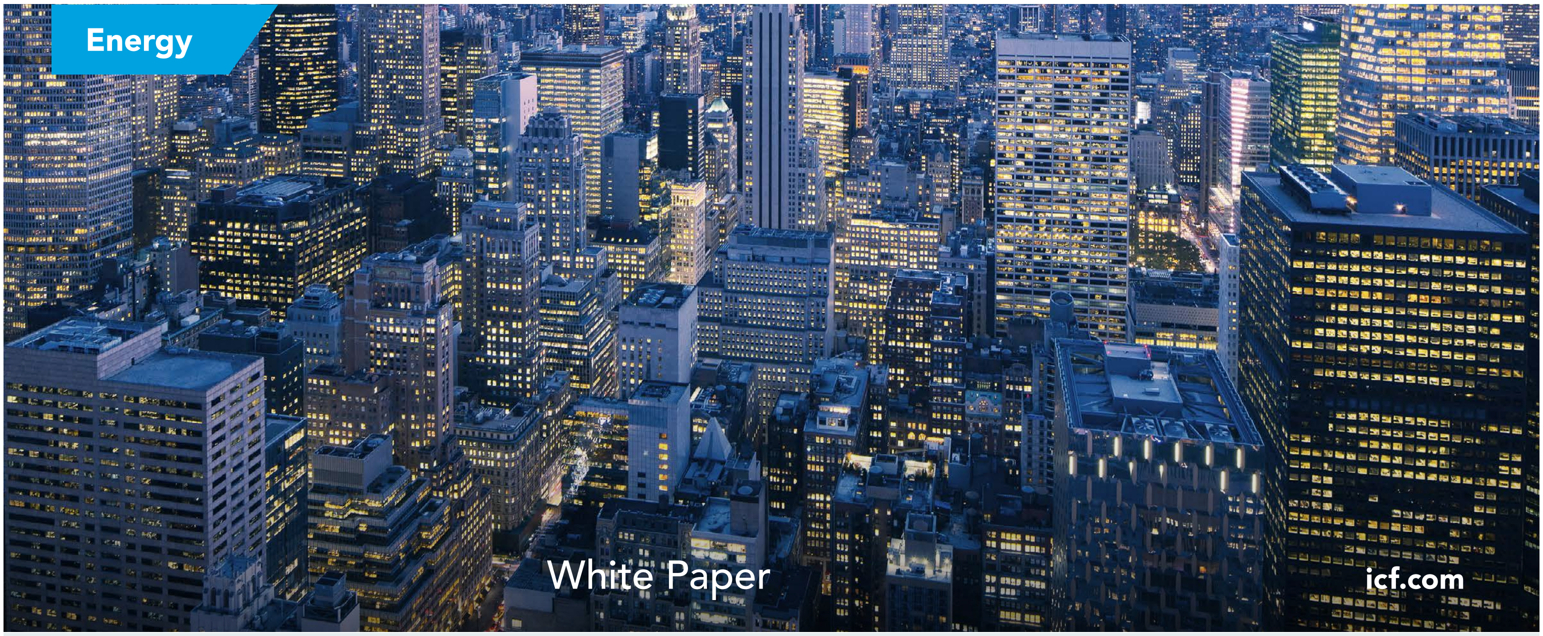


Energy efficiency evolution: New opportunities for utility programs

By: Val Jensen, Senior Advisor for Utility Services, ICF

By utilizing the wide range of inexpensive sensing and control technologies available today, data-driven programs offer the promise of energy "orchestration" as opposed to simply energy reduction as part of the next generation of smart energy programs that are consistent with deep carbon reduction goals and increased electrification.

Executive summary

Energy efficiency has delivered huge benefits over the last 40 years. However, the imperative to achieve deep carbon reductions, combined with a more distributed and dynamic energy grid, creates a need for even greater levels of efficiency that can be targeted to where and when it is most needed. Meeting the challenges associated with delivering more energy efficiency as a low-cost and flexible resource will require both policy and program design, delivery, and evaluation changes.

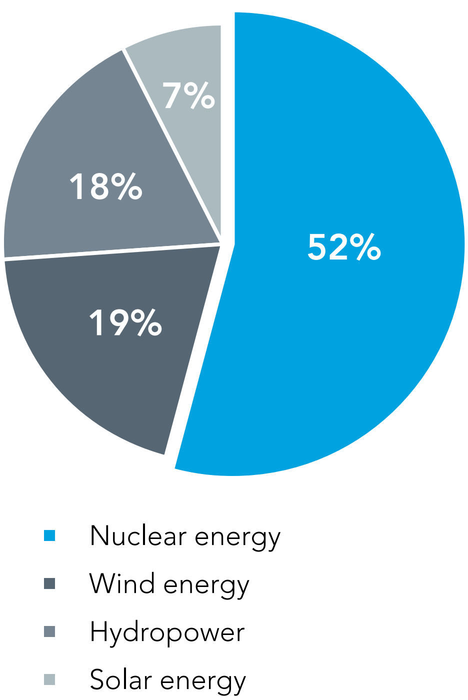
The key policy changes center on clarifying energy efficiency program objectives and then aligning the electric company regulatory model with these objectives. Reducing electricity use remains an important objective, but deep carbon reductions and a need to manage an increasingly dynamic grid require efficiency programs that can accommodate increased electrification and that can be deployed to meet time- and location-dependent grid management needs.

Delivering increasing amounts of energy efficiency at low cost also requires a shift in the program design and delivery approach. Historically, efficiency programs have been relatively blunt instruments with the bulk of savings derived from technology-based programs aimed at broad swaths of customers. The data and analytics revolution sweeping the electric power industry offers exciting opportunities both to improve energy efficiency program marketing and delivery and to support more customized and market-based programs that can be targeted to location and timing needs at potentially lower cost. By utilizing the wide range of inexpensive sensing and control technologies available today, data-driven programs offer the promise of energy "orchestration" as opposed to simply energy reduction as part of the next generation of smart energy programs that are consistent with deep carbon reduction goals and increased electrification.

Introduction

Electric company-administered energy efficiency programs have been offered for 40 years. Since the early 1990s, investment in customer-funded electricity efficiency has climbed from $1.8 billion (spent mostly in California, the Northeast, and the Northwest) to more than $7.23 billion in 2018 with investment occurring across the country.[1] This investment drove substantial impact; over that same period, total annual energy savings grew from just less than 50 billion kilowatt-hours (kWh) to 211 billion kWh. Absent this investment, 2018 electricity use would have been almost 7 percent higher. Roughly 20 percent of the carbon dioxide (CO2) reductions coming from the electric power sector since 2005 have been the result of reduced energy use.[2] In 2018, the magnitude of energy efficiency savings (211 billion kWh) was more than double the output of solar generation (96 billion kWh).[3]

Zero-carbon resource mix in the U.S.



Despite this success or perhaps because of it, there is a growing sense across the industry that "what got us here won't get us there," where "there" is a largely clean energy economy underpinned by a very different electric power industry. Successfully achieving deep carbon reductions will require both further reductions in energy use at least as great as those already achieved and the replacement of significant existing fossil generation with zero-carbon technologies. Most industry experts expect these zero-carbon technologies to be largely wind and solar, and, in some cases, distributed technologies that require reengineering the grid, particularly at the distribution level to accommodate variable and two-way power flows. Today, nuclear energy generates the majority of zero-carbon electricity in the United States (52 percent), followed by wind energy (19 percent), hydropower (18 percent), and solar energy (7 percent).[4] Energy efficiency typically is not considered in the zero-carbon resource mix.

1. Twenty-six states now have some form of energy efficiency target in place. American Council for an Energy Efficient Economy. The 2019 State Energy Efficiency Scorecard. October 2019. https://www.aceee.org/research-report/u1908
2. Estimate based on dividing 149 MMT CO2 by 796 MMT CO2. See Institute for Electric Innovation. Energy Efficiency Trends in the Electric Power Industry (2008-2018). March 2020. https://www.edisonfoundation.net/iei/publications/Documents/IEI_Energy%20Efficiency%20Report_Mar2020.pdf
3. Institute for Electric Innovation. Electric Companies Are Committed to a Clean Energy Future: 2020 Update. April 2020. https://www.edisonfoundation.net/iei/publications/Documents/IEI_Clean%20Energy%20Top%2010_April%202020.pdf
4. Ibid.

Getting to a clean energy economy requires work in **three broad areas** as it relates to energy efficiency:

1. For a number of electric companies, the **regulatory regimes** they work within are **not fully supportive of significant investment in customer energy efficiency**. While 34 states provide some form of adjustment to compensate for lost sales and 29 provide a performance incentive for energy efficiency, significant disincentives to electric company promotion of customer energy efficiency remain in other states.[5] Even if cost-recovery, lost revenue, and financial incentive issues are addressed, some electric companies remain concerned that significant investment in efficiency will drive average prices higher.
2. Those electric companies operating in jurisdictions encouraging significant energy efficiency investment face a variety of **program design, delivery, and evaluation issues** that need to be resolved prior to realizing substantially greater efficiency savings.
3. The combined effect of **the need to reduce carbon and to adapt to the architecture of a more distributed and dynamic grid requires us to rethink both the policy framework for, and the purpose of, energy efficiency programs**. We will need policies that harmonize reduced energy use and increased electrification, and we will need program designs that can deliver both efficiency and demand reduction in the specific locations and at the times most needed for emissions reductions and grid stability.

We know that regulatory policies intended to make electric companies indifferent to spending on efficiency or investing in infrastructure can drive powerful changes in company strategy and culture.[6]

The need for regulatory change that encourages electric company energy efficiency investment (area #1) has been widely documented and described.

Therefore, the focus of this paper is on areas #2 and #3.

Program design, delivery, and evaluation challenges

For close to 40 years, the primary type of company-administered program has been promoting customer adoption of more efficient electricity-using devices. This typically involved a monetary incentive aimed at customers to purchase and to install the technologies, generally without regard for where these customers were located within a service territory. Programs often were highly structured with respect to customer and technology eligibility and the program delivery process.[7]

5. Institute for Electric Innovation. Energy Efficiency Trends in the Electric Power Industry (2008-2018). March 2020. https://www.edisonfoundation.net/iei/publications/Documents/IEI_Energy%20Efficiency%20Report_Mar2020.pdf
6. Several electric companies participating in an Institute for Electric Innovation Key Issues Executive Dialogue in March 2020 described how corporate strategy quickly shifted in response to the opportunity to earn financial returns on energy efficiency investments.
7. One major change in program structure over this period came in the targeting of upstream market actors (i.e., manufacturers and distributors began to work in concert to provide an instant, point-of-sale rebate to a customer) as a way to increase market leverage and steer a customer's purchasing decision toward high-efficiency equipment. Such programs were very successful in certain markets in driving large-scale technology replacement, but they were even less geographically targeted than conventional programs.
   A second innovation came in the use of behavioral norms as opposed to financial incentives to drive reductions in customer energy use. While also very successful and able to be locationally targeted, behavioral programs have faced measurement and evaluation challenges, particularly with respect to persistence.

There is a growing sense within the industry and its stakeholders that the current approach to program design, delivery, and evaluation is reaching its limits[8]. Here's why:

First, throughout the 40-year history of electric company-administered efficiency programs, most savings came from rebate-driven commercial and residential lighting programs. However, increases in federal lighting efficiency standards effectively reduce the savings that electric companies can reap from lighting-focused rebate programs significantly. Similar increases in the baseline efficiency of major appliances due to federal standards further reduce achievable efficiency potential in a variety of end uses.

Second, and as a direct function of the first issue, the cost-per-saved-kWh has been increasing, particularly for those electric companies that have been operating energy efficiency programs for a number of years. This reflects three phenomena.

1. Electric companies that have managed programs for 5-10 years have captured large amounts of the least expensive efficiency—typically, through lighting and residential behavioral programs.
2. Customer acquisition costs rise as electric companies capture those customers most likely to participate in conventional programs. As these customer segments are exhausted, acquiring additional customers takes more and more effort and expense in the form of incentives and marketing.
3. The program portfolios of electric companies that have managed programs for longer periods of time shift in composition from largely lighting- and appliance-based, to having a greater proportion of budget and savings targets allocated to more comprehensive (whole building) programs that are more expensive to implement.

Although a recent Lawrence Berkeley National Lab study found that the national average cost of saved energy continues to be low at 2.5 cents-per-saved kWh over the life of the programs, the report also highlighted significant cost disparities. Whole home retrofit programs are roughly six times the cost of residential lighting rebate programs, and those electric companies that have offered programs for the longest spans have overall portfolio costs that can be more than twice as high as those companies that are relatively new to the business. For example, the average cost of programs offered in the Midwest is 1.5 cents per kWh, compared to 2.6 cents in the West, and 3.3 cents in the Northeast.[9]

The effect of rising cost-per-saved kWh is that budgets required to achieve any given level of savings must increase or, in the case of electric companies with statutory or regulatory budget caps, savings will be lower than they otherwise might be. While the obvious solution to a budget constraint issue is simply to

8. A similar review of the challenges to energy efficiency written by Dian Grueneich identified five challenges: (1) The magnitude of savings must increase dramatically; (2) The sources of efficiency savings must diversify; (3) Measuring and ensuring savings persistence must become commonplace; (4) Efficiency outcomes must be integrated with a carbon reduction framework; and (5) Energy efficiency must be understood and valued as part of an evolving grid. The Electricity Journal. The Next Level of Energy Efficiency: The Five Challenges Ahead. August 2015.
9. Lawrence Berkeley National Laboratory. The Cost of Saving Electricity Through Energy Efficiency Programs Funded by Utility Customers: 2009–2015. June 2018. https://emp.lbl.gov/publications/cost-saving-electricity-through

lift caps that exist, raising the share of customer bills associated with efficiency carries the risk that the programs will lose support. A decade ago, it was rare to find electric companies spending more than 2-3 percent of revenue on efficiency programs.

By 2018, 17 states were spending above that level, 10 states were spending above 3 percent, and the top three states ranked according to this metric were spending above 6 percent. There is some evidence that the spending burden might be growing too large at least in the view of some policy makers. At the end of 2019, 14 states allowed at least some customers to opt-out of energy efficiency programs. Four states (Iowa, Kentucky, Ohio, and Utah) also scaled back or eliminated the efficiency investments electric companies are required to make.[10]

Third, existing program designs have been heavily influenced by evaluation, measurement, and verification (EM&V) beliefs and practices that less and less reflect energy efficiency policy aims, advances in data analytics, or the growing understanding of customer behavior. Programs are designed typically to minimize the risk of not delivering target levels of electricity savings. This puts a premium on designs that make it easy to count and attribute measures of program activity and impact. Standard rebate programs have dominated efficiency program design in part because the number of rebates issued is easily countable, and the savings associated with the action being rewarded often are "deemed" or relatively easy to measure. The focus on evaluation also concentrates program administrator effort on minimizing free riders—the number of customers who take advantage of financial incentives but would have taken the action even without them.

The bias toward programs that easily are evaluated created a disincentive to explore more innovative program designs that would require complicated analysis to determine program performance. However, the fact that electric companies now have deployed more than 100 million smart meters in the United States means that extremely granular data are now available to support performance-based energy efficiency program evaluation.

10. American Council for an Energy Efficient Economy. The 2019 State Energy Efficiency Scorecard. October 2019. https://www.aceee.org/research-report/u1908

In fact, based on projected trends and publicly announced goals, CO2 emissions from investor-owned electric companies are projected to be at least 80 percent below 2005 levels by 2050.

15%

of required emissions reductions could come from buildings and industrial efficiency.[11]

Ultimately, policies focused on reducing energy use will need to evolve to reconcile efficiency and electrification in the context of deep carbon reductions.

How efficiency and increased electrification support deep carbon reductions

Utilities need to reconcile efficiency and increased electrification to achieve deep carbon reductions—and to adapt to a more distributed and dynamic energy grid.

Momentum is building for climate action at the state and local levels. Twenty-six states have joined the U.S. Climate Alliance, pledging economy wide greenhouse gas (GHG) emissions reductions of at least 26 percent (relative to 2005) by 2025. The electric power industry is committed to a clean energy future as demonstrated by its significant CO2 emissions reductions. As of the end of 2019, carbon emissions in the U.S. power sector were 33 percent below 2005 levels (i.e., equivalent to 1987 levels). In fact, based on projected trends and publicly announced goals, CO2 emissions from investor-owned electric companies are projected to be at least 80 percent below 2005 levels by 2050.

Every strategy to achieve deep carbon reductions assigns a major role to energy efficiency. A recent ACEEE analysis of efficiency's potential role in an 80 X 50 strategy found roughly 15 percent of required emissions reductions could come from buildings and industrial efficiency.[11]

At the same time, every strategy also places even greater emphasis on building and vehicle electrification. For example, the California Energy Commission estimated that achieving an 80 percent reduction in GHG emissions by 2050 in California could require not only a 34 percent reduction in building energy use, but also a 100 percent incremental market share for electric space and water heating and electrification of 96 percent of the light duty vehicle stock by 2050.[12] A recent McKinsey analysis of New York's Climate Leadership and Community Protection Act estimates that achieving the Act's goals will result in a 30 percent increase in electricity use.[13]

Challenge and conflict arise as state energy efficiency targets, often expressed as reductions in electricity use relative to some baseline level, meet state carbon reduction targets that will require increases in electricity use. Ultimately, policies focused on reducing energy use will need to evolve to reconcile efficiency and electrification in the context of deep carbon reductions. This is particularly the case in jurisdictions that, decades ago, prohibited electric companies from promoting increased usage and fuel switching.

11. American Council for an Energy Efficient Economy. Halfway There: Energy Efficiency Can Cut Energy Use and Greenhouse Gas Emissions in Half by 2050. September 2019. https://www.aceee.org/research-report/u1907
Energy and Environmental Economics, Inc. Pathways to Deep Decarbonization in the United States, The U.S. Report of the Deep Decarbonization Pathways Project of the Sustainable Development Solutions Network and the Institute for Sustainable Development and International Relations. November 2014. http://deepdecarbonization.org/wp-content/uploads/2015/09/US_DDPP_Report_Final.pdf
Energy and Environmental Economics, Inc. Xcel Energy Low Carbon Scenario Analysis: Decarbonizing the Generation Portfolio of Xcel Energy's Upper Midwest System. July 2019. https://www.ethree.com/wp-content/uploads/2020/01/E3_Xcel_MN_IRP_Report_2019-07_FINAL.pdf
World Resources Institute. Delivering on the U.S. Climate Commitment: A 10-Point Plan Toward a Low-Carbon Future. May 2015. https://www.wri.org/publication/delivering-us-climate-commitment-10-point-plan-toward-low-carbon-future
12. California Energy Commission, Deep Decarbonization in a High Renewables Future: Updated Results from the California PATHWAYS Model. June 2018. https://www.ethree.com/wp-content/uploads/2018/06/Deep_Decarbonization_in_a_High_Renewables_Future_CEC-500-2018-012-1.pdf
13. McKinsey. What New York's Plans to Decarbonize Mean for the World. November 2019. https://www.mckinsey.com/business-functions/sustainability/our-insights/sustainability-blog/what-new-yorks-plans-to-decarbonize-mean-for-the-world

When the objective is to target load relief to specific feeders and/or to help smooth the evening load ramp, come-one-come-all rebate programs may no longer work.

Finally, as increasing amounts of distributed generation and storage are installed on distribution grids, the value of energy efficiency that can be targeted to place and time is growing. When the objective was to lower overall energy use and demand, broad-based energy efficiency programs worked well. When the objective is to target load relief to specific feeders and/or to help smooth the evening load ramp, come-one-come-all rebate programs may no longer work.

In many respects, demand-side management (DSM), which in many jurisdictions had become synonymous with energy efficiency, now is being viewed as a suite of tools for managing the timing and location of demand to help defer the need for expensive capital projects.[14] This time, however, DSM is being powered by much more sophisticated data analytics and control equipment.

Elements of a new approach to electric company-administered energy efficiency

These challenges to the traditional approach to energy efficiency investment don't diminish the value of the resource but do beg for a variety of policy, design, implementation, and evaluation changes. Fortunately, approaches have been implemented in one or more jurisdictions that provide a guide to action and are summarized below.

Getting the policy framework right

Electric company-administered energy efficiency programs are artifacts of state regulatory policy, which sets the goals to be achieved by the programs and the terms under which they are paid for and implemented. In that respect, almost every change to how electric companies plan, implement, and evaluate efficiency investments is a matter of policy. However, there are several broad policy actions that frame virtually all program investment decisions.

1. Set clear policy objectives: Over time, rather than establishing a few clear objectives, policy makers have attached a variety of objectives to energy efficiency, particularly in jurisdictions where little if any new generation is needed. These include:
    - Reducing aggregate customer bills.
    - Deferring/avoiding the need for generation, transmission, and/or distribution investment.
    - Reducing criteria emissions from existing power plants.
    - Reducing carbon emissions more broadly.
    - Creating jobs.
    - Providing bill relief for economically disadvantaged customers.
    - Improving customer service.

14. For example, the NARUC Center for Partnerships and Innovation has undertaken a major effort to support state distribution system planning (DSP), a process patterned after integrated resource planning. Within a DSP process, energy efficiency and demand response are considered as non-wires alternatives to conventional distribution system investments.

Massachusetts has now included "strategic electrification" as an allowable electric company efficiency measure.[15]

Each of these objectives can have merit depending on a state's/electric company's circumstances, but failure to align on the specific objectives and how achievement is to be measured creates uncertainty and risk. In particular, policy objectives that continue to be focused on reducing energy use must be reconciled with existing and forthcoming carbon reduction goals (that often promote increased electrification).

Some states, such as New York and Massachusetts, have broadened efficiency goals from simply reducing electricity sales to reducing BTU consumption. Massachusetts has now included "strategic electrification" as an allowable electric company efficiency measure.[15] The Sacramento Municipal Utility District has taken an even bigger step by redefining the objective of its energy efficiency programs from reducing electricity use to reducing carbon emissions.[16]

While a shift to a carbon goal focuses energy efficiency investment on a very clear objective, it could drive a substantial shift in the portfolio of programs and specific energy management measures an electric company offers depending on the area's carbon emissions profile. The value of efficiency measures that reduce energy use during low emission periods would drop, while the value of measures that could be "turned on" during high emission periods would increase.

2. Align the regulatory environment with the policy objectives: As public service enterprises, electric companies never have been in the business exclusively of generating and selling electricity; every regulatory jurisdiction has assigned multiple economic, social, and environmental objectives to the companies. Often, however, the way that a company generates revenue and profit is related exclusively to customer demand and energy use. Satisfaction of other objectives often is treated as a compliance function. As states increasingly assign responsibilities to electric companies that shift the focus of the business from production and delivery to energy and carbon management, the way electric companies generate revenue also needs to shift away from commodity sales to network and energy management.

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Getting the mechanics right: From energy efficiency to smart energy programs

Meeting the challenges associated with a changing program mix, rising program costs, and the need for time- and location-responsive demand requires a change from what largely has been a technology replacement-based design philosophy to one that is more attuned to the users of that technology. The model for the traditional energy efficiency program was oriented to replacing a piece of equipment with a more efficient piece of equipment. Customers were important insofar as they needed to be convinced to make the change (how much would I need to pay you to use a different kind of light-bulb?). The model was not too concerned with why the lighting fixture was

15. American Council for an Energy Efficient Economy. What will Massachusetts' New Efficiency Targets Mean for Future Policy. November 2018. https://www.aceee.org/blog/2018/11/what-will-massachusetts-new
16. Sacramento Municipal Utility District. SMUD First in US to Change Efficiency Metric to 'Avoided Carbon. February 2020. https://www.smud.org/en/Corporate/About-us/News-and-Media/2020/2020/ SMUD-first-in-US-to-change-efficiency-metric-to-avoided-carbon

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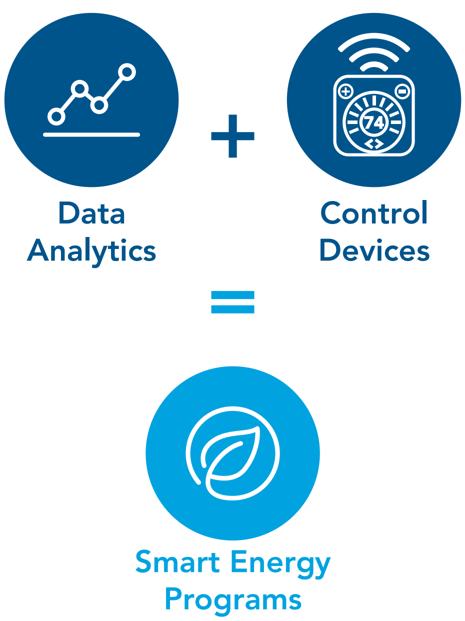
Smart Energy Programs



there in the first place or with how to make the process of getting the amount of light customers need where and when they need it less complex.

The near-simultaneous rise of powerful data analytics, powerful insights about how customers make energy use decisions, and powerful, inexpensive measurement and control devices have made possible a very different approach to program design that is driving an evolution from energy efficiency to **smart energy programs**. The evolution to smart energy programs is driven by five interrelated capabilities:

1. **Data-driven insights.** Granular energy use data can yield very specific insights about how a customer uses electricity and where opportunities for reducing/shifting use can be found. These insights can be paired with propensity data/models to identify the most valuable and likely participants in a smart energy program much more effectively.
2. **Personalized offerings.** These same data insights can help electric companies deliver actionable information tailored to individual customers through the channel most likely to attract their attention.
3. **EM&V 2.0.** These same data combined with sophisticated analytics can greatly improve program EM&V. The wider application of statistical techniques such as randomized control trials has boosted confidence in the savings associated with programs not reliant on specific technologies being installed. These techniques allow electric companies to shift the focus of EM&V from the behavior of individual customers to the aggregate behavior of groups of participants.[17] Further, analytical platforms that support robust program evaluation also can deliver accurate, near-real-time results to program managers.
4. **Pay-for-performance.** This shift in focus supports the broader use of pay-for-performance (P4P) programs that reward customers not for taking specific prescribed or allowed actions but for achieving specific policy objectives (e.g., saving energy, reducing GHG emissions, etc.). These programs greatly simplify program logic models as the program administrator no longer decides which technology will be incented through which channels, leaving those choices to customers and the market. Complex program design issues remain, however. For example, customers with relatively larger savings potential could be more attractive participants than residential, and particularly low-income, customers from the perspective of the energy service companies likely to pursue them. There also could be a tendency for customers and their agents simply to pursue the cheap and easy efficiency measures. The complexity of program design, therefore, shifts to the mechanics of setting prices that reflect the timing, location, and duration of the savings.[18]

17. The practice of EM&V itself could be changed greatly in ways that make it more efficient and less expensive. As programs have become more and more standardized across the industry, it is worthwhile considering whether the nature of EM&V processes could be changed to mirror the process of financial auditing. Each program implementer could be responsible for its own EM&V based on a set of industry standards (similar to those adopted by the Financial Accounting Standards Board) developed for each program type. These results then could be audited and certified with respect to adherence to the standards. Where deficiencies are found, these could be detailed and provided to regulators.
18. For a thorough review of the status of pay-for-performance see: Natural Resources Defense Council and Vermont Energy Investment Corporation. Putting Your Money Where You Meter Is: A Study of Pay-for-Performance Energy Efficiency Programs in the United States. January 2017. https://www.nrdc.org/sites/default/files/pay-for-performance-efficiency-report.pdf

From smart communicating thermostats to sophisticated campus-wide building energy management systems, technology gives customers and electric companies the ability to automatically adjust energy use quickly in response to system conditions.

5. **Energy orchestration.** The rapid fall in the cost of digital sensing and control technology has given rise to a new set of energy management technologies. From smart communicating thermostats to sophisticated campus-wide building energy management systems, technology gives customers and electric companies the ability to automatically adjust energy use quickly in response to system conditions. For example, residential central air conditioners could be controlled to pre-cool during low load/price and/or carbon emission hours and to cycle off during high load/price or carbon emission times. In theory, control schemes could be tailored at the system, community, feeder, transformer, or premise level.

Conclusion

Energy efficiency has delivered huge benefits for nearly 40 years, whether those are measured as avoided power plants, lower carbon emissions, lower electric bills, jobs created, or simply as increased customer control and satisfaction. However, acquiring future energy savings will require different approaches; relatively inexpensive and easy-to-acquire efficiency has, in many jurisdictions, been achieved. Efficiency is growing more expensive as incremental savings targets grow. At the same time, energy efficiency is being called upon to deliver even more as electric companies and states pursue deep carbon reduction and as the amount of distributed, variable renewable resources on the grid increases.

Meeting the challenges associated with delivering more energy efficiency will require both policy and program design/delivery/evaluation changes. A large minority of states still effectively penalize electric companies for promoting energy efficiency through regulations that do not allow for revenue adjustments in response to reduced sales, let alone provide financial incentives. Even states that have created supportive policy frameworks for energy efficiency will need to ensure that carbon reduction policies (including increased electrification) are not working at cross-purposes with efficiency programs targeting reduced electricity sales. It is critical to reconcile efficiency and electrification in the context of carbon reduction goals.

The data and analytics revolution sweeping the industry offers exciting opportunities both to improve program marketing and implementation and to support more customized and market-based efficiency programs at potentially lower cost. Combined with a wide range of inexpensive new sensing and control technologies, data-driven programs offer great promise as part of the next generation smart energy programs.

About the author

Val Jensen is a senior fellow within ICF's energy practice, focusing on important issues facing the utility industry.

Val brings over 40 years of energy industry experience, most recently as senior vice president for strategy and policy at Exelon Utilities. In this role, he led the development of the company's technology and business strategy, supported policy, and coordinated strategy development for Exelon's family of operating utilities. Previously, Val served as senior vice president for customer operations at Commonwealth Edison (ComEd), where he managed development and delivery of the utility's customer-facing products and services, including its $250 million annual portfolio of demand response and energy efficiency programs.

Val returned to ICF in 2020. From 2001–2008, he served as an ICF senior vice president, where he helped grow ICF's Commercial Energy business and then later managed its San Francisco office. During this time, he specialized in the design and management of energy efficiency programs for numerous utilities including ComEd, WE Energies, Wisconsin Public Service, Nevada Power, Ameren, and PG&E.

Val previously served on the boards of the Chicago Lighthouse for the Blind, Energy Foundry, Alliance to Save Energy, and the Smart Grid Consumer Collaborative. He also served on the U.S. Department of Energy's Electricity Advisory Committee and was a founding board member of the Midwest Energy Efficiency Alliance.

Val holds a master's in public administration from the University of Minnesota and a bachelor's in political science and government from Hamline University.

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For more information, contact:

Val Jensen
Val.Jensen@icf.com

linkedin.com/company/icf-international
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