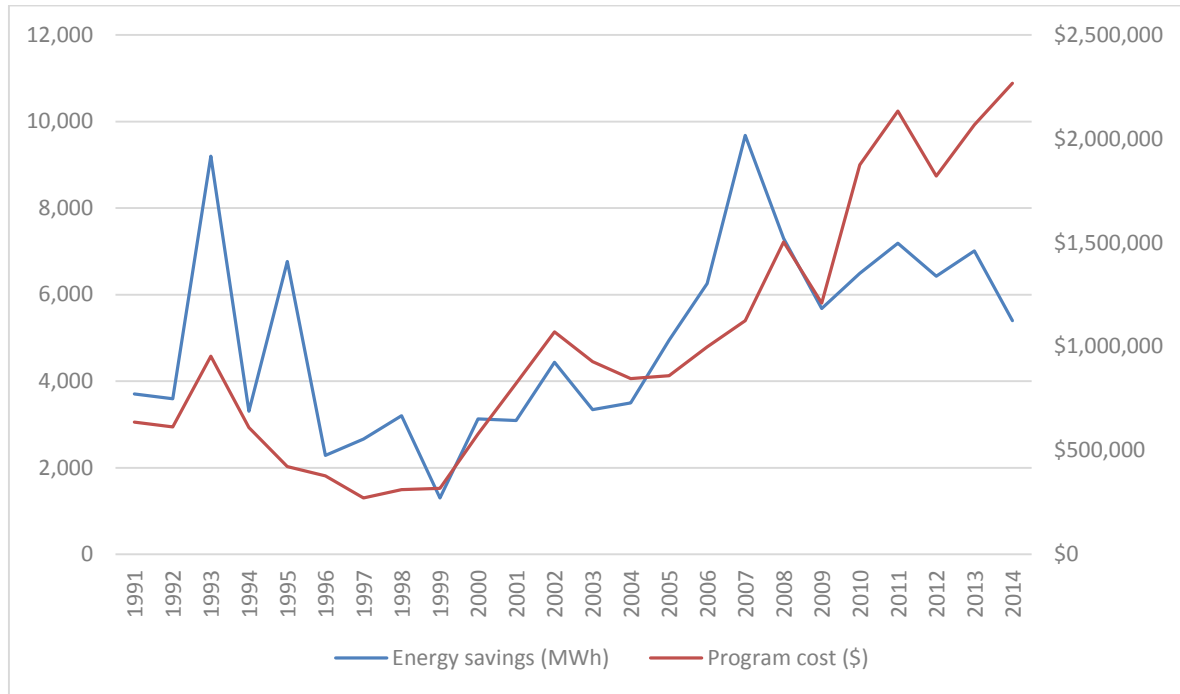


Figure A2. BED energy savings and expenditures on energy efficiency 1991-2014

Burlington Electric's commitment to energy efficiency is detailed in this quote from the 2014 Annual Report on Energy Efficiency Programs:

The Burlington Electric Department is owned by all the citizens of Burlington, who have been unequivocally clear that the option for future supply that they prefer above all others is the pursuit of additional cost-effective energy efficiency.

Resource Objectives

Burlington Electric's commitment to energy efficiency is also highlighted in its most recent (2012) integrated resource plan. In the 2012 IRP, BED assumed that it would achieve a high level of energy savings to meet customer demand. The following quote exemplifies BED's commitment to energy efficiency as a resource objective.

BED remains committed to offering its customers high quality and affordable energy services and a secure, environmentally sound supply of electricity into the future. Energy efficiency continues to play a major role in achieving this goal, and is the cornerstone of the BED resource acquisition strategy that is described in its 2012 Integrated Resource Plan. Energy efficiency has been clearly shown to be Vermont's least expensive future energy supply resource over time, and is every day a greater environmental imperative.

FORT COLLINS UTILITIES

Background

Fort Collins Utilities has provided electric service to the citizens of Fort Collins since 1935. Since 1973, Fort Collins has been a member owner of Platte River Power Authority, a collaborative agency of four cities charged with securing transmission and electricity.¹² Platte River Power Authority owns and operates natural gas and coal-fired power plants while also purchasing wind and hydropower to meet customer needs. Platte River Power Authority currently provides approximately 75% of Fort Collins' electricity from coal generation. The city of Fort Collins provides electric service to more than 70,500 customers over a 55-square-mile service territory.

Energy Efficiency

While Fort Collins Utilities has offered energy efficiency education programs since the 1970s, substantive funding for efficiency programs began in 2002. Today, Fort Collins offers all customers a comprehensive portfolio of programs that is planned and implemented collaboratively with Platte River.¹³ Funding comes from both organizations, with Fort Collins Utilities providing two-thirds of the total investment since 2002.

Fort Collins programs serve residential, commercial, and industrial customers for most end-uses and project types from consumer-product retailer rebates to customized commercial new construction. In recent years, Fort Collins programs are increasingly focused on carbon emissions reduction. As a result, several are building science focused, supporting both electricity and natural gas savings.

Platte River has been offering a core set of common programs to all four municipalities since 2002. The programs have demonstrated continued success and annual improvements, and program spending has also outpaced IRP projections with large increases in recent years from additional municipal utility funding of programs.

In 2013, Platte River and the four communities created a regional brand for programs called Efficiency Works. As programs evolve or new ones are developed, they are being integrated into the Efficiency Works brand to provide more consistent messaging and structure for both customers and efficiency service providers.

Commitment to Energy Efficiency

Last published in 2009, the Fort Collins energy policy, which details short- and long-term goals, shows the city's commitment to energy efficiency. In 2009 the city committed to achieving annual energy efficiency and conservation program savings of at least 1.5% of annual energy use. In 2014, energy efficiency savings were 2.2% of total retail sales while

¹² Fort Collins represents approximately half of the energy requirements of the Platte River Power Authority.

¹³ Platte River Power Authority is a not-for-profit wholesale electricity generation and transmission provider that delivers energy and services to its owner communities of Estes Park, Fort Collins, Longmont, and Loveland, Colorado, for delivery to their utility customers.

spending on programs reached 3.5% of total revenues. The energy policy is due to be updated in late 2015, with increased goals for energy efficiency programs.

Figure A3 shows the strong commitment to energy efficiency since 2005 and the ability of the municipality to achieve (and surpass) stated goals in energy efficiency. The most recent update from Fort Collins Utilities presented 2014 energy savings of 2.2% of community annual usage, \$27 million in local economic benefits, and a cost of 2.2 cents per kWh for conserved energy.¹⁴ Approximately one-third of savings came from the commercial sector, one-quarter from behavioral programs, and the remainder from the balance of the portfolio. During this same period between 2015 and 2014, electricity use per capita in all sectors declined 13% in Fort Collins.

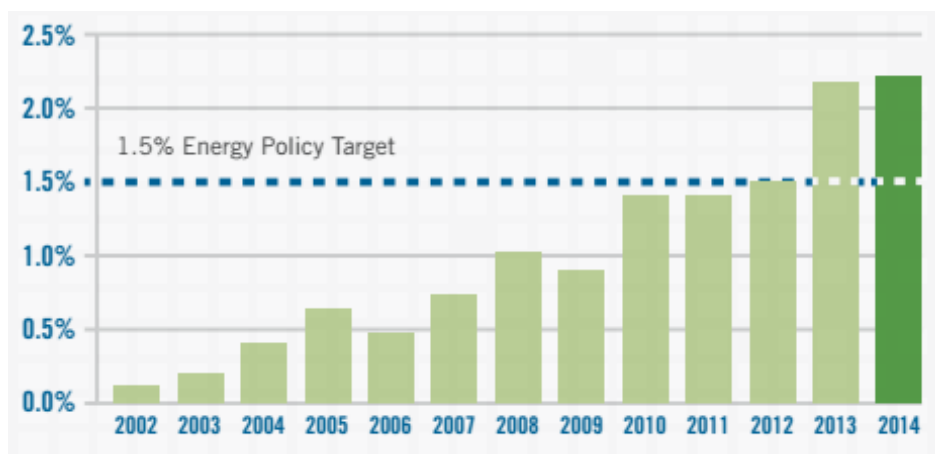


Figure A3. Customer annual efficiency savings (percentage of community electricity use)

City Policies

The city of Fort Collins has a demonstrated and long history of promoting principles of sustainability, including energy delivery. The city's energy policy planning is focused on a goal of becoming carbon neutral by 2050. This goal includes several sectors: buildings, energy supply, transportation, and land use. Also central to this goal is a focus on energy efficiency. The 2009 energy policy focused on combining low energy rates with energy efficiency to achieve sustainably low energy bills and economic activity in all areas.¹⁵ The city also actively promotes the use of meaningful price signals to promote energy efficiency and conservation. Finally, the city promotes efficiency and conservation for electric, gas, and water resources.

In March 2015, the city adopted a new set of climate goals that are among the most ambitious in the nation. The Climate Action Plan Framework calls for Fort Collins to achieve a 20% reduction by 2020, an 80% reduction by 2030, and to be carbon neutral by 2050 (all from a 2005 baseline).

¹⁴ www.fcgov.com/utilities/img/site_specific/uploads/2014_Energy_Policy_Update_Infographic_FINAL.PDF.

¹⁵ Fort Collins Energy Policy (Draft), September 10, 2015.

Resource Objectives

The 2012 Platte River IRP outlined a strong commitment to continuing energy efficiency programs. This planning document recommended a continuation of common programs from 2012 through 2015 (those implemented by the Power Authority) at current spending levels of \$2 million per year. Platte River has proposed increased efficiency investment in 2016 and is planning for expanded efficiency as a key element of Clean Power Plan compliance.

Contact

John Phelan
 Energy Services Manager
 Fort Collins Utilities
 970-416-2539
jphelan@fcgov.com

GLENDALE WATER AND POWER

Background

Glendale Water and Power (GWP) serves over 33,744 water and 85,358 electric customers within the city of Glendale, California. Glendale spans over 30 square miles populated by approximately 195,000 people. The city has operated a municipal power agency for almost 100 years, beginning in 1909. GWP owns and operates one natural-gas-fired power plant, Grayson Power Station, but also relies on a mix of several renewable energy purchase power agreements to meet customer demand. Approximately 35% of GWP's sales are to residential customers, with the remaining sales to commercial and industrial customers.

Energy Efficiency

GWP offers a variety of energy efficiency programs. Table A1 shows the evaluated results from the fiscal year 2013/2014 programs. Among municipal utilities in California, Glendale ranked seventh in gross annual kWh savings in FY 2013/2014. In terms of spending, Glendale spent \$1,558,389 on energy programs in FY2013/2014, 3.6% of total revenues.

Table A1. Glendale Water and Power energy efficiency FY 2013/2014 results

Unit	Value
Gross annual kWh savings	14,807,069
Net annual kWh savings	14,743,479
Net peak kW savings	2,488
Total cost	\$1,558,389
Net lifecycle GHG reductions (tons)	57,564
Total retail sales of electricity (MWh)	\$1,059,372
Gross savings as a percentage of retail sales	1.4%

Glendale offers several programs, including behavioral home energy reports, rebates, home air conditioner tune-ups, tree planting, small business direct install, audit, and education,

commercial retrofits, and smart thermostats. Most of the newer program offerings from Glendale are based on the use of advanced metering infrastructure (AMI) customer data, enabled by the installation of AMI meters. Glendale is also implementing conservation voltage reduction programs and meter data analytics to reduce energy losses on its distribution system.

Commitment to Energy Efficiency

GWP's commitment to energy efficiency is demonstrated through the continued implementation of a full suite of existing and innovative programs. While this commitment is partially driven by state laws intended to increase energy efficiency from public power utilities, Glendale has proven leadership in California in public power energy efficiency program implementation. The city has offered programs for over a decade and established city goals for energy efficiency savings prior to any state requirement to do so. Glendale exceeds the current city council energy efficiency goal of 1.0% of retail sales, and among midsized publicly owned utilities, Glendale is ranked in the top two and exceeds the national best practice by achieving energy savings greater than 1.0% of sales.

City Policies

Glendale is a progressive city with environmentally focused city policies. For example, the city mission and vision statement strongly emphasizes sustainability as a means to achieve success. This emphasis is exemplified in the Greener Glendale Plan, a set of planning documents used to enhance the environmental performance of city operations. The city has also adopted higher building standards than the statewide requirements, strives for zero waste to landfills, has expanded public transportation options, and works with Glendale Water and Power to offer water conservation and energy efficiency programs.

Resource Objectives

GWP filed its most recent integrated resource plan in 2015. The 2015 IRP load forecast relies on GWP meeting specific and aggressive energy efficiency targets throughout the analysis period of 2015 to 2035. As Figure A4 shows, energy efficiency is expected to more than offset any load gains from economic growth, new customers, and electric vehicle adoption (Glendale 2015; 12). The IRP highlights the relative importance of energy efficiency to the resource planning process for GWP. Without the valuable contribution of Glendale's energy efficiency programs, the city would need to procure higher cost resources to meet energy needs.

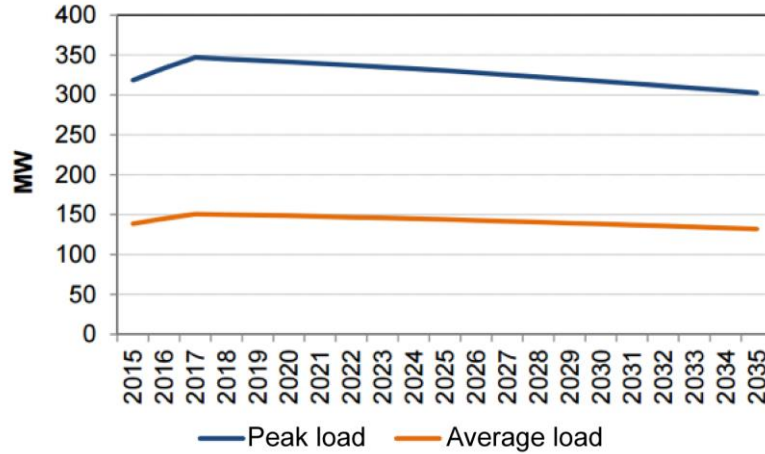


Figure A4. Glendale IRP load forecast summary. *Source:* Glendale 2015.

Contact

Craig Kuennen
 Business Transformation and Marketing Administrator
 City of Glendale, California
 Glendale Water and Power Department
 (818) 548-3369
ckuennen@glendale.ca.gov

LOS ANGELES DEPARTMENT OF WATER AND POWER

Background

The Los Angeles Department of Water and Power has been providing electric service since 1916. LADWP is the largest municipal electric utility in the country, serving over 3.8 million residents across 465 square miles, with 1.4 million power customers in Los Angeles. The department owns over 7,640 MW of generating capacity from a diverse mix of energy resources including coal, hydroelectric, natural gas, renewables, and nuclear. Annual revenue requirements for the electric and water delivery system total \$3.5 billion and the department employs more than 8,800 employees.¹⁶

Energy Efficiency

LADWP has been investing in energy efficiency programs for over 20 years. Since 2000, the LADWP has invested approximately \$423.8 million on energy efficiency saving over 1,756 gigawatt-hours. A variety of energy efficiency programs are offered, including direct install (school, home, and small business), refrigerator recycling and exchange, appliance rebates, residential retrofit, new construction and other programs jointly with Southern California

¹⁶ www.ladwp.com/ladwp/faces/ladwp/aboutus/a-power/a-p-factandfigures?_adf.ctrl-state=jpz8y4yy5_41&_afLoop=396708575420466.

Gas Company, retro commissioning, commercial lighting, commercial HVAC, commercial custom retrofits, tree planting, building codes, emerging technologies, and many others.

In the most recent program year of 2013/2014, LADWP spent approximately 1.5% of total annual revenues on energy efficiency programs. During this same fiscal year, energy savings from programs were 1.06% of total retail sales, in kWh. The increase in spending from 2012/2013 to 2013/2014 was significant, with LADWP increasing the annual budget for energy efficiency from \$55 million to \$115 million. The increased budget allowed LADWP to expand program offerings with 10 new programs, including water conservation programs and joint gas/electric programs with SoCal Gas.

Commitment to Energy Efficiency

The significant energy savings goals set by the Board of Water and Power Commissioners highlights the LADWP's commitment to energy efficiency. In 2011 the board set a target to achieve 8.6% reduction of 2010 energy usage by 2020. In 2012 the board increased the target to 10% and then again increased the target in 2014 to reduce energy usage by 15% of 2010 levels by 2020. This goal is 50% higher than the state-mandated goal of 10% for publicly owned utilities. The savings projections to meet this goal are shown in figure A5.

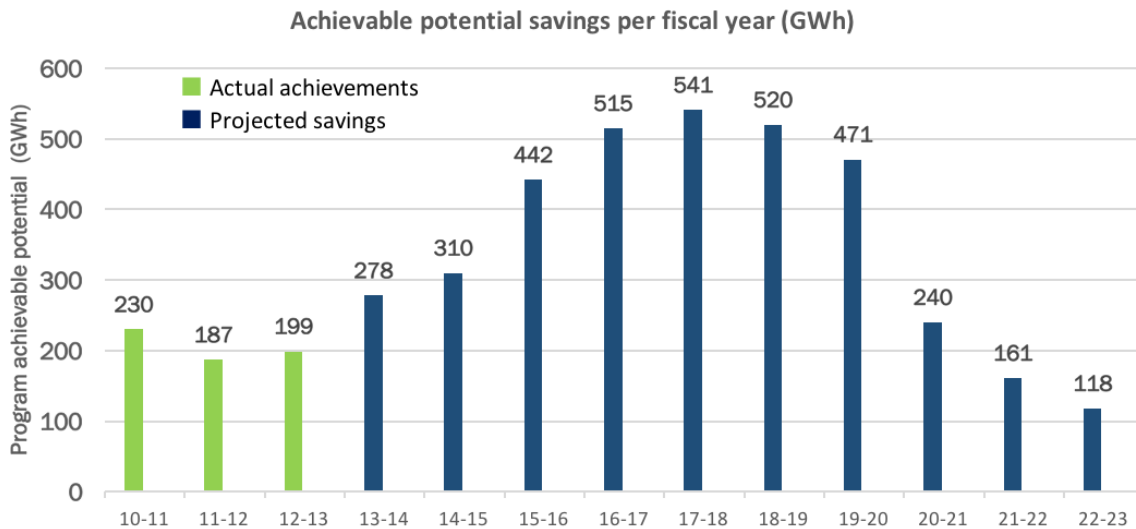


Figure A5. LADWP adopted targets: energy savings per fiscal year

In addition to complying with (and exceeding) state policies, LADWP pursues energy efficiency in order to advance a number of city objectives, including enhancing local employment, improving competitiveness of local businesses by reducing energy costs, and enhancing social equity by serving low-income and other hard-to-reach market segments.¹⁷

¹⁷ See *Efficiently Energizing Job Creation in Los Angeles* by UCLA Luskin Center and LADWP, 2014. innovation.luskin.ucla.edu/content/efficiently-energizing-job-creation-los-angeles. This study found that every \$1 million invested by LADWP in energy efficiency programs produced a net gain of 16 local jobs, through direct, indirect, and induced economic effects.

City Policies

The city of Los Angeles has several large-scale environmentally focused goals to increase renewable energy generation (33% renewable penetration by 2020), water use reduction (20% reduction by 2017, from the 2013–2014 baseline),¹⁸ and energy efficiency (reduction equivalent to 15% of 2010 sales by 2020). It also has a goal to eliminate the use of coal-fired electricity by 2025.

Resource Objectives

The 2014 LADWP integrated resource plan (IRP) focused on using energy efficiency as a primary strategy to reduce greenhouse gases. As part of the IRP, the LADWP Board of Water and Power Commissioners approved revised energy efficiency targets of 15% by 2020 based on a recent (2013–2014) market potential study.¹⁹ The recommended course of action in the IRP follows this target. The IRP considers energy efficiency to be an “overall cost effective resource in LADWP’s supply portfolio.”²⁰

Other Indicators of Commitment

Energy efficiency will be a key resource in LADWP’s effort to eliminate coal use by 2025, an aggressive goal given that coal accounts for roughly one-third of its current supply.

Contact

David Jacot
 Director of Efficiency Solutions
david.jacot@ladwp.com

LANSING BOARD OF WATER AND LIGHT

Background

The Lansing Board of Water & Light (BWL), Michigan’s largest municipally owned utility, has provided water, electric, steam, and chilled water services to mid-Michigan since 1885. The BWL delivers service to more than 100,000 residential and business customers. Generating facilities at the utility include the plants in table A2.

Table A2. Generating facilities at BWL

Plant name	Capacity (MW)	Fuel
Eckert	337	Coal
Erickson	156	Coal
Detroit Edison Belle River	146	Coal
REO Cogeneration (also provides steam service)	100	Natural gas

¹⁸ Mayor’s Executive Directive No. 5, October 2014.

¹⁹ 2014 IRP p. ES-6.

²⁰ 2014 IRP p. 63.

Energy Efficiency

BWL has been offering energy efficiency programs since 2008 to comply with Public Act 295 of 2008 and the related March 15, 2013, Michigan Public Service Commission Order (MPSC Case No. U-17401). BWL's 2015-2017 energy optimization plan includes a wide variety of programs, including a program designed for low-income customers, residential appliance recycling, ENERGY STAR rebates, upstream lighting incentives, and commercial and industrial prescriptive and custom programs. In 2013, BWL spent approximately \$3.6 million (about 1.6% of annual revenues) on its energy efficiency programs with total energy savings of 26,757 MWh (approximately 1.0% of annual sales).

Commitment to Energy Efficiency

BWL is required to submit an energy optimization plan to the Michigan Public Service Commission for review and approval (Public Act 295 of 2008). The law requires each Michigan utility to "provide for the practical and effective administration" of the proposed programs. PA 295 specifies that for 2012 and every year thereafter, annual incremental energy savings must be equivalent to 1% of total annual retail electricity sales in megawatt-hours. In addition to the influence of state policy, several other factors contribute to BWL's commitment to energy efficiency. These include an organizational culture and leadership supportive of energy efficiency, the ability of energy efficiency programs to provide a positive presence for BWL in the community, and the economic benefit of reducing future supply costs and reducing future exposure to environmental costs.

BWL's 2008 Strategic Plan addresses the utility's commitment to energy efficiency and renewable energy:

To lower future costs and manage future risks, we recommend that energy efficiency and renewable energy options play an important role in the BWL's plans. In fact, our recommendation is to meet all load growth through at least the first ten years with a combination of energy efficiency programming and renewable energy production. (58)

Board Policies

At this time, BWL is committed to including energy efficiency as a resource in its strategic planning and integrated resource plan (IRP).

Resource Objectives

In its 2008 IRP, BWL lists several other advantages of energy efficiency programming: "These programs are frequently less expensive than generation options, they do not emit pollutants into the air or water, they are not subject to fuel cost escalations and the programs can be ramped up or down quickly to meet generation needs." (28) The company budgeted approximately \$1.2 million for energy efficiency in 2009 on the premise that "the use of energy efficiency programs can cost-effectively defer the need for additional electric generation." The incremental energy savings that BWL uses in its Energy Optimization Plan is calculated utilizing the average number of megawatt-hours of electricity sold annually during the previous three years to retail customers. BWL expects that its new IRP will further emphasize the importance of energy efficiency to its resource plans.

Other Indicators of Commitment

In addition to the direct resource value of energy efficiency, BWL is aware of its risk exposure from being so heavily dependent on coal-fired generation. BWL sees energy efficiency as a good mechanism for helping to reduce that risk exposure over time.

Contacts

George Stojic
Executive Director, Strategic Planning & Development
Lansing Board of Water and Light
Phone: 517-702-6347
grs@lbwl.com

Sue Warren, CEM, EEM
Manager, Energy and Eco-Strategies
Lansing Board of Water and Light
Phone: 517-702-6585
slw@lbwl.com

SEATTLE CITY LIGHT

Background

Seattle City Light serves more than 400,000 customers in Seattle and surrounding areas. The utility owns a variety of electric generation resources and also buys power from Bonneville Power Administration and elsewhere through long-term purchase contracts and power-exchange agreements.

The origin of the utility is that Seattle residents approved a bond to build a hydroelectric dam on the Cedar River, and then a few years later, in 1905, they established Seattle City Light. In the middle of the 20th century the utility promoted the use of electricity to keep prices down. By the late 1970s following the energy crisis, it changed direction and began energy conservation programs.

Starting in 1976, through the Energy 1990 public planning process, the city gave priority to energy conservation and renewable generation to meet future energy demands. Seattle City Light has been committed to that path since then. Figure A6 shows conservation resources projected past 2030.

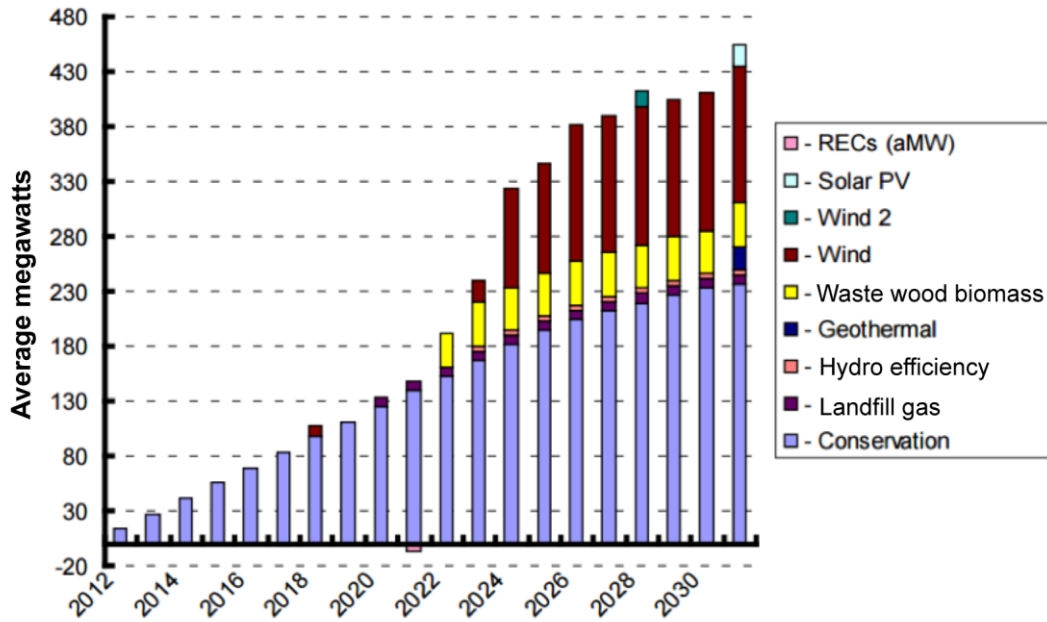


Figure A6. Increases in average megawatts from conservation relative to other resources. *Source:* Seattle 2012.

Energy Efficiency

Seattle City Light has a long history of commitment to energy efficiency, yet has been further increasing spending and ramping up energy savings from energy efficiency programs in the last four years. The company spent \$21.5 million on energy conservation in 2013, an increase of \$0.8 million above 2012, which was also an increase of \$1.5 million beyond 2011 spending. The \$21.5 million in 2013 represents approximately 3% of annual revenues for City Light.

Annual energy savings increases have been correlated with the higher conservation spending. According to EIA, 2012 net incremental savings were 128,288 MWh, and for 2013 they were 138,160 MWh. Seattle City Light reported 2014 energy savings of 159,033 MWh to the Washington Department of Commerce, which is 77% of its two-year target for 2014–2015. That 159,033 MWh is equivalent to approximately 1.7% of City Light’s annual sales.

The energy efficiency portfolio includes dozens of programs in the residential, commercial, and industrial sectors. Program plans call for savings predominantly in the commercial and residential sectors, with only about 10% from Energy Smart Services—Industrial, the main industrial program.

Seattle City Light is on a path to increasing energy savings from energy efficiency programs in the future as well. Both the integrated resource planning process and the energy efficiency potential studies that it regularly conducts and updates support this trend. The vast achievable energy savings is illustrated in figure A7.

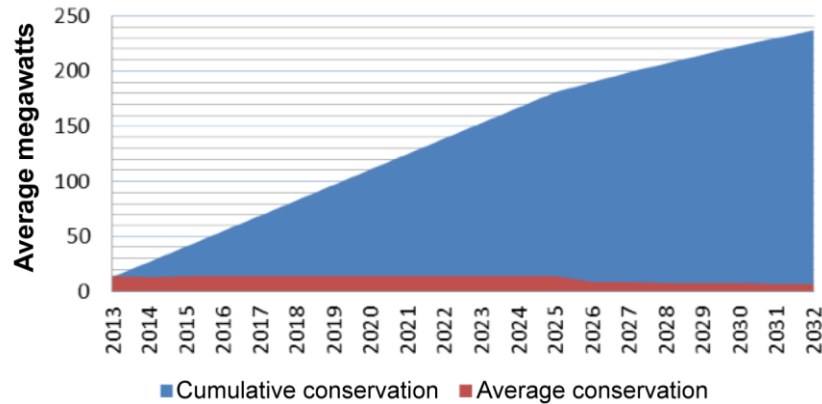


Figure A7. Projected achievable energy savings potential. *Source:* Seattle 2014.

Commitment to Energy Efficiency

Seattle City Light has demonstrated a sustained high level of commitment to energy efficiency policy for decades. This is in part due to the strong support in Seattle for environmental values, but City Light’s commitment to energy efficiency is firmly grounded in a commitment to energy efficiency as a utility system resource.²¹ The city significantly expanded conservation efforts in 2008 at the beginning of a five-year action plan. In the Highlights section of the Executive Summary for the 2012 integrated resource plan, the authors state, “Conservation is the resource of choice, a ‘no regrets’ long-term resource strategy because it is lower cost, flexible, advantageous for economic development, and has minimal environmental impacts.”

Seattle City Light’s 2015–2019 Strategic Plan Update continues Seattle’s commitment to energy efficiency:

Objective 4: Continue conservation and environmental leadership. City Light has been a leader in energy conservation and environmental stewardship. These are core values of Seattle residents. Strategic initiatives are focused on bolstering its efforts through expanded electrical vehicle infrastructure; expanded community engagement; enhancing environmental leadership; and improving the effectiveness and deployment of conservation program dollars.²²

²¹ For example, the city passed an Earth Day resolution in 2000 to meet its electricity needs with no net greenhouse gas emissions. Seattle City Light became the first greenhouse-gas-neutral utility in the country in 2005.

²² See www.seattle.gov/light/stratplan/futureStratPlan.asp.

City and State Policies

The Seattle City Council, as well as state law, directs Seattle City Light to provide an integrated resource plan. Washington state law requires electric utilities to develop IRPs every two years and file them with the state Department of Commerce.

In 2000, the Seattle City Council passed Resolution 30144, stating that City Light should “use cost-effective energy efficiency and renewable resources to meet as much load growth as possible.” This was part of the aforementioned goal to meet Seattle’s electrical power needs with net zero greenhouse gas emissions.

A statewide voter initiative passed in 2006, I-937, requires utilities serving 25,000 customers or more within Washington to pursue cost-effective conservation. Each utility must identify its achievable cost-effective potential and update the assessment every two years. The assessment forms the basis of energy savings targets the utilities must achieve every two years. They report their target and energy savings achievement to the Washington State Department of Commerce.

Energy Efficiency as a System Resource

City Light views energy efficiency as an essential resource. It claims to have the longest-running energy efficiency programs in the country, starting in 1977 and going for more than 38 years. The 2013 annual report lists “investments in conservation” along with power generation and power purchases as one of the three major resources in its portfolio mix.

Seattle City Light’s long-term commitment to energy efficiency has been very effective. Total electricity use in Seattle was lower in 2014 than in 2000. Although Seattle continues to experience substantial economic and population growth, City Light expects to continue to meet essentially all load growth through energy efficiency resources.

Another contributing factor for Seattle City Light is the Northwest Power and Conservation Council (NWPPCC), an important institution that shapes the policy environment the utility operates in. The conservation potential assessments required by law are informed by and use methodology consistent with ’s Sixth Northwest Conservation and Electric Power Plan report (Sixth Plan). NWPPCC evaluated over 7,000 energy efficiency measures in the process that led to the Sixth Plan.

Contact

Michael Little
Seattle City Light, Conservation Resources Division
Planning and Evaluation Manager
Michael.Little@seattle.gov
206-684-3233

SACRAMENTO MUNICIPAL UTILITY DISTRICT

Background

Sacramento Municipal Utility District (SMUD) is the second-largest municipal utility in California, serving 1.4 million customers over a 900-square-mile service territory. SMUD has been providing electricity to customers for over 60 years. SMUD’s service territory spans all

of Sacramento County and some parts of Placer and Yolo Counties. While SMUD primarily relies on natural gas generation to meet energy demand, renewables and hydroelectric sources account for a significant portion as well. SMUD's electricity sales are approximately 45% residential and 55% commercial/industrial.

Energy Efficiency

SMUD's energy efficiency programs have been long standing and very effective. The municipality has offered programs to customers since 1976. The energy efficiency programs have been a contributor to the fact SMUD has some of the lowest electric rates in California (28% lower than neighboring Pacific Gas and Electric). Table A3 shows the results of SMUD's energy efficiency programs for fiscal year (FY) 2013/2014. In FY2013/2014 SMUD's energy efficiency savings represented 1.6% of total sales. Program spending was approximately 3% of total revenues in the same time period.

Table A3. SMUD energy efficiency FY 2013/2014 results

Unit	Value
Gross annual kWh savings	175,370,000
Net annual kWh savings	141,979,000
Net peak kW savings	25,470
Total cost	\$41,041,001
Net lifecycle GHG reductions (tons)	526,980

SMUD's delivery of energy efficiency programs is highly customer focused. The utility offers customers insight into energy use history and analytics through an online tool. SMUD also offers energy efficiency financing at competitive rates to customers.²³ According to the 2013 annual report: "SMUD's purpose is to provide solutions for meeting customers' electrical energy needs with a vision of empowering customers with solutions and options that increase energy efficiency, protect the environment, reduce global warming, and lower the cost to serve the region."

Commitment to Energy Efficiency

SMUD has demonstrated a long history of implementing successful energy efficiency programs. This commitment is further strengthened through a state initiative for public power companies to reduce energy consumption by 10% of forecasted demand over the next 10 years (California AB 2021). In 2007, SMUD's publicly elected board of directors adopted an ambitious target of 15% of forecasted demand over 10 years, and following attainment of that level has subsequently updated the target to apply out to 2025, continuing at a 1.5% per year target. SMUD's commitment to energy efficiency is based in a

²³ SMUD's current energy efficiency program offerings can be found at www.smud.org/en/residential/save-energy/ for residential customers and at www.smud.org/en/business/save-energy/index.htm for commercial customers.

commitment to customers. In a recent interview, SMUD principal energy advisor Bob Kinert stated, “With these programs, we can help our customers work their way out of the recession. If they are profitable, they stay in business and they stay our customers” (Anderson 2014). SMUD considers energy efficiency, along with other policies, as an economic development tool with promise to help businesses reduce costs through lower electric bills, creating jobs in the SMUD service territory.

Resource Objectives

SMUD has also recognized energy efficiency as the key to addressing issues with future peak load problems. SMUD is a summer-peaking utility, experiencing extremely hot summer days often over 100 degrees. With rising demand through customer growth and extreme heat in the summer, SMUD plans to address concerns of peak demand through energy efficiency. Allocating expensive resources to meet peak demand for only a few dozen hours a year is costly, and energy efficiency offers an inexpensive way to reduce demand and avoid the need for additional resources required to meet future peak demand.

Contact

Obadiah Bartholomy
Supervisor, Customer Technology Strategy
obadiah.bartholomy@smud.org
916-732-6835

SNOHOMISH COUNTY PUBLIC UTILITY DISTRICT (PUD) No. 1

Background

Snohomish County PUD is a county utility district, not a municipally owned utility like most of the utilities in this report. It is governed by an elected three-member board of commissioners. Snohomish County PUD is the second-largest publicly owned utility in Washington after Seattle City Light, serving over 332,000 electric customers and 19,000 water customers. The service territory, north of Seattle and Tacoma, is more than 2,200 square miles, including Snohomish County and Camano Island.

Over 90% of the PUD’s power supply mix is renewable generation. The majority of it is from contracts with Bonneville Power Administration (BPA). Most BPA power is hydroelectric. As of 2012, the company generated 6% from its own hydroelectric projects.

Energy Efficiency

Snohomish PUD has been providing energy efficiency programs for 35 years. Since 2007, with the passage of the Washington State Energy Independence Act, the PUD has regularly increased investment in energy efficiency, frequently breaking its own records for megawatt-hours energy savings per year. In 2013, program spending as a percentage of total annual revenues was 3.77% (\$22 million compared with \$584 million). Annual megawatt-hour savings as a percentage of total retail annual megawatt-hour sales was 1.58% (103,000 saved out of 6,544,000) for 2013.

Highlights from that record-setting year for savings included increasing retail lighting product sales through an expanded network of 125 stores, higher customer rebates and triple the installations of ductless heat pumps, and continuing success for the Community

Energy Efficiency Program. The Community Energy Efficiency Program is for tenant customers—residential renters and small businesses that lease their spaces. Another major program initiative delivering energy savings has been the PUD’s streetlight program, a five-year plan to replace more than 38,000 existing street lamps with LED fixtures.

Commitment to Energy Efficiency

While many factors converge to advance energy efficiency at the PUD, three were noted by staff at Snohomish. The utility has had a steady commitment to efficiency for over 30 years. While some other utilities have ramped up and down their conservation programs with the state of deregulation, economic cycles, or other external factors, Snohomish has been consistent. “We’ve been very steady-state and have always thought of conservation as a viable supply-side alternative.” Second, the Public Utility District board adopted a climate change policy that considers energy efficiency to be the first priority resource to meet load growth. The strong reputation for energy efficiency has been a magnet for industry professionals, with one utility representative describing an “amazing ability to attract young talented ambitious employees into the energy efficiency group.”

State and Local Policy

The Washington State Energy Independence Act requires municipal utilities to acquire all cost-effective energy savings through providing energy efficiency programs.²⁴ All mid-sized and large utilities were required under this law to do conservation potential studies going through 2019 (the initial 10-year period), and to update those studies every two years. The law requires each qualifying utility to set savings acquisition targets for cost-effective conservation during these two-year periods and to reach those targets. The law allows utilities to bank savings above the target for future periods, but each target must be at least one-fifth of the overall 10-year target. Utilities can save energy faster than the plan, but are not allowed to fall behind.

In 2007, the governing board of the PUD set a policy with two resource objectives: (1) the district would acquire all cost-effective conservation in its service territory; and (2) to the extent that the utility needed additional electricity supply to meet load growth, the district would either purchase renewable energy or build its own renewable energy resources, preferably in its own backyard. The policy was later incorporated in the utility’s integrated resource plan.

Local policy was cited as having the most importance in influencing Snohomish PUD to provide strong energy efficiency programs to its customers, even more than economic benefits to the local economy and more than state policy requirements.

Energy Efficiency as a System Resource

As the largest customer of Bonneville Power Administration, Snohomish has very little power generation of its own, which has implications for how fully it can embrace energy efficiency as a system resource. It have very low fixed costs, so when efficiency lowers

²⁴ Revised Code of Washington (RCW) 19.285 and Washington Administrative Code (WAC) 194.37. www.secstate.wa.gov/elections/initiatives/text/1937.pdf.

electricity loads, the under-recovery of fixed costs is far less than if it were an investor-owned utility with substantial generation assets to pay for. As there are no shareholders concerned about lost revenues, one major barrier to using efficiency as a resource is not an issue.

Contact

George Pohndorf
 Senior Manager, Energy Services
 Snohomish County PUD
 Office: 425.783.8022
grpohndorf@snopud.com
www.snopud.com

TACOMA PUBLIC UTILITIES/TACOMA POWER

Background

Tacoma Power, one of the oldest municipally owned utilities in the nation, was incorporated in 1884 and purchased by the city of Tacoma in 1893. It is part of Tacoma Public Utilities, which also provides water, cable TV, and rail services. The company serves over 169,000 electric customers, supplying approximately 580 average megawatts in 2012. Generation comes partly from hydroelectric power through a long-term contract with the Bonneville Power Administration (BPA). The other 41% is generated by the utility's eight hydroelectric dams.

Energy Efficiency

Tacoma Power has provided energy efficiency programs for 33 years. The utility offers a full portfolio of programs serving residential, commercial, and industrial customers. Residential programs include custom projects, product distribution, retail products, and single-family and multifamily heating and weatherization, using cash rebates, low-income grants, and zero-interest loans. Commercial and industrial programs include lighting, custom retrofit, Energy Smart Grocer, equipment rebates, new construction, and strategic energy management. Spending on energy efficiency was 1.9% of total revenue in 2014. Energy savings as a percentage of retail electric sales were 1.16%.

Commitment to Energy Efficiency

The city of Tacoma requires energy efficiency programs to comply with Washington state laws, while also meeting the city's own public policy goals. In Tacoma Power's 2014–2015 conservation plan, the first purpose cited is the need to defer building expensive new generation and distribution systems. Conservation saves all customers money, especially those that directly participate in energy efficiency programs, and keeps rates among the lowest in Washington. A third policy rationale is environmental stewardship. In the case of hydro-powered Tacoma, electricity saved through conservation directly displaces the need for fossil-fuel generation elsewhere when sold to other markets.

There is a strong pro-conservation culture among stakeholders in Tacoma. The financial interests of customers, the passion and enthusiasm of employees and trade allies, and cooperation among other nearby utilities support effective energy efficiency. One conservation program manager stated, "Employees really care about working with

customers and allies to make it happen. That’s the best part of it. We have the support from our leadership to be innovative and we understand that we work in a cost effective way, with our ratepayers in mind from a business perspective as well.”

Tacoma’s long-term commitment to energy efficiency is demonstrated by its track record of sustained energy savings. As shown in figure A8, Tacoma Power has consistently exceeded annual energy savings targets.²⁵

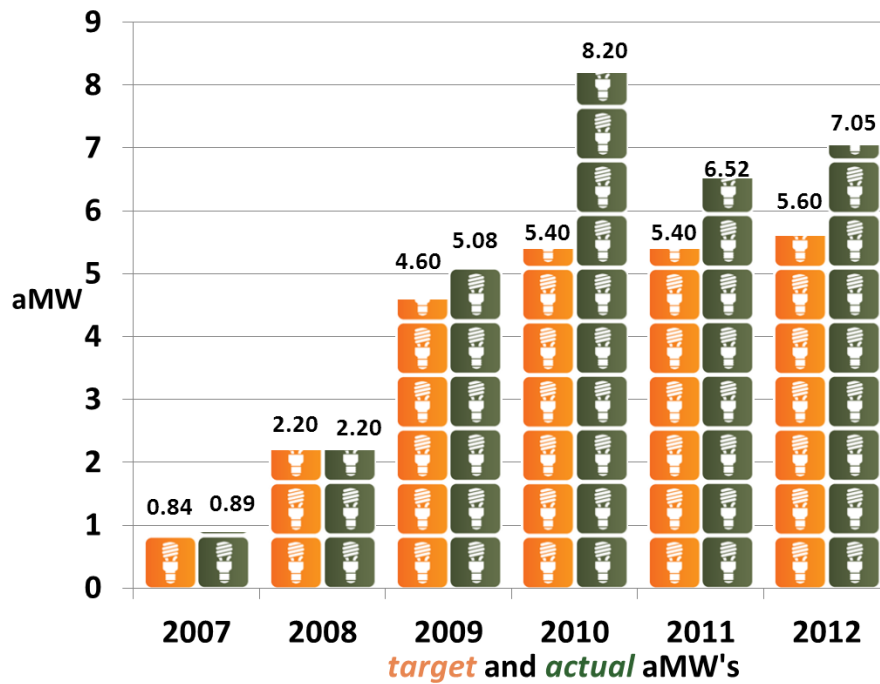


Figure A8. Tacoma Power target savings compared with actual. Source: Tacoma Power 2013.

State Policy

In 2005, Washington voters approved Initiative I-937, the Washington State Energy Independence Act, which requires municipal utilities with 25,000 or more customers to acquire all cost-effective energy savings through energy efficiency programs.²⁶ All I-937 utilities are required under this law to do conservation potential studies going through 2019 (the initial 10-year period), and to update those studies every two years. The law requires each qualifying utility to set savings acquisition targets for cost-effective conservation during these two-year periods and to reach those targets. The law allows utilities to bank savings above the target for future periods, but each target must be at least one-fifth of the overall 10-year target. Utilities can save energy faster than the plan, but are not allowed to fall behind.

²⁵ Energy savings over time through conservation programs are measured in average megawatts in the Northwest. An average megawatt is 1 MW for every hour of a year, or 8,760 MWh.

²⁶ Revised Code of Washington (RCW) 19.285 and Washington Administrative Code (WAC) 194.37.

Energy Efficiency as a System Resource

Tacoma Power considers energy efficiency as a system resource in the long, medium, and short term. The utility uses an integrated resource plan (IRP) that looks at supply and demand resources extending 25 years into the future. The plan assesses prices, the forecast price of natural gas, and other inputs that could influence the cost of electricity to customers. Using its IRP, Tacoma Power develops a conservation potential assessment (CPA) that quantifies the energy saving potential. The CPA looks at the number of light bulb sockets, the number of customers participating in conservation programs, and other concrete metrics. The utility's two-year conservation plans get into the details of how its programs will achieve the energy savings.

All of the above is ultimately driven by the commitment of Tacoma's public utility board and city council to recognize energy efficiency as a true resource. Any lost revenues from successful conservation efforts are effectively a non-issue in this context, because the avoided supply-side resources would have cost more than conservation, and because each megawatt-hour conserved can be sold to other markets where demand is greater.

Contact

John Walkowiak
Conservation Information Manager
Tacoma Power
JWalkowiak@ci.tacoma.wa.us
(253) 502-8534

Appendix B. Questionnaire

ACEEE SURVEY OF LEADING MUNICIPAL UTILITIES ON ENERGY EFFICIENCY*

[* Note: these questions apply to energy efficiency, not including load management or demand response]

Utility: _____

Respondent: _____

Date: _____

1. Are there any state policies or regulatory requirements that require you as a municipal utility to provide energy efficiency programs and/or meet particular energy efficiency goals?

Yes ____ No ____

If yes, please briefly describe and provide a citation or link to the source. -

2. Does your municipal government and/or your municipal utility governing board have a policy requiring energy efficiency programs and/or establishing energy efficiency goals?

Yes ____ No ____

If yes, please briefly describe and provide a citation/link to the source.

3. Please rate each of the following items on their importance in influencing you as a municipal utility to provide strong energy efficiency programs to your customers.

[Use a 0 to 10 scale, with 0 being not important at all, and 10 being extremely important]

[or N/A = Not Applicable]

- a. ____ A state policy or regulatory requirement to provide energy efficiency (EE)
- b. ____ A municipal government/governing board policy/requirement to provide EE
- c. ____ Reducing greenhouse gases (e.g., part of a “climate” policy or goal)
- d. ____ Other environmental benefits from energy efficiency
- e. ____ The value of energy efficiency as a “resource” in your resource supply mix
- f. ____ The economic benefits to the local economy and your service territory
- g. ____ That energy efficiency reduces your other supply costs
- h. ____ That energy efficiency is a service your customers like
- i. ____ Other [please describe: _____]

4. For approximately how many years has your municipal utility been providing ‘substantial’ energy efficiency programs (i.e., more than just “information” type programs) _____ years

5. Please provide the following approximate percentages for the most recent program year:

[round to the nearest tenth of a percent]

- EE program spending as a percentage of total annual revenues: ____ %
- EE annual kWh savings as a percentage of total annual kWh sales ____ %

6. Do you expect that your 2015 spending on energy efficiency programs will be ____ more, ____ about the same, or ____ less than your 2014 EE spending? (check one)

Please provide the name and contact information for the best person(s) to talk to about your utility's strategic approach to energy efficiency, and how it fits into your overall business plan.

Name: _____

Title: _____

E-mail address: _____

Phone Number: _____

Thank you very much for your assistance.