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Exceeding Affordability Goals: Leveraging AI and Behind-the-Meter Data to Better Serve Income-Qualified (IQ) Customers

AI and premise-level intelligence are the key to closing the program enrollment gap and empowering customers.

Utilities have invested significantly in income-qualified (IQ) programs. What's missing is a cost-effective, data-driven method to identify, prioritize, and engage the right households at scale. Programs exist, funding is available, and yet enrollment often lags projections.

Traditional targeting methods reach a small percentage of likely eligible households, leaving many customers who could benefit unaware that programs exist or that they qualify. Further, customers don't necessarily trust the outreach when it arrives.

"When asked about financial assistance, rebates and other programs that are widely available, less than a quarter of consumers overall are aware of these programs." According to Smart Energy Consumer Collaborative (SECC) President and CEO Nathan Shannon:

> **"Among those making less than $50,000 per year—those most likely to benefit from these money-saving opportunities—half are unaware of the options available."**

At the same time, the need has never been greater. According to SECC's 2025 Addressing Energy Affordability survey, nearly one-third of American households are now struggling to pay their electric bills, up from one-quarter just two years ago. Among lower-income households (under $50,000 annually), that figure reaches 49%, a 15-point increase since 2023. And the challenge is expanding beyond traditionally vulnerable populations. Today, 34% of moderate-income households ($50,000-$100,000) now also report difficulty paying their bills, up from 22% just two years ago.

In other words, utilities don't have a program problem—they have a customer discovery problem. They need better ways to connect those programs with the customers who need them. And discovery problems can be solved with data.

WHY TRADITIONAL TARGETING FALLS SHORT

Existing methods prioritize reach over accuracy, leaving many eligible households unidentified.

Publicly available ZIP code data is too coarse, and census block data, while 17x more granular than ZIP code, still casts too wide a net. Both approaches miss eligible customers and waste resources on ineligible ones.

A customer earning $80,000 annually may be above the federally-funded Low-income Home Energy Assistance Program (LIHEAP) thresholds, but if their monthly energy bill averages $800, they're spending a disproportionate share of income on energy. They're energy burdened, but traditional targeting will miss them as a utility program candidate.

This distinction matters more than ever. The American Council for an Energy-Efficient Economy (ACEEE) estimates that low-income households spend a median of 8.3% of their annual income on energy, well above the 6% threshold that indicates high energy burden. A quarter of low-income households have an energy burden exceeding 15%. These customers need help, but income-based targeting alone won't find them.

Program-specific signals require precision targeting.

Virtually every program has unique thresholds and preconditions. For example, weatherization programs need customers with inefficient appliances. Arrearage management serves customers with payment challenges. Veterans programs, medical baseline programs, and energy burden programs have distinct eligibility criteria. ZIP code and census block data is not granular enough to determine which program fits which household.

The limitations of legacy targeting methods cause a range of challenges for utilities, from enrollment shortfalls to regulatory scrutiny over meeting low-income carve-outs for bill and energy savings to rising arrearages that compound territory-wide challenges. And, perhaps most importantly, customers who need help most may remain invisible.

THE POWER OF PREMISES-LEVEL INTELLIGENCE

The same AI, data analytics, and behind-the-meter intelligence that's transforming load shaping and management, distribution grid operations and distributed energy resource adoption can be applied to income-qualified targeting.

By analyzing usage patterns, appliance signatures, and behavioral indicators at the premises level, utilities can move beyond "likely income-qualified neighborhood" to "this specific household would benefit from this specific program."

Traditional Approach	Premises-Level Approach
Binary yes/no income flag based on geography	Makes probability distribution possible across income bands
Same targeting for all programs	Matches customers to specific programs based on household characteristics
Static annual snapshots	Continuously updates eligibility signals
Inability to identify energy-burdened households above income thresholds	Identifies high bill-to-income ratios regardless of absolute income

Rather than a simple true/false income qualification, premises-level analysis provides a likelihood distribution across income bands. This enables targeting for programs with different thresholds - some households may qualify for one program but not another, and the data should reflect that nuance.

"Utility regulators place a high priority on ensuring income-qualified customers are well-represented in policy writ large," notes Darleen DeRosa, Bidgely Vice President of Regulatory Affairs. "One tool available to regulators is to ensure that utility programs are designed to maximize existing investments in data analytics such that income-qualified customers receive the benefits of advances in identifying those that need support."

BUILDING THE PREMISES-LEVEL PICTURE

Most utilities already possess the foundational data essential for premises-level targeting. Advanced Metering Infrastructure (AMI) provides usage patterns, billing systems contain payment history and program databases track current enrollment. The opportunity is in combining and analyzing these inputs at the household level.

Appliance-level usage patterns: Data disaggregation reveals not just what appliances customers own, but how they're performing. Inefficient HVAC, degraded water heaters, and high-consumption appliances signal both energy burden and weatherization opportunity.

Program enrollment history: Understanding which programs a customer has already accessed (or been offered and declined) prevents redundant outreach and identifies gaps.

Bill payment indicators: Payment timing, partial payments, and arrearage patterns provide early warning signals before customers reach crisis.

Demographic and geographic context: Census data and community characteristics provide additional context as a layer on top of premises-level insights, but not as the primary targeting mechanism.

Unlike annual surveys or periodic census updates, premises-level analysis continuously updates as usage patterns evolve. A household's circumstances change over time due to job loss, medical needs, appliance failures and more. Program targeting must reflect those changes.

“We gave Bidgely a list of 150,000 accounts that are within that named community and were able to identify customers within the top 30 percent of heating usage or cooling loads. Now, we can go in and completely replace those appliances for those customers.”

Consider how Avista Utilities has leveraged its data to boost its equity efforts. When the United States Department of Agriculture (USDA) announced new grants to help utilities lower energy costs for rural communities, Avista initially didn’t think they had any communities that would qualify. “When the federal grant came out to support customers within your service territory that spend more than 275 percent of the national average on energy with a grant, at first we didn’t think we’d have anyone who would be eligible because our rates are too low,” explained Andrew Barrington, Avista’s Director of Customer Service. “But we ran the analysis with Analytics Workbench and within 10 minutes were able to identify 90 customers within one ZIP code who qualified. So now we’ve got grant writers working on submitting for these grants. Without this tool, we would have discounted it. We would have said no to the opportunity.”

“We also have a Clean Energy Transformation Act (CETA) in Washington State that is focused on our low-income, vulnerable customers. We gave Bidgely a list of 150,000 accounts that are within that named community and were able to identify customers within the top 30 percent of heating usage or cooling loads. Now, we can go in and completely replace those appliances for those customers.”

Is my Community Eligible?

Your community qualifies as an eligible extremely high energy cost community if average home energy costs in the area to be served are at least 275 percent of the national average under one or more of the high energy cost benchmarks shown below. Eligibility may be established using average annual household expenditures for individual fuels or for total energy, or average per unit cost for home energy.

2023 High Energy Cost Benchmarks
(Set at 275% of the National Average)

Fuel	Average annual household expenditures benchmark	Average per unit cost benchmark
Electricity	$3,795	$0.4318 per kilowatt-hour
Natural gas	$1,724	$41.94 per thousand cubic feet
Fuel oil	$3,366	$13.26 per gallon
LPG/Propane	$2,005	$7.37 per gallon
Total household energy	$5,181	$67.46 per million BTUs

Defining eligibility: Translating energy burden thresholds into actionable program targeting.

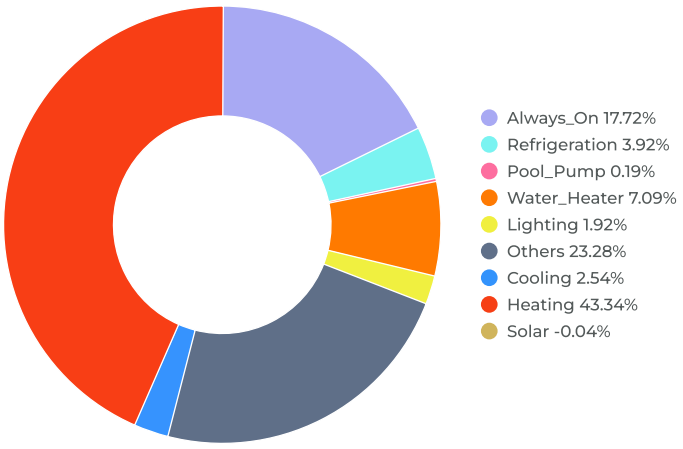
ATCO Electric had a similar experience. The utility used behind-the-meter analytics to uncover the cause of unexpected load growth in one of the most remote communities they serve.

Fort Chipewyan, Alberta, is an isolated, off-grid Indigenous community of roughly 800 people, accessible by land only during a shrinking winter road season. ATCO operates a diesel microgrid there, supplemented by a 2.2 MW community-owned solar farm and battery storage. When load kept growing at 9 percent year over year, threatening their renewable offset targets, ATCO had no way to understand what was happening inside the roughly 600 homes there.

"We had hypotheses on what was going on in the community, and there were a couple of trends we needed to test out. Heating fuel is expensive out there. A gallon of milk is $16. So the hypothesis was, are people starting to switch to electric heat? Traditional ways of trying to figure that out would be to go ask the municipality if there were any electrical permits being taken out. Nothing. What we found out through the Bidgely analysis is that residents were installing space heaters—a space heater you can buy at Walmart for $30—and running it all the time so the heating fuel furnace didn't have to run as much. We confirmed that through our Bidgely work," explained Matt Sveinbjornson, Director, Engineering at ATCO Electric.

"The other finding that blew my mind was the amount of refrigeration load. In these northern communities, there's a lot of hunting and gathering. You shoot a moose, you prep that moose, and it goes into a freezer for the next year to feed your family. There's a ton of refrigeration load, and now we're asking, 'are those deep freezers the most efficient ones on the market, or are they from the sixties and seventies?'"

"We found overall that the top 10 percent of customers made up 34 percent of the load. That was a big moment. It gave us targeted intelligence we can now work with inside the community. The only other way we could have gathered these insights would have been to go door knocking, but that would have been a very extensive process. Bidgely's analytics made us more educated when it comes to targeting solutions."



ATCO uses Analytics Workbench to target users that have the highest consumption for each appliance category.

UNDERSTANDING THE CUSTOMER YOU NEED TO REACH

Before utilities can effectively engage income-qualified customers, it's essential to understand who they are. SECC's research on this population provides important context.
SECC's Meeting the Needs of Low-Income Households research reveals a population with distinct characteristics that should be considered in program design:

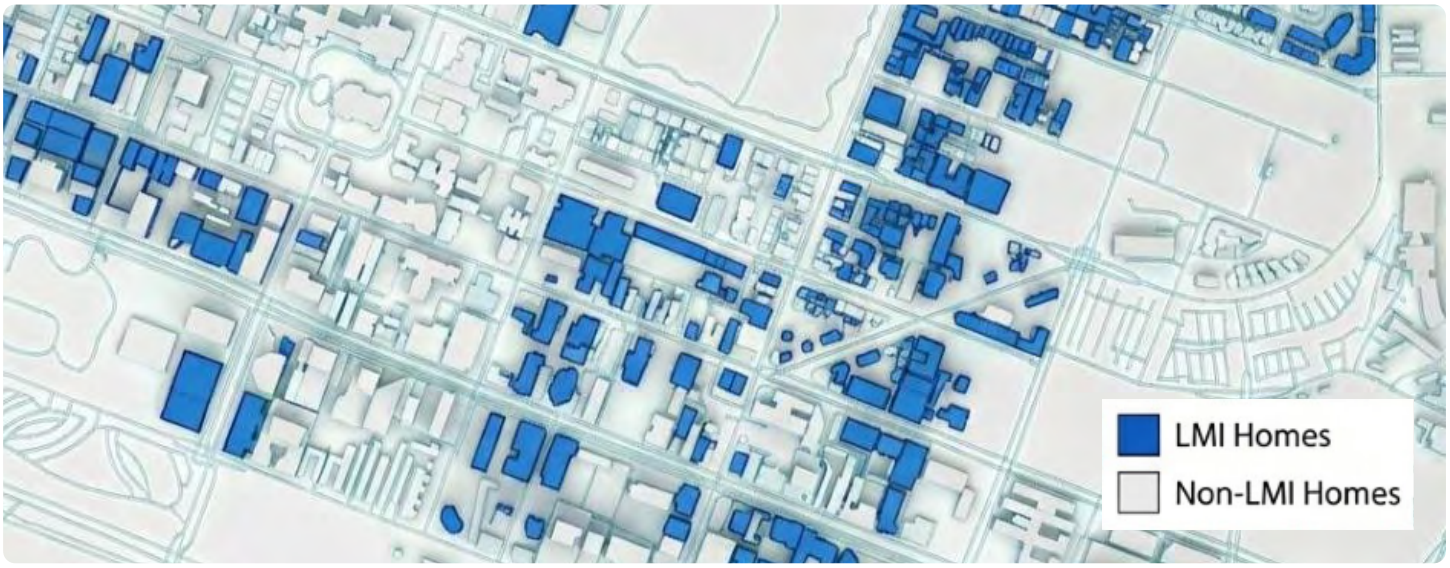
Majority are renters: **55%** rent compared to just 17% of higher-income households. Programs requiring home infrastructure changes simply won't work for most of this population.

More likely to live alone: **38%** live in single-person households. They are also more likely to skew older (51% are 55+), which may require different communication channels.

Lower technology adoption: Many lack access to smart devices, but half or more express interest in learning to use them for energy management when they own them. The barrier is access, not interest.

Perhaps most importantly, 88% of low-income customers say they're already doing "everything they can" to reduce their electricity bills. In addition, half of income-qualified customers are unaware of programs that could help them – a gap that mass marketing campaigns have failed to close.

Rather than generic advice, they need personalized recommendations about what additional steps they can take to help their situation, and what tangible benefits they will realize.



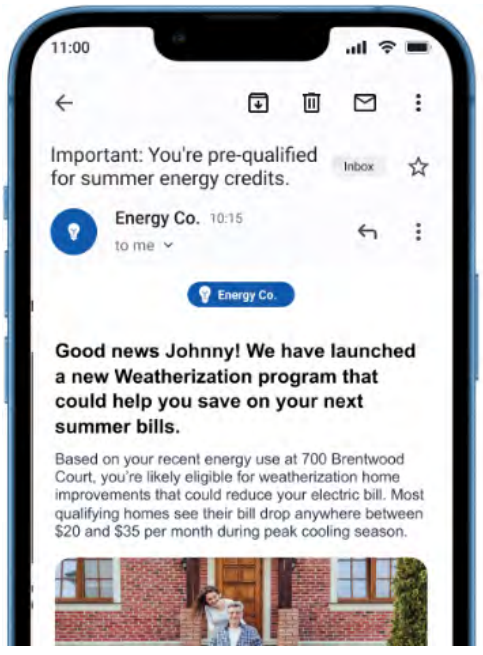
Population of 1 household: Patented algorithms improve accuracy with arrearage tracking, program outreach & participation.

ENGAGING CUSTOMERS WHERE THEY ARE

Industry practitioners observe this is particularly true for rural customers, who represent a disproportionate share of income-qualified households and may be more skeptical of utility outreach.
This trust deficit shows up in the data. SECC found that low-income customers rate their utilities lower than other customers on satisfaction, trust, and reliability. Building credibility with this population requires demonstrating understanding of their specific situation.

Typically, income-qualified customers have fewer interactions with their utility than other populations.

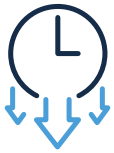
SECC found that 53% of low-income customers have had no contact with their provider in the past year beyond receiving bills.
Improving this engagement takes time and requires ongoing communications and multiple touchpoints across email, text, and mail channels with persistence that doesn't become intrusive. If someone misses the first message, or only engages via text, or prefers communication in their native language, the system should adapt.
Many utilities serve diverse populations where significant percentages of customers speak languages other than English or Spanish. Marketing teams typically translate materials into one or two languages, but can't operationalize translations into every language their customers speak. Emerging AI capabilities can help utilities communicate in customers' preferred languages without bloating translation budgets.
Utilities have also learned that they may not be the most trusted messenger for some populations. Partnerships with community organizations such as food banks, faith organizations and social service agencies can reach customers who won't answer a call from the utility. Premises-level intelligence can support these partnerships by providing better-qualified referrals to community partners.
As the adage goes, you can't improve what you don't measure. Who's opening communications? Who's enrolling? What messaging is working? Which channels are most effective for which segments?
Understanding program performance isn't just about regulatory reporting. It's about creating a feedback loop that improves targeting, messaging, and channel selection over time. Low engagement from a particular segment might signal irrelevant messaging, inaccurate targeting, or an inappropriate channel.
The measurement loop turns income-qualified outreach from a one-time campaign into a continuously optimizing engine.
Regulators increasingly expect utilities to demonstrate that programs reach the customers they're designed to serve. Premises-level tracking enables utilities to precisely demonstrate that income-qualified programs are reaching their intended populations and delivering measurable benefits from budget investments.



Targeted promotion connects a customer's energy usage to the most relevant program

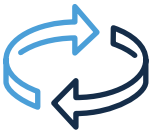
THE BROADER OPPORTUNITY

Regulators have historically focused income-qualified requirements on energy efficiency programs and rate offerings such as set monthly percentage discounts on energy bills. But the same premises-level intelligence that improves weatherization targeting can be applied across the program portfolio:



Time-of-use (TOU) Rates: Identifying income-qualified customers who would benefit from TOU (and not be harmed by bill increases) and coaching them to succeed

Arrearage Management: Early identification of customers trending toward payment difficulty, before they reach crisis



Demand Response: Targeting behavioral and direct load control programs to income-qualified households with flexibility potential

Rate Optimization: Proactively matching customers to the rate structure that best fits their usage pattern

> **"As affordability pressures increase, regulators are evaluating utility spending requests for opportunities to maximize investments across the customer base. Premise-level intelligence makes that possible for both income-qualified and broader programs to benefit from deep customer insights." —Darlene DeRosa, VP, Regulatory Affairs**

BETTER SERVING INCOME-QUALIFIED CUSTOMERS

The affordability challenge isn't going away. With utility costs and rates projected to continue to rise, the gap between customers who need help and customers who receive it will grow without premises-level intelligence. Closing the gap between program availability and enrollment is possible with:

Premises-level identification

Moving beyond ZIP code and census block targeting to household-level intelligence that matches specific customers to specific programs

Engagement that meets customers where they are

Reaching customers with multi-channel, multilingual and persistent outreach

Continuous measurement and improvement

Feedback loops that optimize targeting, messaging, and channel selection over time

The utilities that embrace this integrated approach are better positioned to enroll more customers and demonstrate to regulators that their programs deliver on the promise of lower bills for income-qualified customers. Most importantly, they'll ensure help reaches the customers when and where they need it most.

Read more from our EmPOWERing Progress Series:

- Expanding the Energy AI Value Stack
- Time-of-Use Rates: Phase-Next CX
- How Behind-the-Meter Intelligence and Targeting Can Change the Utility Calculus of Widespread Heat Pump Adoption
- EV Preparedness Starts with EV Intelligence
- Leveraging Behind-the-Meter Intelligence to Better Inform and Achieve Clean Energy Plan Targets
- Grid and Customer Convergence: Leveraging Energy Intelligence to Achieve Business Transformation
- The Vertical AI Imperative: How CIOs Can Transform Utility Operations Through Domain-Specific Intelligence

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Taking the Next Step

To learn more about how behind-the-meter intelligence can help your utility better serve income-qualified customers, email info@bidgely.com to schedule a meeting.