AN ENERGY MARKETER'S
PLAYBOOK
FOR DECARBONIZING THE GRID

THE TRANSFORMATIVE POWER OF DATA SCIENCE-DRIVEN DSM PROGRAM DESIGN

bidgely

Around the world, energy providers are setting ambitious decarbonization goals and net-zero commitments. Though reaching those goals will ultimately require an all-in approach across every facet of energy operations, making significant gains in demand-side management (DSM) promises to play one of the most important roles in reducing carbon emissions.

Though DSM initiatives have evolved slowly over the last few decades, decarbonization has created a new urgency for energy providers to be more strategic about the ways programs are implemented, promoted and evaluated. Data-driven design is enabling the DSM transformation.

Across all categories of DSM, data-driven design empowers energy marketers to supercharge demand-side programs, making them more impactful, responsive and cost effective.

In support of this mission, we've developed this Marketer's Playbook for Decarbonizing the Grid to help energy marketing leaders amplify demand-side carbon reduction through data-driven program design, including:

- **Strategy 1:** Get to know every customer on a one-to-one basis
- **Strategy 2:** Target, tailor and expand program design
- **Strategy 3:** Evolve demand-side programs from reducing load to managing flexible load
- **Strategy 4:** Shift program assessment to real-time

Average Hourly Usage
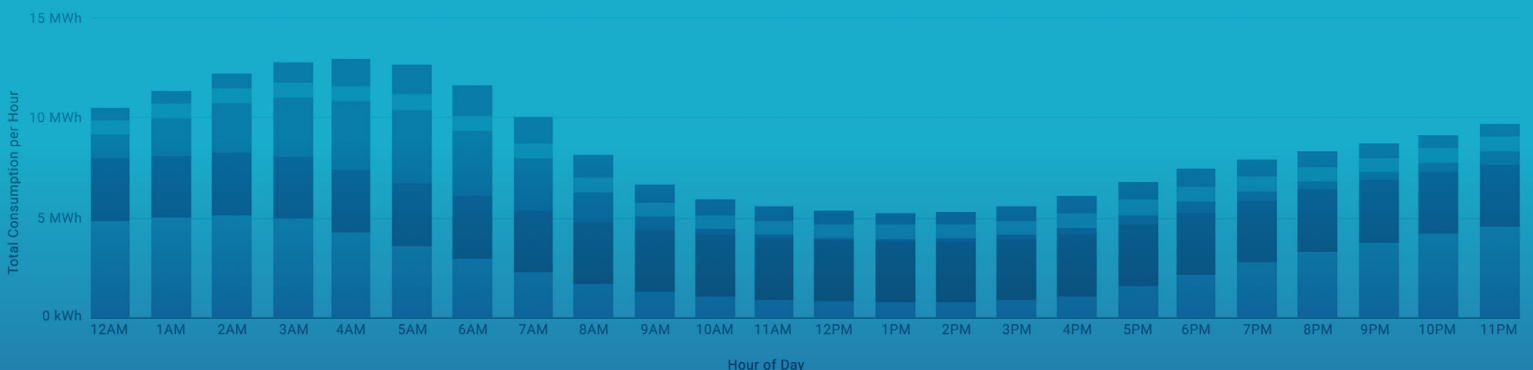
STRATEGY 1: GET TO KNOW EVERY CUSTOMER ON A ONE-ON-ONE BASIS

Because widespread customer participation is essential to achieving decarbonization targets, it's easy to assume mass marketing is the right tool for driving program performance. But that's not quite right. Personalized marketing to individuals — with messaging aligned to each consumer's behaviors and values — done at scale, is imperative to improving program results..
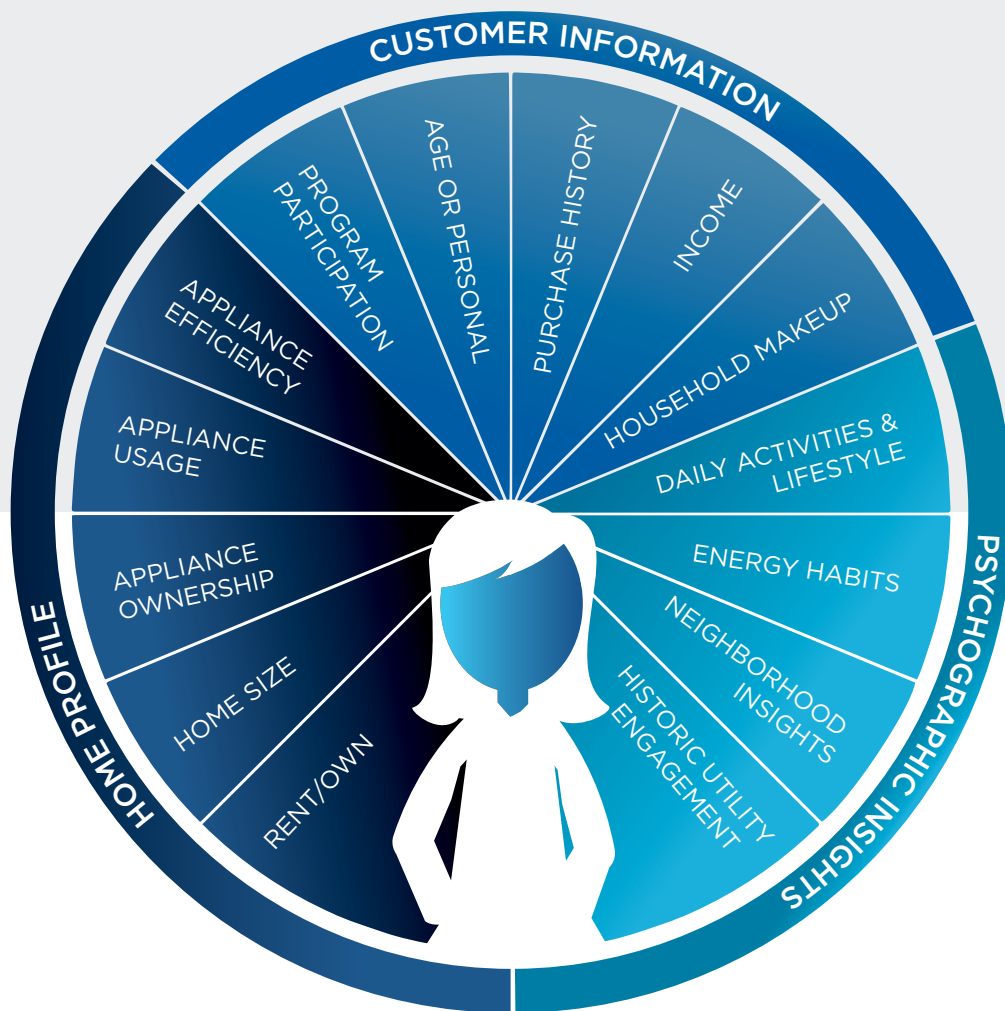
ACTION STEPS

Develop **"real-world 360° customer profiles"** to enable personalized consumer engagement

Improve **customer targeting** with advanced analytics.

Initiate an ongoing, **personalized efficiency dialogue** with targeted customers.

CUSTOMER INFORMATION

PROGRAM PARTICIPATION
AGE OR PERSONAL
PURCHASE HISTORY
INCOME
APPLIANCE EFFICIENCY
HOUSEHOLD MAKEUP
APPLIANCE USAGE
DAILY ACTIVITIES & LIFESTYLE
APPLIANCE OWNERSHIP
ENERGY HABITS
HOME SIZE
NEIGHBORHOOD INSIGHTS
RENT/OWN
HISTORIC UTILITY ENGAGEMENT

HOME PROFILE

PSYCHOGRAPHIC INSIGHTS

The proliferation of renewables, energy storage and transportation electrification is adding complexity to the energy efficiency landscape. For example, once consumers install solar, their perspectives on saving energy may change: 'Why do I need to shave $5 off my bill if I am now producing my own energy?'

Achieving energy efficiency in the context of this new mindset requires personalized messaging that reflects each customer's unique needs, motivations and values. Messaging that is relevant and presents next-best-actions in context of what is important to each customer is more likely to inspire participation.

Understanding and engaging customers on an individual basis may seem unattainable, but data science and AI makes it not only possible but much easier to achieve.

In the past, energy providers have had to rely on in-person home assessments and customer surveys of small samples to build target customer profiles that guide energy efficiency program development and implementation. Though never ideal, these legacy approaches fall short particularly in today's energy environment — because selection bias and small samples fail to address increasingly varied profiles across the entire service population..

REAL-WORLD 360° CUSTOMER PROFILES

The good news is household meter-derived household energy use data can now provide the missing link for building accurate, comprehensive and cost-effective profiles for every residence. Today's energy marketing teams can look to meter-data insights as a powerful new proxy for each customer's voice.
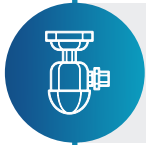
AI-enabled meter data analytics can help marketers determine:

Which homes have EVs and who is charging during peak hours
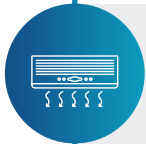
Which homes have inefficient or degrading HVAC systems

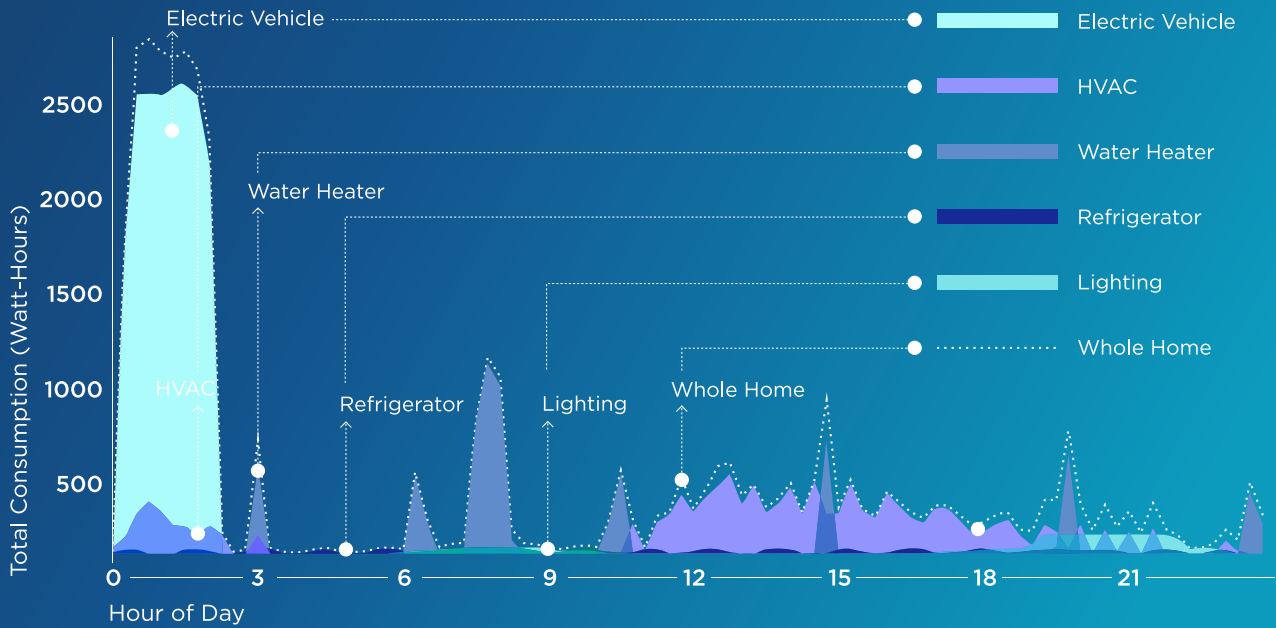**Which homes have pool pumps and whether they are single or variable**

Insights into appliance health

And other insights not available apart from customers self-reporting.

In actuality, energy analytics can identify inefficiencies that customers may not be aware of, such as an inefficient water-heater or air conditioner, enabling energy providers to educate and help customers with a right-fit service, rebate or program.

In addition to appliance and technology intelligence, applying sophisticated machine learning and statistical solutions to raw energy consumption data also reveals essential attributes that describe each customer's behavior, lifestyle, propensity to buy and other personal characteristics.

Electric Vehicle

2500

2000

1500

1000

500

Total Consumption (Watt-Hours)

Water Heater

HVAC

Refrigerator

Lighting

Whole Home

0   3   6   9   12   15   18   21

Hour of Day

Legend:
- Electric Vehicle
- HVAC
- Water Heater
- Refrigerator
- Lighting
- Whole Home

Bidgely's advanced appliance-level disaggregation, based on AI-enabled data science and backed by 17 patents, can give energy providers deep behind-the-meter visibility into the needs of each customer.

IMPROVE CUSTOMER TARGETING

Historically, one of the greatest challenges to successful DSM programs has been that there is **no universal motivator or set of rules which apply to all customers when it comes to making better energy decisions.** Traditional customer segmentation techniques helped incrementally, but with so much variation in customer personas and energy habits, even segment-tailored DSM programs and outreach has sometimes missed the mark.
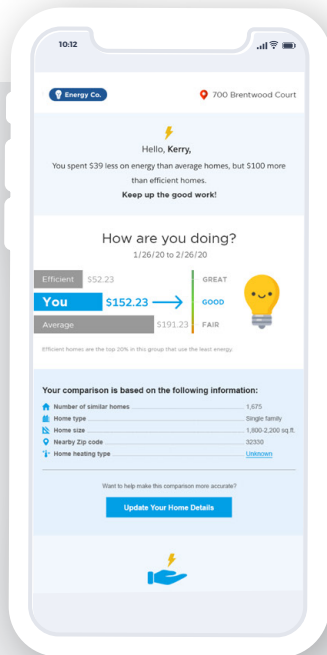
Real-world 360° customer profiles make it possible to create customer segments that group individuals based upon highly nuanced similarities and maximize the contrast between segments.

For example, among customers who stay at home during the day, ongoing consumption patterns emerge, including those associated with daytime space heating, entertainment usage, and lighting. AI-generated insights from energy-use data associated with these daytime habits allow marketing teams to distinguish customers by lifestyle and then apply different treatments to each group.

With such precise targeting, DSM programs can become more nimble and engaging – creating individualized energy efficiency journeys that yield higher savings for every customer and greater participation overall.
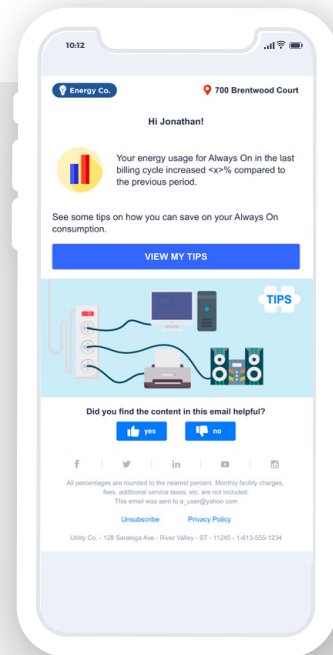
ONGOING, PERSONALIZED EFFICIENCY DIALOGUE

Maintaining an ongoing two-way dialogue is key to creating the enduring customer engagement and trust necessary to achieve aggressive new decarbonization efficiency targets in an era of electrification and distributed energy resources.

PEER INSIGHTS
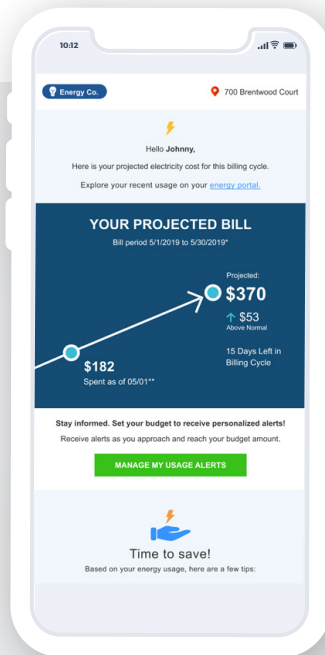
BUDGET INSIGHTS

EFFICIENCY INSIGHTS

Real-world 360° customer profiles, hyper-targeted segmentation and digital tools make it possible to replace one-size-fits-every-season DSM communications with an evolving cadence of smaller, bite-sized insights at precise and more frequent customer outreach. It is a shift from infrequent and general communications to timely and specific touch points designed to deliver the most pertinent information and recommendations at optimal times. Providing easy-to-digest, customer-specific insights and calls to action at key points during the billing cycle makes it easier and more appealing to consumers to take energy-saving actions.

STRATEGY 2: TARGET, TAILOR AND EXPAND PROGRAM DESIGN

Most DSM programs have been limited in scope and treatment group size due to the cost and complexity of implementation. Achieving decarbonization goals requires much broader participation. Data-driven, digital-first design eliminates legacy barriers to program expansion and allows every customer to be engaged.

ACTION STEPS

Align program design with customer segments.

Design incentives based on highest **grid value.**

Inclusively expand DSM program participation.

Has Pool Pump: Single Speed, 2.6kW
Runs for 8 hours from 12-7pm

Personalized Tips/Offers:
• Change to TOU Rate plan
• Run in off peak hours
• Buy variable speed pool pump
  and save $430/year (2 year ROI)
• Buy solar to run during day

Central A/C: 5.5kW, Inefficient

Personalized Offer: Take advantage of UtilityCo's $50 rebate for smart thermostats. You could save $250/year on AC spending based on your total AC spending of $800/year.

Solar Panels: 4.4kW system
Gas Heating: High efficiency
Lifestyle: Stay at home mom
Offer: Based on your solar capacity you could upgrade to electric heating + battery and save on your gas spending.

ALIGN PROGRAM DESIGN WITH CUSTOMER SEGMENTS

Starting from the foundation laid in Part 1 of 360° customer profiles aggregated across a service territory, energy marketers can now design a catalog of DSM programs that target narrowly defined customer segments with hyper-relevant calls to action.

For example, **knowing which customers own pools**, when they run pool pumps and for how long, gives marketers a highly specific group of customers to target for load shift. Furthermore, identifying which pool owners are operating single-speed pumps enables targeting for variable-speed pump upgrade programs.

This precision targeting is more cost effective, allowing energy marketers to promote a wider range of DSM initiatives aimed at exactly the right customers.

DESIGN INCENTIVES BASED ON HIGHEST GRID VALUE.

Traditional incentive programs offer the same benefit to all customers. A more valuable approach is to tailor efficiency and load-shifting programs based on each customer's potential load impact.

With time and location data for energy use, marketers can better focus behavioral nudges on residents of a specific grid location or those with energy assets or habits that enable greater load shift.

For example, legacy DSM approaches might offer all customers within a congested area an incentive to shift their EV load. But not every customer in that area will have an EV, and among those who do, it is likely that many are already charging off-peak. Data analytics allows energy marketers to pinpoint which customers have an EV and when they are charging. With those insights, marketers can focus DSM programs to incentivize these customers in proportion to their load contribution. The result is greater grid benefit with lower costs.

INCLUSIVELY EXPAND DSM PARTICIPATION

The availability of advanced analytics and digital tools frees energy marketers to expand upon their traditional high-consumption-user focus to generate savings among a wider range of customers in all consumption tiers.

With more precise targeting and digital tools, marketing teams are able to expand DSM initiatives beyond standard high-consumption customer segments into other customer groups that are traditionally out of focus. Personalized savings recommendations can improve energy affordability and increase equitable access to energy across the entire service population without added program costs.

STRATEGY 3: EVOLVE DEMAND-SIDE PROGRAMS FROM REDUCING LOAD TO MANAGING FLEXIBLE LOAD

As part of the decarbonization-inspired shift to distributed generation and storage behind the meter, energy customers are evolving from their legacy role as passive energy consumers. This shift requires a change in demand-side thinking

ACTION STEPS

Evolve DSM from reducing load to **managing flexible load** and orchestrating the cleanliness of the kWh.

Focus on influencing **when and where** customers use energy.

Appeal to customers as they become an **active participant** in how we manage grid supply

EVOLVE DSM FROM REDUCING LOAD TO MANAGING FLEXIBLE LOAD.

When DSM was initially conceived, consumers were squarely on the "demand-side" where energy was consumed and "management" meant reducing consumption. With the accelerating deployment of solar, energy storage, and EVs, it is essential to evolve the DSM mandate from reducing consumption of load to managing distributed energy resources and the provision of flexible load and supply.
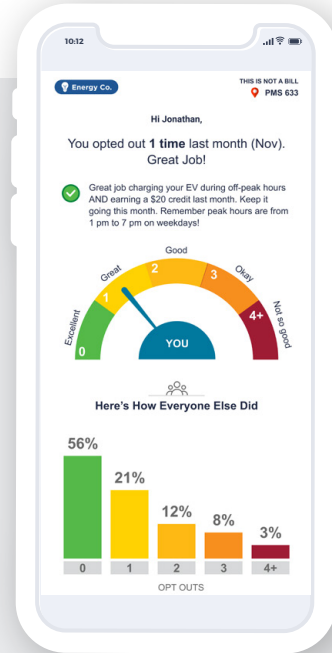
PASSIVE MANAGED CHARGING WITH AMI DATA
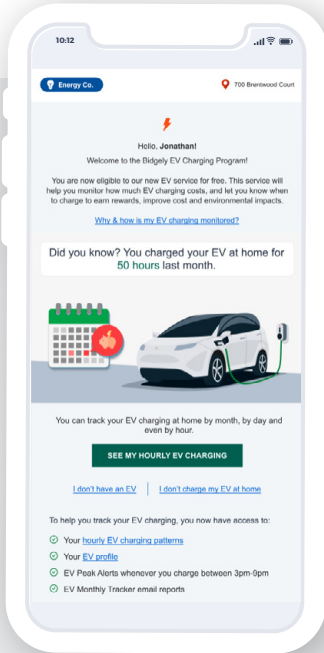
WELCOME &
ENROLLMENT
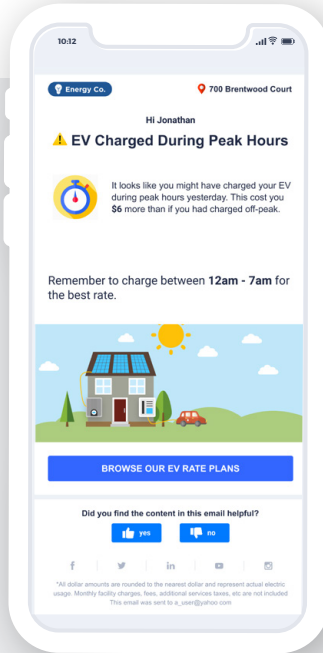
PEAK CHARGING
ALERT

GAMIFICATION:
MONTHLY SCORE

FOCUS ON WHERE AND WHEN CUSTOMERS USE ENERGY

As more intermittent renewable energy resources are added to the grid, and consumers become flexible grid resources, the need for agile customer engagement is increasingly important. DSM programs must place greater focus on influencing where and when consumers use energy. Again, data-driven personalization and hyper-targeting is the key to success with this approach.

For example, as electric vehicle adoption grows and more appliances become electrified, increased grid congestion is almost certain, taxing transformers and grid capacity at levels they were not built to handle.

Data-analytics-driven DSM programs have the power to alleviate congestion on transformers and substations that are at or near capacity by shifting the load of specific homes or buildings at specific times of day.

APPEAL TO CUSTOMERS WHO CAN PARTICIPATE IN GRID SUPPLY

Data analytics can also reveal which customers have installed solar or an EV. These insights enable energy marketers to build collaborative relationships with customers who are positioned to participate in grid supply when necessary.

Such programs could include managed charging for EV owners or cooling demand-shift which capitalizes on mid-day solar generation.

Perhaps in no other area of DSM program management will real-world 360° customer profiles be as critically important as in compelling customers to become utility partners who play a pivotal role in resiliency and the energy transition. Employing energy data-derived customer insights to capture, nurture, and maintain a positive relationship with this customer-partner segment will be key to successfully managing flexible demand.
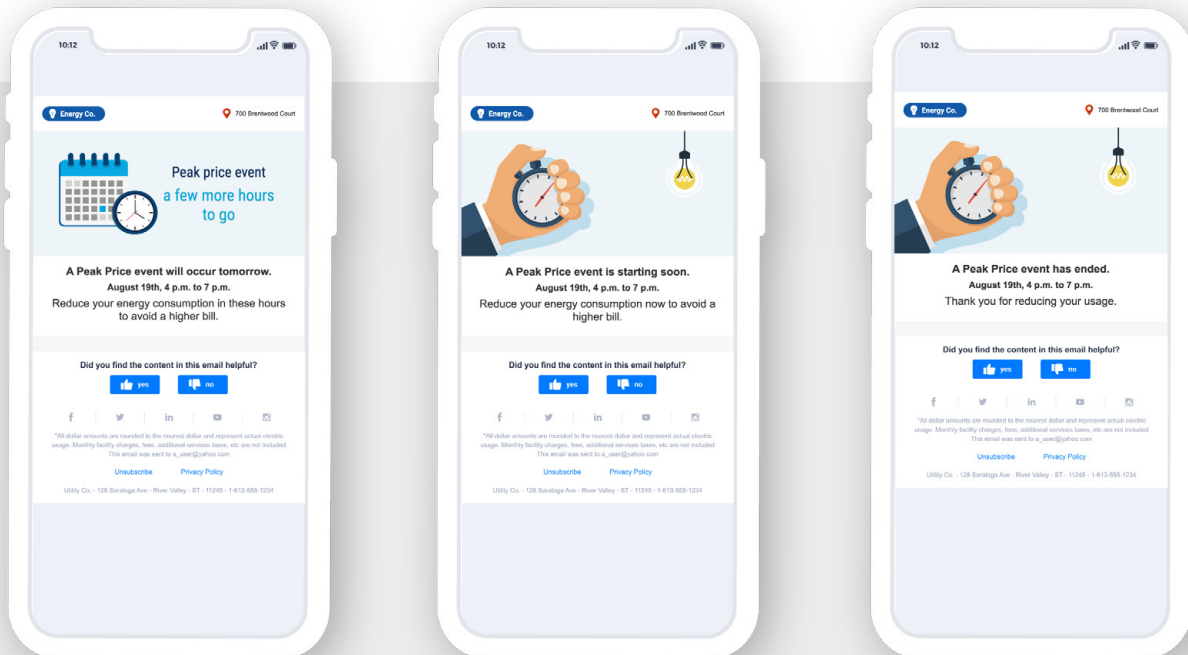
PHASE 4: SHIFT PROGRAM ASSESSMENT TO REAL-TIME

Historically, energy providers have relied on a backward-looking evaluation, measurement, and verification (EM&V) process conducted annually or at the conclusion of a given DSM program. Realizing that achieving decarbonization targets requires DSM programs be fine-tuned on a continual basis, future-ready utilities are supplementing formal program assessments with near-real-time and appliance-specific reporting. By necessity, DSM is becoming increasingly proactive and iterative.
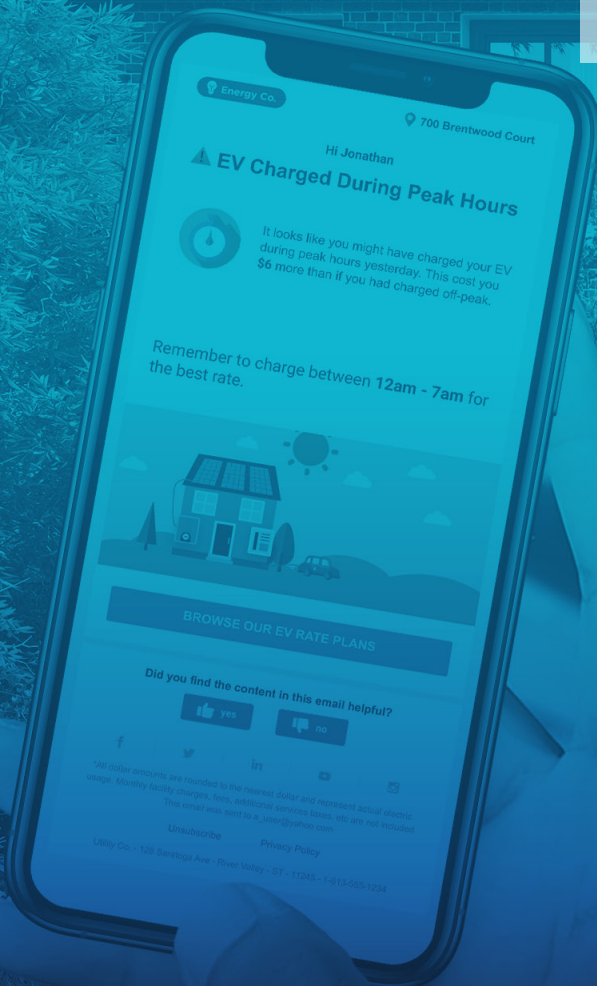
ACTION STEPS

Incorporate **continuous improvement** into EM&V processes.

Leverage real-time EM&V to validate **load shifting event signals**

Hi Jonathan

⚠ **EV Charged During Peak Hours**

It looks like you might have charged your EV during peak hours yesterday. This cost you $6 more than if you had charged off-peak.

Remember to charge between **12am - 7am** for the best rate.

BROWSE OUR EV RATE PLANS

Did you find the content in this email helpful?

👍 yes   👎 no

## INCORPORATE CONTINUOUS COMMISSIONING INTO EM&V PROCESSES

With data-driven design, energy providers can actually use analytics to understand DSM program performance in near-real-time — on a weekly basis or monthly basis to continuously improve. At any point, it's possible to answer the questions: 'What's really happening with my program? Am I achieving the outcomes I'm trying to drive?'

If the answers to these questions is 'no,' data analytics can reveal what steps energy marketers should take to correct course now — adjusting program strategy, target audience, rebate amount or any other program element weeks or months into implementation — rather than at the end of the program year.

With the ability to pivot in near-real-time, DSM programs are more likely to meet or exceed the milestones they set out to achieve.

LEVERAGE REAL-TIME EM&V TO VALIDATE LOAD SHIFTING EVENT SIGNALS

With extreme weather events becoming more commonplace and transportation electrification introducing new types of peak loads – such as the day before a long weekend – using real-time EM&V can help to validate daily and time-of-use demand response event signals and customer participation in load-shifting events.
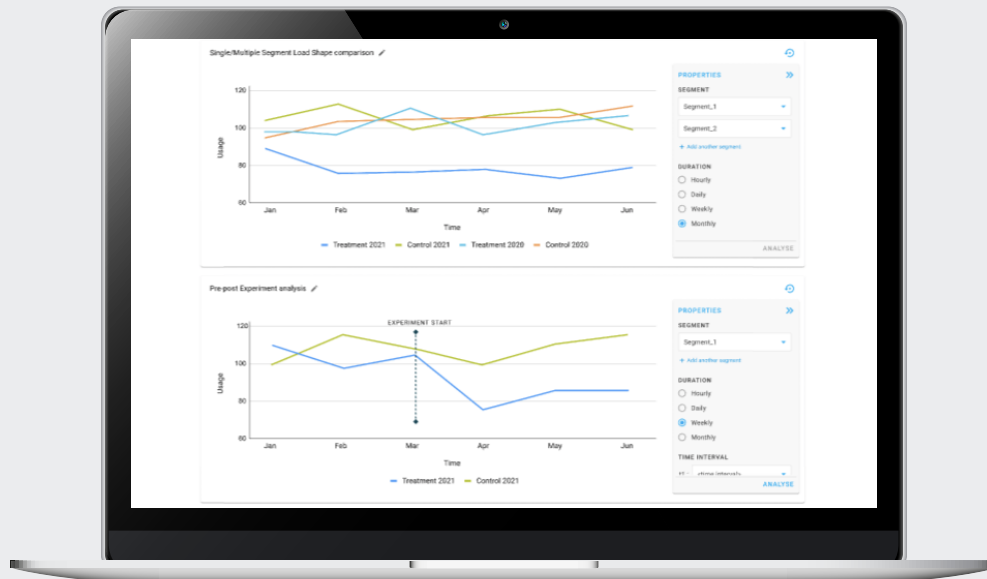
LOOKING FORWARD

Data holds the answer to decarbonization writ large — and marketers have a critical role to play. Data science-driven DSM programs are more effective and impactful in engaging customers as energy transformation partners, reducing emissions and managing flexible load.

For more information about how Bidgely's Analytics Workbench can inform data science-driven DSM program design, download our Analytics Workbench Solution Brief.

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