

Maintaining Strong Utility Energy Efficiency Programs Beyond 2018: Challenges and Prospects in the Southwest

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ABSTRACT

Electric utilities in the Southwest (AZ, CO, NM, NV and UT) have significantly ramped up their energy efficiency programs in the past decade. Some utilities in the region are achieving first year energy savings of 1.5 percent or retail sales or greater. Some factors call into question the ability to sustain this level of energy savings beyond 2018, while utilities are also implementing innovative technologies and program strategies to maintain or possibly increase energy savings. This paper reviews the status of energy savings requirements or goals and other key policies affecting utility energy efficiency programs in the Southwest, the prospects for continuing these policies, and the major challenges to maintaining high levels of energy savings. The paper also reviews the key innovative strategies and technologies that utilities in the region are implementing. Considering all of these factors, the major electric utilities in the Southwest are likely to sustain at least a moderately high level of energy savings well beyond 2018.

Background

Electric utility energy efficiency policy and programs in the Southwest (AZ, CO, NM, NV and UT) have greatly improved over the past 15 years. Total funding for electric utility demand-side management (DSM) programs in the region increased from about \$21 million in 2001 to about \$385 million in 2017.¹ Households and businesses lowered their electricity use in 2016 by about 20 billion kWh as a result of energy efficiency programs implemented during the previous decade—equivalent to the electricity use of about 1.7 million typical households in the region (Geller 2017a).

Figure 1 shows the energy savings achieved by the seven largest electric utilities in the region each year as a fraction of retail electricity sales during 2007-17. The leading utilities, Salt River Project (SRP) and Arizona Public Service Co. (APS) achieved savings equal to 1.5 to 2.0 percent of their electricity sales in 2017. Three other major utilities – Xcel Energy-CO, Rocky Mountain Power (RMP), and Tucson Electric Power Co. (TEP) saved 1.3-1.4 percent of sales from their 2017 programs.² TEP's savings achievement fell in 2017 due to some funding limitations and temporarily suspended programs. NV Energy and Public Service Company of New Mexico (PNM) achieved energy savings of about 0.9 percent of sales in 2017.

For comparison, no utility in the region saved more than 1.0 percent of sales in 2007 and only one did in 2008. In addition, all of the major utilities in the region were at or above the national average savings percentage for large utilities which was approximately 0.89 percent of retail electricity sales as of 2016 (Relf, Baatz and Nowak 2017).

¹ These values include funding for both energy efficiency and demand response programs. Data collected by the Southwest Energy Efficiency Project (SWEET).

² The savings percentages are based on how savings are reported by the utilities. In the case of APS, SRP, TEP, NV Energy and RMP, gross savings are reported. In the case of Xcel Energy and PNM, net savings are reported. The savings are at the point of electricity use and exclude any plus-up for T&D line loss reduction.

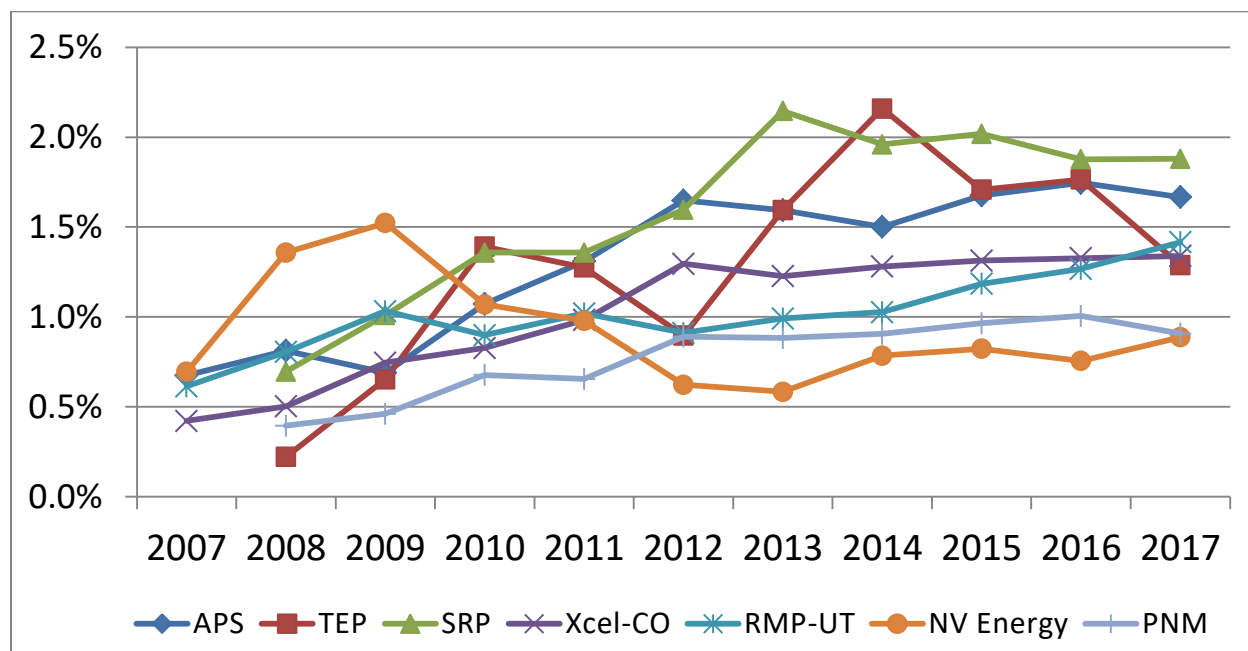


Figure 1. Energy savings of major electric utilities in the Southwest (savings as a percentage of retail sales)

The energy savings trends over the past decade were driven by a variety of policies including energy savings requirements or goals and shareholder incentives for utilities, as well as by technological and programmatic opportunities.

Challenges

There are a number of challenges to maintaining strong utility energy efficiency programs in the Southwest and other regions after 2018. Some of these challenges are technological or market-related, while others are policy-related. The generic challenges are briefly reviewed below, followed by a discussion of policy status and prospects by state.

Diminished Load Growth

The major utilities in the Southwest, like utilities in other regions, have experienced flat or even declining electricity demand over the past decade. Diminished load growth has led some utilities to look less favorably upon their energy efficiency efforts, particularly those utilities with business models where utilities benefit financially from load growth in between rate cases. Utilities with adequate or excess capacity (and their regulators) ask why they should be pursuing additional energy efficiency resources. Diminished load growth also affects cost effectiveness analysis in that robust energy efficiency programs generally have less value if they are primarily reducing the operation of existing power plants rather than avoiding both construction and operation of new generating facilities.

Falling Avoided Costs

The costs avoided by utility energy efficiency programs include both capital and energy costs. Avoided energy costs have fallen in recent years as natural gas prices have dropped and remain relatively low. With plentiful natural gas supplies expected to persist for many years, some utilities are no longer projecting significant increases in natural gas prices in their DSM plan time horizons. In addition, some utilities are experiencing reductions in avoided generation and avoided transmission and distribution (T&D) capacity costs. The reduction in avoided costs lowers net economic benefits and makes it more difficult for some programs to pass cost effectiveness screening.

Uncertain Energy Savings Potential

There is some uncertainty regarding achievable and cost-effective energy savings potential from utility energy efficiency programs beyond 2018. One uncertainty concerns the scope and degree of enforcement of the EISA light bulb efficiency standard that is scheduled to take effect in 2020.³ Consequently, it is unclear whether utilities will be able to maintain cost-effective residential lighting programs in 2020 and beyond, and if so how much net energy savings potential will be available. Likewise there is uncertainty about the achievable energy savings potential from emerging technologies and new program strategies such as utilizing smart meter data to educate and engage with customers in ways that contribute to energy savings.

Policy Limitations and Uncertainties

Some southwestern states including Arizona and New Mexico face policy limitations around energy efficiency goals or standards that end in 2020, and uncertainty as to whether there is the political will to extend the standards beyond 2020. Other states such as Utah lack energy efficiency goals or standards. Some states including Arizona and Nevada have not adopted financial incentives for utilities to pursue high levels of energy savings, or have inadequate incentives. Some states are considering new clean energy standards or even clean peak standards, but these new policies are still under development. Finally, there is uncertainty related to the possible adoption of retail electricity competition via a ballot initiative in Nevada. These issues are discussed in more detail in the next section.

Policy Status and Prospects

Arizona

Arizona has adopted some of the strongest energy efficiency standards in the country for investor-owned utilities through action taken in 2009 by the Arizona Corporation Commission (ACC 2009). Regulated electric utilities are required to save 22 percent of electricity consumption in 2020 as a result of energy efficiency programs implemented during 2011-2020.⁴

³ The EISA standard of 45 lumens per watt lamp is written into law but is being challenged by lighting manufacturers.

⁴ The standards refer to gross energy savings and consequently savings achievements are also based on gross energy savings.

Up to 2 percent of the total savings can be attained through credits from demand response programs. Also, some early-action credit is provided for energy savings achieved through utility programs during 2005-10. The standards include annual targets that have increased over time. During 2016-20, the annual targets average 2.25 percent savings per year excluding the demand response credit. In addition to the energy efficiency standards, the ACC has approved lost revenue recovery and performance-based shareholder incentive mechanisms for the electric utilities it regulates. However, the shareholder incentives are relatively modest in magnitude.

The state's major investor-owned electric utilities, APS and TEP, are on track for meeting the 2020 standards. As of 2017, the two utilities realized annual savings of about 5,350 GWh per year due to cumulative energy efficiency programs under the standards (excluding the demand response credits) (APS 2018; TEP 2018). This is equivalent to saving about 14.5 percent of retail sales for the two utilities combined. In addition, the two utilities estimate net societal benefits of over \$1.2 billion from cumulative energy efficiency programs under the standards.

In spite of the success of the standards, APS has proposed deep cuts in its energy efficiency programs including eliminating residential and commercial/industrial (C&I) lighting programs, C&I refrigeration measures and air conditioning efficiency programs starting in 2018 (APS 2017). APS argues that energy savings during daytime hours in the spring and fall are no longer as valuable to the utility as in the past given the growing penetration of solar resources; i.e., the duck curve issue. Energy efficiency advocates are opposing the program cuts arguing that the programs continue to provide value to the utility system the majority of the time and that APS has failed to demonstrate that the programs are no longer cost effective. In addition, eliminating the programs would put compliance with the efficiency standards at risk. The ACC is expected to rule on APS's proposed DSM program cuts during the summer of 2018.

Regarding the prospects for maintaining strong utility energy efficiency programs after 2020, adopting new standards post-2020 does not look promising at this time given the current composition of the ACC and the energy efficiency program cuts proposed by APS in 2018. Several Commissioners are supportive of strong utility energy efficiency policies and programs, but at least three votes are needed for approving a new policy by the five-member Commission.

The Integrated Resource Plans (IRPs) prepared by the utilities are another avenue for advancing energy efficiency policy over the longer term. In 2017, APS and TEP developed IRPs that emphasized addition of new gas-fired generating capacity while greatly scaling back energy efficiency and peak demand reduction efforts. APS in particular proposed adding over 5,000 MW of new gas-fired resources by 2032, no new utility-scale solar additions, and only about 1,070 MW of new energy efficiency and demand response resources.

The Southwest Energy Efficiency Project (SWEET) and its partners developed Alternative Resource Portfolios for both APS and TEP that consisted of much greater reliance on energy efficiency, demand response, renewable resources and energy storage compared to the utilities' plans (SWEET and WRA 2018). Analysis by the advocates showed that the Alternative Portfolios would save consumers hundreds of millions of dollars, reduce pollutant emissions, and reduce risk. A broad range of stakeholders including consumer groups, business groups, tribal representatives and clean energy groups supported the Alternative Resource Portfolios before the ACC. In March 2018, the ACC decided on a 3-2 vote to "not acknowledge" the IRPs submitted by APS and TEP (ACC 2018).⁵ In the next round of IRPs, the utilities were directed to develop

⁵ The ACC does not accept or reject the utility IRPs but instead either acknowledges them or not. Voting to not acknowledge the plans essentially means the Commission was not supportive of the resource portfolios proposed by the utilities.

and analyze resource portfolios with less natural gas and more energy efficiency and other cleaner resources. The ACC also adopted a moratorium on new natural gas resources of 150 MW or greater for the remainder of 2018.

In addition to this historic rejection of the resource plans proposed by the utilities, ACC Commissioner Andy Tobin has proposed an Energy Modernization Plan that would establish a goal of 80 percent of generation coming from “clean resources” (defined as renewable energy, energy efficiency and nuclear power) by 2050 (Tobin 2018). The Energy Modernization Plan proposal also directs the ACC to establish a new energy efficiency policy for the post-2020 time period to help meet the goal. The ACC is expected to issue a response to Commissioner Tobin’s proposal at some point in 2018.

Colorado

In 2007, the Colorado legislature directed the Public Utilities Commission (PUC) to establish energy savings goals for investor-owned electric utilities through 2018. The legislation also directed the PUC to provide utilities with an opportunity to earn a profit from implementing cost-effective energy efficiency programs for their customers. In 2017, the original legislation was amended directing the PUC to set energy savings goals for another ten years.

The Colorado PUC set energy savings goals for Xcel Energy, the major electric utility in the state, which increased over time. The goal is 400 GWh per year during 2015-18.⁶ This goal is equivalent to saving about 1.3 percent of the utility’s retail electricity sales annually. Xcel Energy exceeded the savings goal set by the PUC each year during 2008-17, saving about 3,100 GWh in 2017 due to cumulative energy efficiency programs (SWEEP 2017a). This level of energy savings is equivalent to saving about 11 percent of the utility’s retail sales as of 2017.

Xcel Energy estimates net economic benefits of about \$1.4 billion from its cumulative energy efficiency programs since 2008. In addition, Xcel Energy was awarded about \$130 million in shareholder incentives during 2009-17 based on the energy savings and net economic benefits of its energy efficiency programs.

A DSM Strategic Issues proceeding began in 2017 to establish new energy savings and peak demand reduction goals, and consider changes to other DSM policies, for Xcel Energy during the 2019-23. The utility initially proposed lowering the energy savings goals based on a new DSM Market Potential study and other factors. Some intervenors including Commission staff and the consumer advocate supported goals even lower than what Xcel proposed, while SWEEP and other energy efficiency advocates proposed higher energy savings goals.

Settlement negotiations in the proceeding resulted in most parties agreeing to continue the current energy savings goal of 400 GWh per year through 2023 rather than lower the goal (Settling Parties 2018). The Settlement Agreement also strengthens the shareholder incentive mechanism, supports geo-targeted DSM efforts on constrained distribution system feeders, and increases the non-energy benefits adders used in DSM program cost-benefit analysis.

The Commission deliberated in April, 2018 and approved the energy savings goal originally proposed by SWEEP which is a net energy savings goal of 500 GWh per year, equal to about 1.6 percent of Xcel’s projected retail sales during 2019-23 (Colorado PUC 2018). Some portions of the Settlement Agreement were approved as well.

In addition to the DSM Strategic Issues proceeding, the Colorado PUC approved a decoupling mechanism for Xcel Energy in 2017. The decoupling mechanism applies to the

⁶ The Colorado goals are expressed as net energy savings at the generator level.

residential and small commercial customer classes. The combination of decoupling and the shareholder incentives in the Settlement Agreement helped to convince Xcel Energy to support the continuation of relatively strong energy savings goals.

Nevada

In 2005, Nevada's Renewable Portfolio Standard (RPS) was amended to allow up to 25 percent of the clean generation requirement to be met with energy savings credits from utility-sponsored energy efficiency programs. The RPS required that 20 percent of all electricity sold by the state's regulated utilities to come from clean sources by 2015. The RPS was subsequently amended to require 25 percent clean generation by 2025.

NV Energy, the parent company for Nevada Power Co. (NPC) in southern Nevada and Sierra Pacific Power Co. (SPPC) in northern Nevada, greatly expanded its energy efficiency and other demand-side management (DSM) programs during 2006-9 in response to this legislation (see Figure 1). In 2008-09, NV Energy was the leading utility in the southwest region with respect to energy savings as a percentage of retail electricity sales.

However, a number of factors worked against energy efficiency in Nevada over the past decade (SWEEP 2017b):

- Nevada's economy withered during the great recession and electricity consumption fell as a result. The Public Utilities Commission of Nevada (PUCN) questioned the need for large investments in energy efficiency programs in the short run, and cut NV Energy's DSM budget including eliminating the residential lighting and pool pumps programs.
- NV Energy accumulated significant excess energy efficiency credits from its successful DSM programs during 2006-09, meaning the utility had less motivation to continue achieving high levels of energy savings post-2010.
- Nevada's consumer advocate became increasingly hostile to energy efficiency programs in part because NV Energy proposed and the PUCN approved a lost revenue recovery mechanism.
- In 2013, the Nevada legislature approved a phase out of the energy efficiency credits that can be counted towards compliance with the Renewable Portfolio standard, with full phase out in 2025.

In 2017, NV Energy spent \$50 million on DSM programs and realized energy savings of approximately 265 GWh per year, equivalent to about 0.9 percent of retail electric sales.⁷ The utility implements comprehensive C&I programs but no longer implements residential lighting, new construction, or low-income programs. While the energy savings are relatively low on a percent of sales basis, NV Energy does implement a very successful Wi-Fi-enabled smart thermostat program with over 75,000 thermostats installed as of 2017. This integrated EE/DR program provides considerable energy savings as well as peak demand reduction.

Given the modest energy savings achievements of NV Energy in recent years, SWEEP and other energy efficiency advocates proposed new policies including stand-alone energy efficiency standards. Negotiations with NV Energy resulted in a compromise set of policies that the Nevada legislature adopted in 2017 (Nevada Legislature 2017). The new legislation:

- Includes a declaration that it is in the public interest for utilities to maximize the implementation of cost-effective, achievable energy efficiency opportunities;
- Directs the PUCN to set energy savings goals for NV Energy;

⁷ The energy savings value is gross energy savings, as reported by NV Energy.

- Requires cost effectiveness at the portfolio level rather than individual program level;
- Requires that at least 5% of total utility energy efficiency expenditures assist low-income households in saving energy; and
- Directs utilities and the PUCN to account for non-energy benefits in DSM program benefit-cost analysis.

The PUCN was nearing conclusion of a rulemaking to implement the new legislation as June, 2018. In addition, NV Energy submitted a new three-year DSM programs plan in June 2018 that responds to the 2017 legislation and includes a number of new energy efficiency programs; e.g., restarting residential lighting and pool pumps programs (NV Energy 2018). The new DSM plan is designed to save a total of 345 GWh per year on average during 2019-21, equivalent to saving about 1.15 percent of projected retail electricity sales annually.

There is one other “wild card” that could affect future utility efficiency efforts in Nevada. A proposal to adopt retail competition, known as the Energy Choice Initiative, will be on the ballot in November 2018. If this ballot initiative passes, the legislature is given the responsibility for adopting implementing legislation with retail competition implemented starting in 2023. The fate of utility energy efficiency programs is one of the issues that will need to be addressed should the Energy Choice Initiative pass. For example, the implementing legislation could include a non-bypassable wires charge to pay for energy efficiency programs that either NV Energy or a third party administrator would implement.

New Mexico

In 2005, the New Mexico legislature adopted the Efficient Use of Energy Act (EUEA), directing investor-owned utilities to implement cost-effective energy efficiency and load management programs, and establishing a cost recovery mechanism for utility DSM investments. In 2008, the EUEA was amended, requiring that electric utility programs achieve 5 percent savings by 2014 and 10 percent by 2020 (as a fraction of 2005 electricity sales). The amended EUEA also directed the Public Regulation Commission (PRC) to remove disincentives and allow utilities to earn a profit on investments in cost-effective DSM programs.

In 2013, the legislature amended the EUEA a second time, setting utility funding for energy efficiency and load management programs at 3 percent of customers’ bills and changing the primary cost-effectiveness test from the TRC to the UCT test. At the same time, the legislature lowered the state’s 2020 energy efficiency standard from 10 percent to 8 percent.

Public Service Company of New Mexico (PNM) is the main investor-owned utility in the state; in addition there are two smaller IOUs. The three utilities significantly ramped up their energy efficiency programs in response to the policies described above. Combined they saved about 0.9 percent of retail sales annually from programs implemented in 2017, and a total of about 1,050 GWh as a result of DSM programs implemented during 2008-17 (SWEEP 2017c). The savings from cumulative efforts are equal to about 7.0 percent of total retail electricity use. The utilities are on track to meet the EUEA’s 2020 energy savings requirement.

PNM has proposed revenue decoupling in order to remove the financial disincentives associated with utility-sponsored energy efficiency programs, but the PRC rejected this policy in two separate rate cases. The PRC approved limited financial incentives which PNM in particular does not believe are adequate to satisfy the requirements in the Act. In addition, the PRC is considering adopting a Lost Revenue Adjustment Mechanism (LRAM) mechanism for PNM in a docket underway in 2018.

Utah

PacifiCorp, doing business as Rocky Mountain Power (RMP), is Utah's sole investor-owned electric utility. The Utah Public Service Commission established IRP requirements for PacifiCorp in 1992. The Utah Legislature also approved a DSM tariff rider as well as an industrial self-direction program, but has not adopted energy savings goals or standards. The Utility Cost Test (UCT) is the primary test used to determine DSM program cost effectiveness.

PacifiCorp's IRP is the primary driver of DSM program budgets and savings goals in Utah. In 2017, RMP proposed and the Utah legislature approved a policy that capitalizes all DSM program expenditures, amortizes this investment over ten years, and enables the utility to earn its normal ROE on DSM expenditures. Prior to this the utility obtained cost recovery through the tariff rider, but no shareholder incentive or disincentive offset.

RMP's customers saved about 2,500 GWh of electricity as of 2017, due to programs and measures implemented during 2008-17. This amount of electricity savings is equal to about 10 percent of total electricity consumption by RMP's customers. RMP's DSM programs have been very cost effective as determined by the UCT, with approximately \$1.1 billion of net economic benefits as a result of DSM programs implemented during 2008-17 (SWEEP 2017d).

Given that Utah is a very conservative state politically, it is unlikely that the legislature would approve energy efficiency standards or even meaningful energy savings goals. PacifiCorp's IRP, which gets updated every two years, continues to be the primary mechanism for establishing RMP's energy savings targets. Unfortunately, the most recent IRP calls for less energy savings in Utah than did the previous IRP. This is a consequence of reduced load growth and other factors such as declining avoided costs (PacifiCorp 2017). Nonetheless, RMP is on track to achieve energy savings in 2018 that are close to the level achieved in 2017, as a result of strong customer response to incentives for LED lamps and fixtures in particular.

Innovative Program Strategies

Utilities in the Southwest are employing a number of innovative program strategies, and are focusing on some newer technologies, in order to increase energy savings in particular market segments. These innovative approaches will help utilities maintain or possibly increase total energy savings beyond 2018. Five of the most significant strategies and/or technologies are summarized below, but this is not an exhaustive list. Utilities in the region are pursuing other innovative strategies and technologies as well, such as programs focused on retrofitting multifamily buildings and geo-targeting DSM efforts on constrained distribution system feeders.

Shift to Midstream Incentives

A number of utilities have shifted from paying incentives to end users to paying equipment distributors, thereby influencing equipment stocking and marketing practices of these critical market actors. Xcel Energy-CO, PNM and RMP in Utah have made this shift for unitary packaged air conditioning equipment and popular types of LED lamps in their commercial and industrial (C&I) air conditioning and lighting efficiency programs. Providing incentives directly to distributors also benefits end users who receive an instant discount at time of purchase, rather than having to submit a rebate application project-by-project and waiting for a rebate check.

Once distributors respond, the shift to midstream incentives generally results in a large increase in the sale of energy-efficient equipment and a lower cost per unit of energy savings. For example, Xcel Energy reports that sales of high efficiency commercial AC equipment (measured in terms of total tonnage) increased 350% between 2015 and 2016 after the shift to midstream incentives (Xcel Energy 2017). In 2018, NV Energy shifted to midstream incentives in its residential AC program.

Strategic Energy Management and Energy Manager Funding

Some utilities including RMP in Utah are achieving considerable energy savings through promoting and supporting Strategic Energy Management (SEM), which involves obtaining management support for energy savings goals, developing energy teams, developing better tracking of energy use, and adopting improved operations and maintenance (O&M) practices. RMP's SEM program also provides incentives and takes credit for measured O&M savings.

SEM has become an important component of RMP's C&I programs, delivering 47.5 GWh of savings in 2017 which is equal to 22% of total C&I program savings (RMP 2018). Substantial O&M savings were achieved by water supply utilities in particular. Other utilities in the region including Xcel Energy-CO, PNM, and NV Energy are conducting SEM pilots.

RMP also provides funding for energy managers in larger C&I facilities with the funding dependent on program participation and delivery of energy savings. This activity addresses one of the main obstacles to energy efficiency among larger customers – lack of dedicated and trained energy management staff. RMP funded 39 energy managers in both commercial and industrial facilities at some point during 2014-17. Cumulatively, companies with funded energy managers provided over 192 GWh of energy savings through participation in SEM as well as equipment-based incentive programs.

Communicating Smart Thermostats

WiFi-enabled smart thermostats offer significant electricity savings as well as demand response potential especially when implemented with HVAC optimization strategies and controls. NV Energy has implemented a successful smart thermostat program for a number of years with an emphasis on homes in southern Nevada. The utility provides a free thermostat that optimizes HVAC system performance. Demand response includes home pre-cooling and individualized thermostat control tailored to each home.

Independent evaluation of the NV Energy program shows annual savings of 460 kWh of energy and 3 kW of peak demand reduction per home for homes in the Las Vegas area (NV Energy 2018). The program is very cost effective with a benefit-cost ratio of over 3.0 using the Total Resource Cost test. Nearly 70,000 smart thermostats were installed in homes as of the end of 2017 (Brown 2018).

NV Energy is also having success promoting smart thermostats in commercial buildings, with over 6,000 installed in businesses as of 2017. WiFi-enabled smart thermostats in both the residential and commercial sectors provided 35 GWh of energy savings in 2017, 14% of the total energy savings achieved by all of NV Energy's DSM programs (NV Energy 2018).

Maximizing Energy Savings with LED Lighting in the C&I Sector

Utilities in the Southwest are achieving increased energy savings from the adoption of LED lighting by businesses. For example, Xcel Energy-CO realized net energy savings of 158 GWh from its C&I lighting programs in 2017, nearly double the level of savings realized in 2015. Xcel Energy is seeing a 51% reduction in lighting wattage and energy use when fluorescent lamps or fixtures are replaced with LED lamps or fixtures (Geller 2017b).

This energy savings opportunity for utilities is likely to persist for 5-10 years given the time required to transition a market as large and diverse as C&I lighting, and the fact that federal lighting standards are not expected to force a transition to LED lighting other than for general purpose A-type light bulbs. Moreover, the savings potential could rise over time given that LED lamps, LED troffers and advanced lighting controls are still improving in performance and declining in cost and that lighting controls are still in an early stage of adoption.

A few utilities in the Southwest are starting to emphasize adoption of either basic or advanced controls along with LED lights by businesses in order to maximize energy savings at the time of conversion to LED lighting. RMP, for example, modified its fluorescent-to-LED lighting incentives in mid-2017 to a “good, better, best” approach. A moderate incentive is offered for adoption of LED lamps or complete LED fixtures alone (e.g., \$0.10/kWh of first year energy savings), a higher incentive if basic controls such as occupancy sensors or daylighting controls are adopted along the LED lamps or fixtures (e.g., \$0.12/kWh saved), and an even higher incentive if advanced networked controls are adopted along the LED lamps or fixtures (e.g., \$0.15/kWh saved). RMP reports that this approach has begun to motivate the adoption of advanced controls along with LED lights by some larger companies (RMP 2018).

Utilization of AMI and Smart Meter Data

Some utilities in the Southwest have fully implemented advanced metering infrastructure (AMI) and smart meters, and others are in the process of doing so. The data provided by smart meters offers an opportunity for utilities and third party service providers to better engage with customers and help them realize energy savings and peak demand reduction. Some utilities in the Southwest are starting to pursue this opportunity.

NV Energy has begun to offer all of its residential customers either remote or in-home energy assessments that include end-use energy consumption disaggregation and personalized energy saving recommendations. This disaggregation utilizes smart meter data collected from each household along with proprietary software developed by a third party service provider (Hart and Clark 2017). The energy assessments and feedback are offered through multiple communication channels (web portal, mobile phone app, email or paper). The tool automatically updates energy use disaggregation and savings over time, allowing for ongoing customer engagement and feedback. It is too early to estimate how much energy savings potential can be achieved through this service.

Conclusion

Electric utilities in the Southwest, like those in other regions, face a number of challenges to maintaining strong energy savings from their energy efficiency programs after 2018. These challenges include energy savings goals or requirements that end in 2020 in some states, lack of

adequate financial incentives to motivate some utilities to maintain well-funded and effective programs, reduced load growth, declining avoided costs which lower the cost effectiveness of some measures or programs, and diminished program-related energy savings potential particularly in the residential lighting market.

Policymakers in the Southwest are starting to respond to these challenges in positive ways, with pressure from energy efficiency advocates and in some cases support from utilities.

- In Arizona, the Commission has not supported utility IRPs that greatly limit future utility energy efficiency efforts and also directed utilities to consider resource portfolios with much greater emphasis on energy efficiency, renewable energy and energy storage.
- In Colorado, the Commission approved higher energy savings goals and increased shareholder incentives for exceeding the goals for Xcel Energy-CO during 2019-23. In addition, the Commission has approved revenue decoupling for Xcel Energy.
- In Nevada, new legislation declares that it is in the public interest for utilities to maximize the implementation of cost-effective, achievable energy efficiency opportunities. The legislation also directs the Commission to set energy savings goals for NV Energy and allow for non-cost-effective energy efficiency measures or programs as long as the utility's overall energy efficiency plan is cost effective. NV Energy has filed a new three-year DSM plan that includes a number of new energy efficiency programs and higher energy savings targets.
- In Utah, RMP proposed and the Utah legislature approved capitalization of RMP's DSM program expenditures, thereby enabling the utility to earn its normal ROE on DSM expenditures along with recovering program costs.

At the same time, utilities in the Southwest are adopting innovative program design strategies and promoting newer energy saving technologies as a means of maintaining if not increasing their overall energy savings achievement. These positive changes include shifting to midstream incentives in order to amplify market impact, promoting SEM and offering energy manager funding to businesses, achieving significant energy savings and demand response potential through adoption of WiFi-enabled smart thermostats, and maximizing energy savings associated with adoption of LED lighting in the commercial sector. In addition, some utilities are starting to utilize smart meter data to enhance customer engagement and encourage greater energy savings.

The overall impact of these counteracting forces remains to be seen, but it appears likely that the major electric utilities in the southwest region will sustain at least a moderately high level of energy savings well beyond 2018.

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