



➔ Powering affordability: Utility program strategies that deliver real savings

Residential electric retail rates are rising around the country and could increase another 15% to 40% by 2030. The increases—and reasons for them—vary depending on the market, but the bottom line is clear: Customers are being stretched thin, and affordability is skyrocketing up the list of priorities for utilities, regulators, and policymakers alike. Among the tools utilities have to address affordability, customer programs are a compelling opportunity.

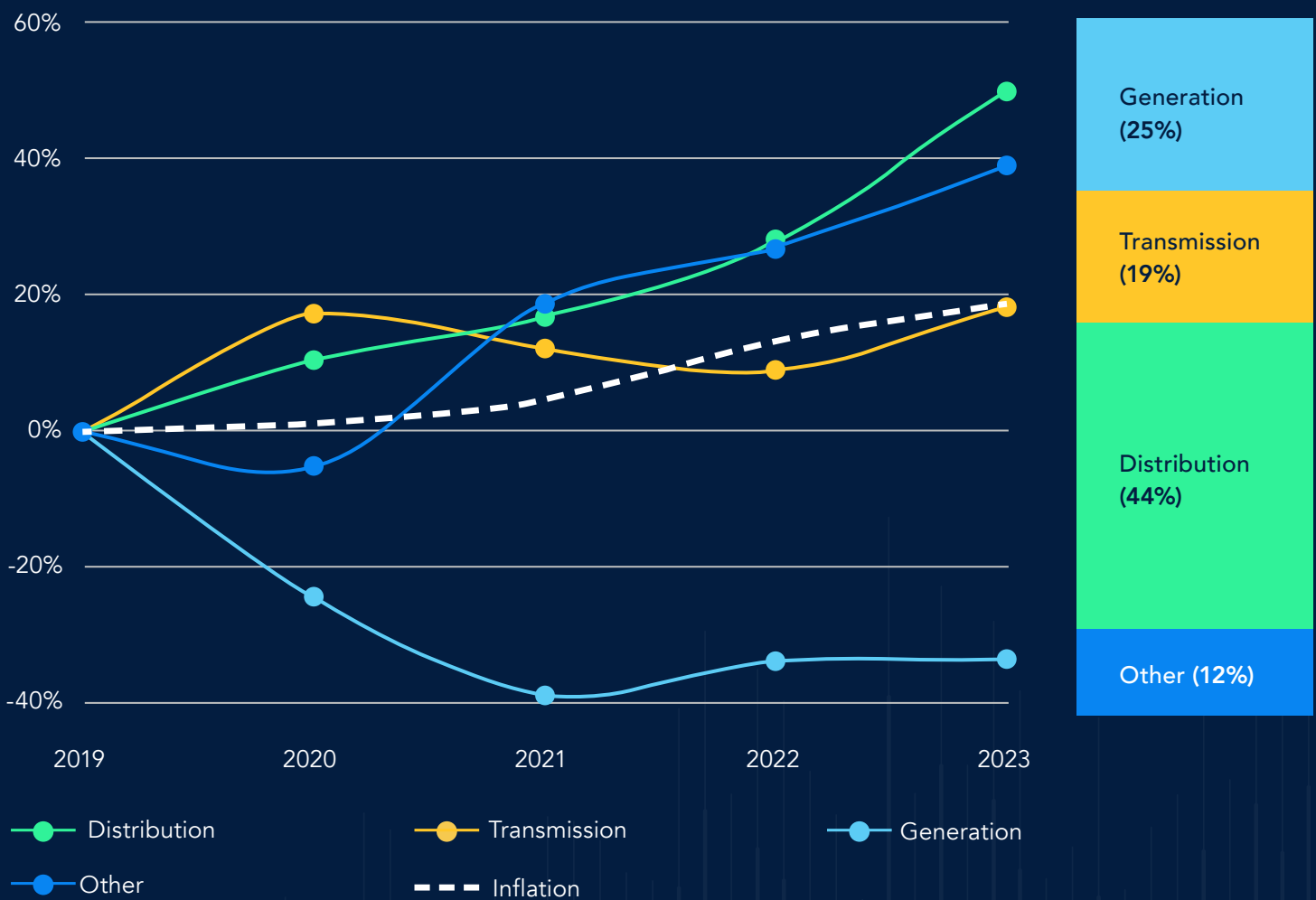
Backed by ICF's decades of expertise planning and implementing large-scale affordability, efficiency, and DSM programs, this paper highlights approaches utilities can use to meaningfully lower energy bills and spotlights how one utility is using DSM to strengthen the grid and reduce customer costs.



Rising costs drive rate increases, but customer programs can help

U.S. electricity demand is expected to grow 25% by 2030 and 78% by 2050, compared to 2023. This unprecedented growth is shaping utility decisions and driving new infrastructure investments. Distribution system capital expenditures are now the fastest-growing utility cost, with generation and transmission investments also climbing. Given that distribution costs typically account for 30%-45% of customer retail rates depending on the state, this increased investment has the potential to create upward pressure on rates. Coupled with increased supply costs—and the affordability challenge becomes even more problematic.

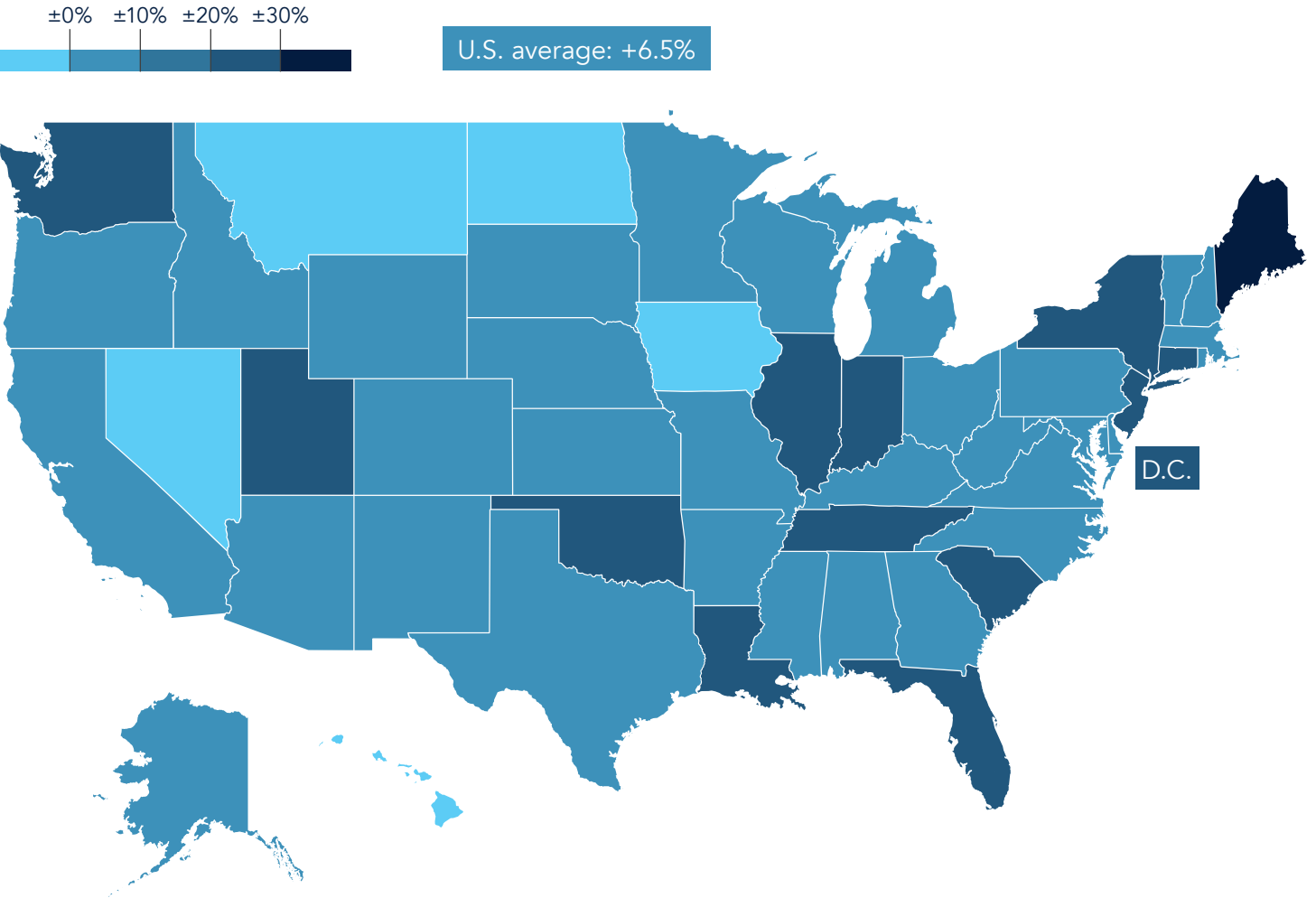
Change in annual CapEx from 2019



Source: [Retail Electricity Price and Cost Trends: 2024 Update](#), Berkeley Lab

These rising investments directly affect customers’ bills. Residential **electric rates could increase by 15% to 40% by 2030**, depending on the market. **By 2050, some rates might even double**. This trend is already underway: From May 2024 to May 2025, prices rose an average of 6.5% nationwide. With demand rising, rates are expected to keep climbing.

Change in average residential electricity prices from May 2024 to May 2025



Source: [U.S. Energy Information Administration](#)

As rates rise, customers, regulators, and policymakers are beginning to push back. In response, **utilities are renewing their focus on energy affordability for customers**. In some areas, such as [Ohio](#) and [Virginia](#), they’re even proposing new rate designs for large load customers like data centers to address future grid costs and fair cost allocation.

Customer demand-side management (DSM) programs are among the most efficient, timely, and cost-effective tools utilities have to reduce bills. Programs that manage demand and optimize grid use can help control costs and keep bills manageable. While many utilities offer affordability-focused programs for low-income customers, there is growing urgency to address affordability for all.

DSM programs can create value that translates to lower costs for everyone.

4 program design approaches to improve affordability

Affordability isn't just a customer concern—it's a utility imperative. Rising energy costs are straining households and utility balance sheets alike. Since 2023, the total amount customers owe on past-due utility bills has grown by [8.4%, reaching \\$17.4 billion](#). Higher arrears bring more complaints and greater regulatory scrutiny—scrutiny that can delay or block the investments needed to ensure grid reliability and advance clean energy goals.

By addressing affordability head-on, utilities can safeguard revenues, ease regulatory pressure, and strengthen their reputation as trusted stewards of reliable, safe, and affordable service. Customer programs are among the most effective levers for doing so. With thoughtful design, these programs can align grid benefits with meaningful bill relief. Four proven approaches stand out:

1. Create more value out of existing programs

Target where the grid needs it most

When it comes to their locations on the grid, some customers can have a much bigger impact on overall grid costs than others. Demand management in areas with load congestion or capacity constraints provide the greatest value by reducing the need for new infrastructure. For example, a customer replacing an HVAC system with a high-efficiency unit and enrolling in a demand response program will deliver more system benefits if they are on a constrained feeder than if they are not.

Utility DSM programs should therefore focus on delivering impacts exactly when and where they matter most. Existing programs can be steered toward pockets of load congestion that have the highest potential to reduce infrastructure needs and, in turn, improve affordability. Program leaders can work closely with distribution system planners to identify these areas, then use marketing tactics such as segmentation and digital targeting to deliver the right mix of offers to the right customers.



Smarter utility programs.
Responsibly powered by AI.

Sightline, ICF's utility customer program management platform, delivers advanced segmentation and targeted insights, such as customer likelihood to sign up for a program. It leverages AI-powered digital twins to recommend cost-optimized solutions to maximize grid and customer affordability benefits.

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Measure what matters

Distribution system planners won't rely on customer programs when making grid investment decisions unless they have confidence in how those resources will actually perform. That requires new approaches to planning, valuing, and measuring DSM performance. Deemed savings—the traditional standard for DSM measurement and evaluation—are not sufficient for infrastructure planning. Additionally, distribution grid operators require much more insight into dynamic and actual DER performance in order to rely on these resources as predictable grid resources. Meter-based savings provide a clearer picture of actual customer usage and net load impacts, but they also come with challenges for forecasting, particularly in residential programs where energy use patterns vary widely. To address this, grid-edge technologies and device-level telemetry—such as data from smart thermostats, EV chargers, or water heaters—can complement meter data by capturing real-time performance and improving confidence in DSM as a reliable grid resource.

Assessing the cost-effectiveness of DSM as a grid resource also requires a shift in thinking. DSM investments are typically evaluated using benefit-cost tests such as the Total Resource Cost, while distribution infrastructure investments are assessed using planning-centric methodologies like the Least-Cost Reasonable approach. These frameworks differ significantly in their assumptions, scope, and valuation metrics, creating a disconnect in how value is measured across utility functions as distributed energy resources (DERs) are increasingly added as grid resources.

Cost-effectiveness itself is not uniform—it varies widely across jurisdictions depending on regulatory priorities, market conditions, and stakeholder values. As DERs evolve from novel and pilot-scale resources to reliable alternatives to address distribution investments and other policy goals, utilities must consider whether traditional benefit-cost analysis remains the right framework. A more holistic approach—one that accounts for locational value, reliability, inclusivity, and system-level benefits—may be needed. Ultimately, measuring what matters will be essential to unlocking the full affordability and reliability potential of load management programs.



With the potential of EVs and energy storage systems to provide various distribution grid services, DERs offer a direct means to delay or defer distribution infrastructure investments and support resource adequacy.



2. Explore new or updated DER programs

It's important to remember that DERs are not uniform in their contribution to load management programs. Depending on the type, DERs can provide additional value to the grid—and help keep energy affordable—by supplying power during periods of peak demand. DERs, such as batteries, can shift load, support local voltage and power quality, and reduce surplus solar generation. They also help planners if they can be reliably controlled and measured. DERs like battery energy storage systems and electric vehicles (EVs) are larger levers for grid impact than traditional efficiency tools like smart thermostats, giving customer DER programs strong potential to scale. Currently, these new programs should be considered complementary to traditional DSM programs.

With the potential of EVs and energy storage systems to provide various distribution grid services, DERs offer a direct means to delay or defer distribution infrastructure investments and support resource adequacy. As such, new and existing DER-focused programs present potent opportunities to unlock new value and pass those savings on to customers.

To fully capitalize on these opportunities, utilities must consider several decisions up front:

- **Clarify ownership and control.** Define whether DERs are utility-owned, customer-owned, or third-party owned, and outline how and when the utility can use them based on their operational potential. This will determine the optimal DER sourcing strategy and how much value a utility can derive from DERs through its programs.

- **Align incentives with intended value.**

Ensure program payments and benefits reflect the true value DERs provide to the grid—whether tied to system peak reduction or distribution services—while keeping incentives fair and easy for customers to understand.

- **Build confidence in orchestration.** Establish how DERs will be coordinated and managed—whether individually or through aggregation models like virtual power plants—and confirm the utility can rely on them when needed.

While DERs represent the next frontier, DSM programs continue to prove their affordability impact today. For example, smart thermostats are now in widespread use, and load management programs that allow utilities to remotely control them during peak demand periods can significantly reduce grid costs and support lower customer bills. While smart thermostat demand response is not uncommon, not all utilities have designed their programs to optimize grid value and customer satisfaction.

ICF partnered with Southern Maryland Electric Cooperative (SMECO) to do just that through a [smart thermostat program and water heater demand response pilot](#), jointly enrolling nearly 10,000 participants. Together, these initiatives delivered over 12 MW of peak load capability and shifted 605 MWh of energy during high-demand periods in 2025—all while maintaining strong customer engagement, with opt-out rates averaging below 10%.

By incorporating DERs into core planning and operations—and aligning them with high-performing DSM—utilities can build a more resilient, reliable, and affordable grid, especially as traditional power generation and infrastructure struggle to keep pace with rising electricity demand.

3. Pursue innovative financing and rate designs

Utilities can leverage their DSM programs to pair energy efficiency and load management with access to financing tools, green banks, or local support services. They can also layer state and local incentives with utility-funded programs to broaden participation.

ICF and its utility partners have explored several forms of innovative financing and rate design to boost customer affordability:

- **Tariff on bill:** Unlike other financing programs, tariff on bill (TOB) programs are not loans but rather they tap into the financial savings from energy projects to fully or partially pay for their cost. Repayment is done through a tariff charge added to customers' utility bills, which are tied to the meter, not the customer. TOB programs do not require individual credit checks or property ownership, making them accessible to renters and those with poor credit.
- **DER leasing:** Certain DERs like battery energy storage systems (BESS), solar panels, and EV chargers can provide immense value in controlling grid costs and customer bills. However, many customers can't afford them. Utilities can use program funds to lease these technologies to customers, covering the upfront costs and recouping investment over time.
- **Prepay:** Traditionally, customers consume energy and pay their bill at the end of the month. Prepay customers purchase energy in advance—similar to a gift card. Customers can monitor their balance and the estimated days remaining. This creates immediate feedback on their energy use, which influences behavior and decision-making in turn. [One study](#) found that prepay customers on average reduce their annual energy consumption by 12%. The prepay model can be very effective in helping utilities address arrears, with one utility in the Southwest recovering almost \$3 million in outstanding payments after just one year of implementing a prepay program.
- **Rate discounts:** Utilities can incentivize use of equipment that creates grid value by offering direct rate discounts to participating customers. For example, the Massachusetts Department of Public Utilities recently approved a [seasonal discount](#) for households using efficient electric heat pumps in all three of the state's investor-owned utility territories. The new rate offers a 6 cents/kWh winter discount, delivering an average of \$540 in savings.
- **Distributed capacity procurement (DCP):** This model enables utilities to finance, deploy, and manage smaller, localized energy resources—such as community solar, battery storage, and aggregated demand response—to meet grid needs, reduce congestion, and lower costs for customers.
- **Repurpose public-purpose funds:** While legacy DSM programs still provide value, their marginal returns are declining compared to the needs of the energy transition. DER programs deliver multiple stacked benefits—energy savings, load flexibility, resiliency, and emissions reductions—offering greater value per ratepayer dollar. Redirecting a portion of public-purpose funds to higher-impact DER initiatives can help maximize both the effectiveness and efficiency of these investments.

Case in Point: Green Mountain Power's home energy storage lease option

Green Mountain Power has developed an innovative DSM program that promotes residential energy storage adoption and creates shared value for both customers and the utility.

Through its home energy storage lease option, customers could lease a BESS for 10 years at \$55 per month. Participants gained the benefits of a system worth more than \$16,000 for less than \$7,000.

Green Mountain Power estimated that the system benefits from managing the batteries would more than offset the additional battery cost. Each BESS was projected to deliver nearly \$3,000 in net value, which translates into reduced grid costs and, in turn, helps maintain or lower rates for all customers compared to traditional approaches.

Regulators validated these findings and approved expanding the program from a pilot to a systemwide offering.



4. Communicate about affordability with stakeholders

The factors driving customer bills—and the innovations that can help lower them—are complex and not always well understood across the stakeholder landscape. Utilities can help bridge that gap by proactively engaging regulators, policymakers, and consumer advocates to build understanding and advance new approaches.

For example, in many jurisdictions, utilities are not allowed to offer higher program incentives to certain customers due to concerns about discriminatory practices. However, some state regulators have been receptive to targeting customers with differentiated incentives when supported by evidence that all customers ultimately benefit, but getting there required education and proof.

Utilities can strengthen trust with regulators and customers by [communicating solutions, not just rate increases](#).

Utilities should move beyond framing energy efficiency as only “resource savings” and instead quantify and communicate **direct bill impacts of customer programs**. For example, energy efficiency programs often communicate metrics around energy saved, but not actual customer cost savings.

To better demonstrate the energy affordability value to stakeholders in Maryland, ICF used digital twins to compare energy usage between utility customers who participated in efficiency programs and those who did not. The finding: Marylanders who participated in energy efficiency programs [saved 18%-32%](#) on winter heating compared to nonparticipants.

To begin the process with regulators, utilities can position affordability as a priority equal to reliability and decarbonization. Utilities can also track and report energy burden metrics to regulators and stakeholders to show measurable reductions in household energy costs.

If affordability issues arise, such as new data centers causing costs to rise for all customers, utilities should communicate about the impacts and advocate for fair cost allocation. This can include requiring data center operators to support community benefit programs, such as subsidizing weatherization for low income residents.

Lastly, utilities seeking regulatory approval for new programs that drive grid value to support energy affordability should consider starting with narrow proposals. A pilot program designed to specifically offset the need for a substation upgrade can be backed by clear data and results that build trust with regulators.

Conclusion

As a utility customer program leader, you know that affordability challenges can't be solved by rate design or vendor selection alone. Every tool matters—and **customer programs are among the most powerful levers** you have for delivering real bill savings today.

By elevating customer affordability as a core goal, you can unlock new value across your entire portfolio, strengthening customer relationships, meeting regulatory requirements, and building trust with stakeholders. These steps not only enhance your strategic flexibility, but also empower you to pursue preferred plans with greater confidence and less resistance.

ICF helps utilities nationwide deliver programs that measurably lower customer bills while driving efficiency, electrification, and clean energy adoption. We bring the tools, analytics, and partnerships to make energy more affordable—and utilities more trusted—in a time of rising costs.



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Our experts have been embedded in every corner of the energy industry for over 40 years, working at the intersection of policy and practice. We work with the top global utilities, plus all major federal agencies and relevant energy NGOs, to devise effective strategies, implement efficient programs, and build strong relationships with their customers. From creating roadmaps to meet net zero carbon goals to advising on regulatory compliance, we provide deep industry expertise, advanced data modeling and innovative technology solutions, so the right decisions can be made when the stakes are high. Learn more at icf.com/work/energy.