



CUSTOMER-CENTRIC ENERGY TRANSFORMATION

A CASE STUDY OF THE OPPORTUNITY WITH GREEN MOUNTAIN POWER

BY RACHEL GOLD, LEIA GUCCIONE, AND MIKE HENCHEN



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ABOUT US



ABOUT ROCKY MOUNTAIN INSTITUTE

Rocky Mountain Institute (RMI)—an independent nonprofit founded in 1982—transforms global energy use to create a clean, prosperous, and secure low-carbon future. It engages businesses, communities, institutions, and entrepreneurs to accelerate the adoption of market-based solutions that cost-effectively shift from fossil fuels to efficiency and renewables. RMI has offices in Basalt and Boulder, Colorado; New York City; Washington, D.C.; and Beijing.

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EXECUTIVE SUMMARY

*“Creative and
customer obsessed
thinking is what we
really need.”*

*—Mary Powell
Green Mountain Power*

EXECUTIVE SUMMARY

Green Mountain Power (GMP) has announced a new company vision as Vermont's Energy Transformation Company and pursued a path of customer innovation to advance the transition to a low-carbon, affordable, reliable future energy system. In so doing, GMP aims to expand from its traditional vertically integrated investor-owned utility business model by offering more energy products and services to customers, building new revenue streams in the face of declining energy sales to keep rates affordable, and using distributed resources more efficiently to support a low-cost and highly renewable and resilient energy system.

Advancing the energy transformation and meeting Vermont's aggressive renewable energy goals will require greatly increasing the scale and scope of these programs. We believe GMP can scale programs through expanded marketing and customer engagement, high-saturation deployment approaches, and new program design including bundling of services and provision of alternative financing options. New programs to round out a comprehensive portfolio include an energy concierge service for small and medium businesses, an electric vehicle managed charging program, a customer load flexibility program, and greater choice of innovative rate designs.

CONTEXT

Like many U.S. utilities, GMP faces new economic and operational challenges as new energy technologies reach more customers and state legislative mandates for renewable energy require sweeping changes to the electric system. After a long history of increasing electricity sales that financed a growing grid, GMP forecasts declining load and sales over the next 10 years, even as the needs for modernizing an aging grid require sustained capital investment.

Meanwhile, Vermont's legislature has mandated, and GMP has embraced, a transformative, low-carbon energy future. GMP will need to provide 75%

ABOUT THIS REPORT

We set out to assess how Green Mountain Power can advance the transformation to a low-carbon, reliable, affordable energy system by building on its portfolio of innovative customer programs and its evolving business model. This report provides recommendations to GMP for expanding its offerings and impact as it shifts its business model toward an energy-services utility highly engaged in energy solutions for its customers.

GMP hired Rocky Mountain Institute (RMI) as a consultant for this assessment. GMP's CEO, Mary Powell, also serves as a trustee on RMI's board.

renewable power by 2032, up from 55% estimated for 2017. Separately, 10% of its energy must come from distributed generation, up from less than 1% today, meaning GMP will soon need to address the operational and financial challenges faced today in high-solar regions like Hawaii and California. Further, the requirement to reduce customer fossil-fuel usage equivalent to 12% of GMP's energy sales will require major efforts to switch customers away from gas and oil for space heating, water heating, and mobility.

GMP has launched a series of innovative, customer-facing programs to achieve the goal of an affordable, low-carbon, reliable energy system while sustaining its ability to invest in future grid upgrades. Examples of these programs include:

- **eHome:** A holistic home energy audit and efficiency program in partnership with service providers to offer a bundled, curated energy solution to customers that includes financing and advisory services
- **Cold-climate heat pumps and water heaters:** High-efficiency electric appliances to replace gas or oil devices and improve comfort, complete with no-money-down financing

- **Tesla Powerwall:** Home battery storage providing backup power and customer incentives for allowing GMP to dispatch the battery in order to lower system costs
- **eWater:** Bundled offer for residential customers, including a Nest thermostat and grid-interactive control for electric water heaters to help meet system needs
- **eControl:** Customers receive a free, connected control device for ductless heat pumps, and GMP can dispatch these connected devices for demand response
- **Off-grid program:** A comprehensive planning and energy management service to help rural customers go off-grid
- **Electric vehicle (EV) charging build-out:** In partnership with EVgo, GMP has built charging stations in public, workplace, and residential areas and subscribed customers to GMP and EVgo's charging program
- **Home EV charging incentive:** GMP offers a free home EV charger for customers purchasing a new EV and provides unlimited off-peak charging for a fixed monthly fee

While these programs support GMP's goals, they are relatively new, and so far have only reached less than 3% of residential customers. Achieving the affordable, low-carbon, reliable energy system of the future will require significant increases in both scale and scope, and continued collaboration with regulators, policymakers, and stakeholder groups to expand innovative services for customers.

ACHIEVING GREATER SCALE

To achieve its goals, GMP will need to significantly ramp

up programs over the next 10 years, by as much as ten- or twentyfold or even more. We have identified four approaches GMP can take to build customer participation:

1. Ramp up efforts to understand customer needs, segment into groups, and use those insights to inform product development, sales, and marketing.

GMP can use existing smart meter data and new customer research to segment its customers into personas (groups of residential customers) and cohorts (groups of business customers) and better understand the needs of each group. GMP can then tailor product development and sales and marketing campaigns to these personas and cohorts to improve both the value proposition and messaging offered to individual customers and to ensure low-income customers are well served by new offerings.

2. Test high-saturation adoption opportunities that leverage tightly knit social networks, bulk purchase structures, and well-timed default customer offers.

These approaches include partnering with local organizations such as towns, campuses, neighborhoods, and other community and social groups, like employers and religious groups. GMP can also use the bulk purchase model exemplified by "Solarize" campaigns, which requires group participation in a limited time window to capture a compelling deal. And by timing offers around trigger events, such as new account activation, home purchase, or new jobs, and framing them as default options, GMP may entice more customers to take advantage of offerings.

3. Design bundled offerings to overcome cognitive confusion and leverage integration.

These bundles can simplify the choices offered to customers through curated packages that meet their needs, whether a standard bundle targeted to a customer segment or a personalized bundle offered following an eHome audit. For customers who choose to start with only one à la carte offering, "completing the bundle" may be a valuable next step.

4. Test alternative financing options that make offerings affordable. GMP currently offers lease options for several home devices to allow customers to participate in offerings with no money down. In addition to the lease, GMP can offer an on-bill tariff program that creates opportunity for customer ownership, eases the complexity of transferring responsibility when a home is sold, and expands GMP's ability to finance solutions for customers who do not meet traditional underwriting standards.

EXPANDING THE SCOPE OF CUSTOMER OFFERINGS

GMP can also expand the scope of its programs to build a robust portfolio of customer offerings supporting the transition to an affordable low-carbon energy future. We have proposed four additions that fill important gaps in GMP's programs and that stand to add significant value for customers and the energy system. Importantly, with ever more programs on offer, GMP can package these customer solutions in bundles and as part of holistic portfolio solutions, to avoid diluting program effectiveness as customers face more options.

1. Energy concierge for small and medium businesses

(SMBs): Provide new offerings to SMB customers, including a holistic energy concierge service to perform energy audits and advise customers on solutions. This program could leverage the design of the eHome program for SMB customers, with bundled offerings tailored by cohorts of business type.

2. EV charging incentive program: Reaching Vermont's goals for transportation electrification will require more than 32,000 EVs in GMP's service territory by 2025, up twentyfold from today's total. GMP can both encourage EV adoption and support grid-beneficial charging through discounts and financing for garage EV chargers. It can accomplish the same ends through rewards for enrolling in

a managed-charging program, by which GMP can adjust the timing of home EV charging within the customer's available window to shift energy consumption to low-cost times and better integrate variable renewable resources. (RMI provided this recommendation to GMP in early 2017, and GMP has since launched a home-charging incentive program, described more fully in chapter 2 of this report.)

3. Load flexibility program: Many uses of energy are flexible and can be shifted to different times of day to lower system costs with little or no inconvenience to customers. GMP can seek to enroll a wide range of devices, both residential and commercial, into an automated load flexibility program and optimize these loads to support a more efficient, low-cost, reliable energy system. These loads could include EV charging, municipal and agricultural water pumping, electric heating and air conditioning, and more. GMP would compensate customers for these benefits through credits on their bills and could package the offer with devices delivered under the eHome program. Since RMI provided this recommendation in early 2017, GMP has launched eWater and eControl, enrolling water heaters, Nest thermostats, and ductless mini-split heat pumps into its load flexibility portfolio.

4. Rate design: Well-designed time-varying rates can reduce peak consumption without compromising customer satisfaction. While GMP has substantial potential to manage and optimize flexible loads on behalf of customers, many customers who will prefer not to enroll in central management of their devices could still save on their bills and support a more efficient system with time-varying rates. In particular, these customers may find increasing opportunity to use automated devices in their home or business to help them save through granular rates while maintaining greater control of their comfort settings. GMP has an opportunity to update its rate offerings to provide distinct and attractive value propositions to customers and to communicate this value more effectively.

01

WHY IS CHANGE NEEDED?



WHY IS CHANGE NEEDED?

THE CHANGING U.S. ENERGY SYSTEM

Across the nation, the energy system is evolving rapidly toward a more clean, distributed, customer-centric system, and creating new economic and operational challenges for utilities. Low-cost solar panels are allowing more customers to generate their own power. Homes and businesses are becoming more energy-efficient as federal efficiency standards and utility efficiency programs continue to successfully reduce energy needs. Energy efficiency has lowered nationwide electricity sales an estimated 14% below where they otherwise would be.¹ Distributed solar has further reduced electricity sales by about half a percent nationally, and is projected to increase rapidly in the coming years.²

These factors have led to flat or declining demand for electric power across much of the country, even as capital expenditure in the electric system has continued to rise by an estimated 6% per year since 2000,³ driven by aging infrastructure, grid modernization, and increased weather and security risks. This increased grid investment, in the face of flat energy sales, places economic pressure on utilities, which must continue to maintain a reliable energy system without passing unreasonable rate increases on to customers.

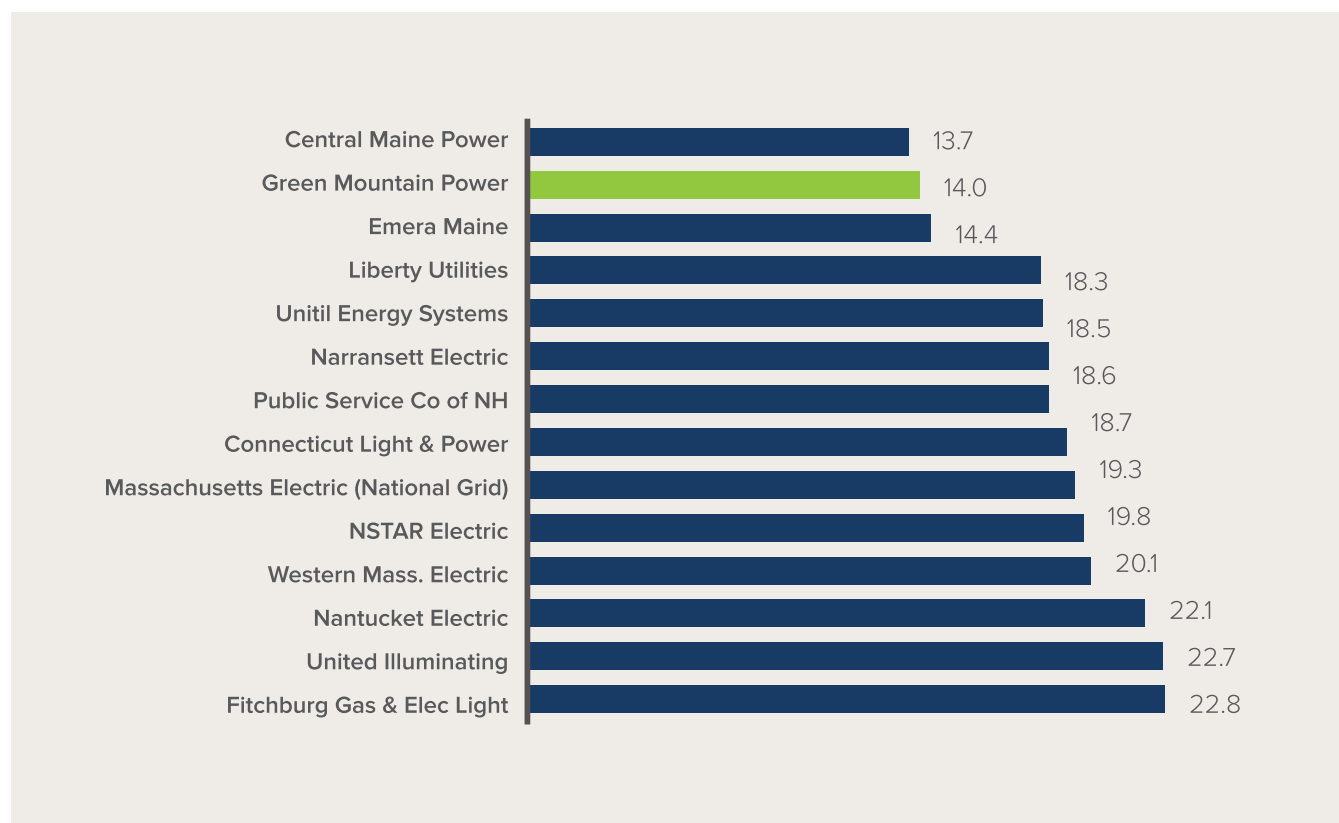
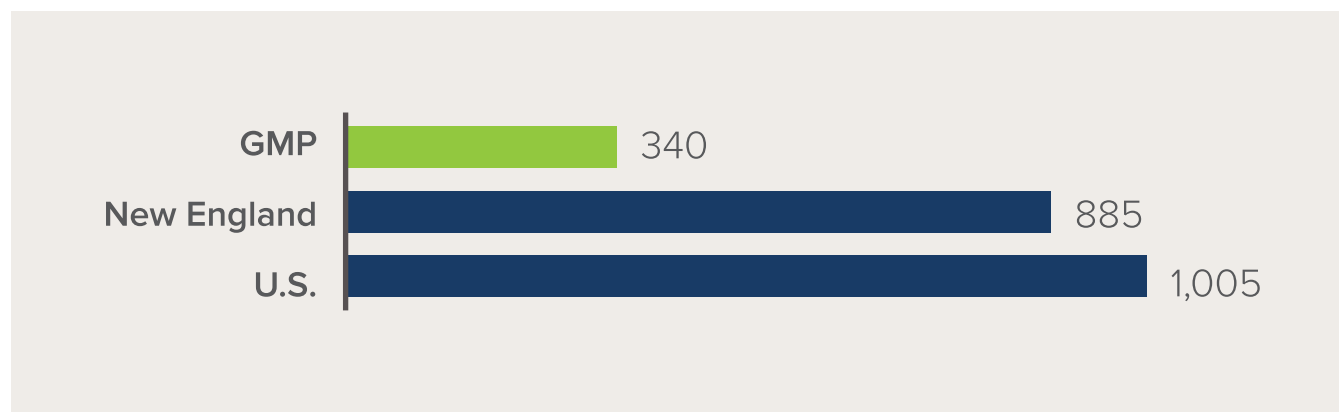
Meanwhile, the threat of climate change requires that the U.S. transition expeditiously to a low-carbon energy system that is efficient, renewable, and resilient. States have implemented a patchwork of renewable standards and carbon markets to advance this transition, and utilities must respond by changing the structure and operation of their systems. With the rise of large quantities of renewable power, and the advent of distributed energy resources like rooftop solar, electric vehicles, and demand flexibility, utilities are shifting from the traditional model of central power

dispatched one-way to customers, to a flexible and fluid system where both supply and demand are managed based on understanding of granular time- and location-specific value at different points on the grid.

IN VERMONT, GREEN MOUNTAIN POWER IS EVOLVING TO ENABLE AFFORDABLE LOW-CARBON ENERGY

Green Mountain Power (GMP) provides low-carbon electric service at affordable rates to 260,000 customers across central and southern Vermont.

- GMP serves approximately 220,000 residential, 41,000 commercial, and 70 industrial customers in a service territory spanning 7,500 square miles in Vermont.⁴
- GMP's retail rates are among the lowest from New England's investor-owned utilities.
- The carbon intensity of GMP's energy production is 340 lbs CO₂/MWh, less than half the New England average and one-third the U.S. average.
- GMP's 2016 generation mix included 40% hydro and 14% nuclear. An additional 18% was generated from renewable sources including wind, hydro, and solar, though GMP sold these renewable energy credits. The remaining 28% came primarily from other market energy purchases.
- GMP's customers give it a 94% satisfaction rating, and consistently identify affordable, low-carbon, reliable power and responsive customer service as their priorities.⁵

FIGURE 1AVERAGE RETAIL RATE FOR NEW ENGLAND INVESTOR-OWNED UTILITIES, 2015, CENTS/KWH⁶**FIGURE 2**CARBON INTENSITY OF ELECTRICITY SUPPLY, 2016, LBS CO₂/MWH^{7,8}

ECONOMIC CHALLENGES

However, GMP faces many of the same challenges as the rest of the U.S. utility industry, threatening long-term customer affordability and the ability to invest in the energy system of the future. Demand is forecast to fall by up to 180 GWh (4%) over the next 10 years.⁹ At current rates, this represents a \$20–30M reduction in revenues.

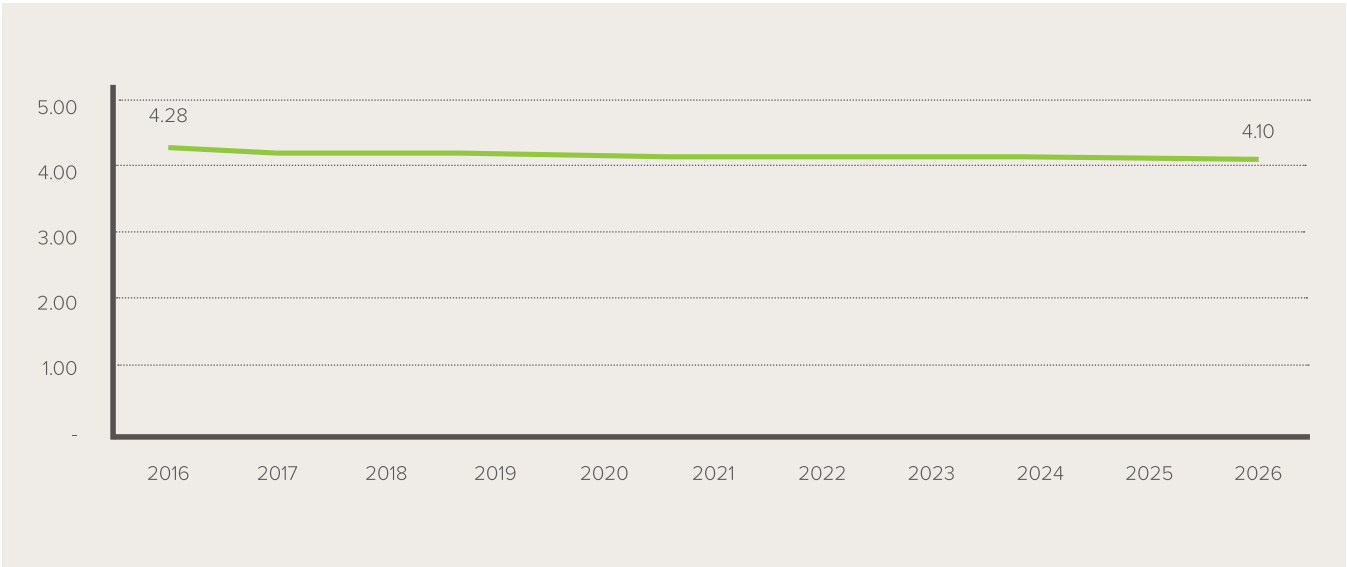
To make needed investments in a reliable energy system without imposing significant rate increases on customers, GMP will need to choose upgrades that lower system costs while supporting reliability. In particular, distributed energy resources (DERs) offer significant potential for greater system efficiency, as well as for new revenue streams to support the

regulated utility business model. If GMP is unable to limit rate increases as the costs of new energy technologies continue to decline, customers will have further incentive to defect from the grid, either by going off-grid entirely or choosing to generate more of their own energy, compounding the cost burden on customers who do not adopt DERs.

ENVIRONMENTAL GOALS

Just as GMP is facing this affordability challenge, it must transform to meet new requirements for renewable energy and decarbonization. Vermont has an ambitious mandate for a renewable energy standard (RES), requiring by 2032 that 75% of electricity come from renewable sources, that 10% come from distributed generation, and that utilities

FIGURE 3
GMP FORECAST ANNUAL ENERGY SALES (WITHOUT ELECTRIFICATION), TWH¹⁰



achieve fossil-fuel savings equivalent to 12% of their annual electric sales through energy transformation projects, such as replacing gas or oil heating systems with electric heat pumps, or replacing gasoline cars with electric vehicles.¹¹ The state has added the aspirational goal that 90% of Vermont's total energy needs come from renewable sources by 2050, including building and mobility energy needs.¹² In 2016, GMP's generation mix was 40% renewable after selling excess renewable energy credits. By retaining these credits in 2017, GMP planned to meet the 55% requirement with the existing generation mix.¹³

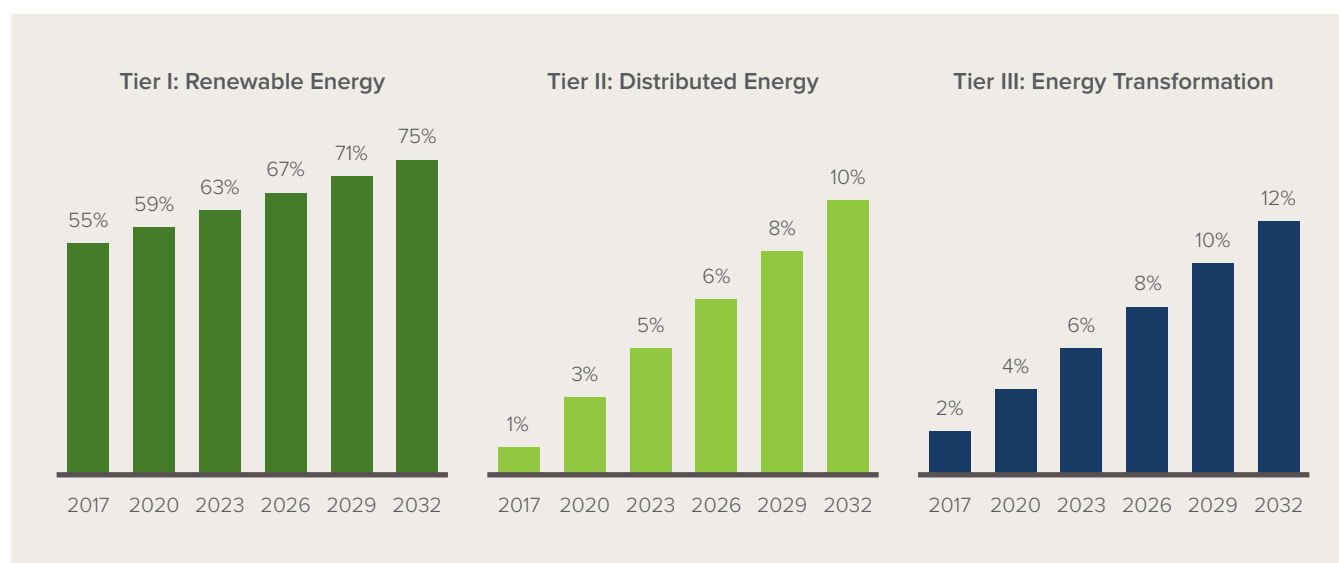
Achieving these high renewables targets will not only require sourcing large amounts of new renewable resources from across New England, but also operating a highly flexible, adaptive grid. This future energy system must be capable of balancing supply and demand with large volumes of variable renewable

resources, maintaining stable grid conditions on local circuits experiencing two-way flows of electricity, and integrating a wide, distributed network of responsive resources that is orders of magnitude greater than today's.

Vermont's unique "Tier III" requirement mandates utilities either source additional distributed generation above and beyond the 10%, or reduce customers' fossil-fuel consumption through energy transformation projects. These projects could take many forms, but at GMP they are likely to be driven primarily by fuel switching away from natural gas and petroleum to electricity for space heating, water heating, and vehicles. Satisfying these requirements with fuel switching will require tens of thousands of GMP customers to adopt heat pumps, heat-pump water heaters, and/or electric vehicles over the next 15 years.

FIGURE 4

VERMONT RENEWABLE ENERGY STANDARD REQUIREMENTS, % OF ELECTRIC SALES



CUSTOMER CHOICE

Increasing customer interest in DER technologies will require GMP to integrate and manage a wide array of new resources. In early-adopter states like Hawaii and California, customers are clamoring to install distributed solar, and many neighborhoods are starting to see significant clusters of EV ownership. While only 0.6% of U.S. residential customers were on a solar net-metering program in 2015, the Hawaiian utilities each had 8–12% penetration, and larger California utilities like San Diego Gas & Electric (SDG&E) and Pacific Gas & Electric (PG&E) had 3–6% penetration. These leading utilities are now experiencing novel challenges managing local grid stability in pockets of high solar penetration and balancing supply and demand for changing load shapes on their grids. Vermont is independently forecast to reach close to 7% penetration by 2030,¹⁴ and the state's RES mandate will require distributed generation equal to 10% of total sales by 2032, meaning GMP will face these same challenges in the coming years. It is clear that GMP will have to transform to meet a future where customers are active participants in generating and managing power on the energy system.

WHAT STRATEGIC GOALS SHOULD GMP'S NEW BUSINESS MODELS PROVIDE?

GMP has the opportunity to meet these challenges by pursuing new business models and customer programs that achieve four goals: keep energy

affordable for customers; advance the transition to a low-carbon energy system; maintain the high reliability customers expect; and provide sufficient revenue for investment in the energy system.

AFFORDABLE ENERGY

GMP's programs can support affordability by maximizing the potential of new resources and approaches to lower the costs of operating the energy system, and by developing new revenue streams to offset the underlying decline in demand for electric power.

LOW-CARBON SYSTEM

Programs should support efficient use of energy, high penetration of renewable generation, and reduced fossil-fuel consumption across a wide range of end uses.

HIGH RELIABILITY

GMP's customers expect very high reliability and service quality. New offerings cannot compromise that reliability and in fact must adapt to maintain this service level as the energy system shifts to become less centralized and more flexible.

SUSTAINABLE INVESTMENT

GMP can diversify sources of revenue through new programs so it is less dependent on volumetric sales of electricity and can find new ways to avoid or defer unnecessary capital investments in grid infrastructure, to maintain funds for the necessary investments in a clean, distributed, flexible energy system.

02

WHAT HAS GREEN MOUNTAIN POWER DONE SO FAR?



WHAT HAS GREEN MOUNTAIN POWER DONE SO FAR?

GMP is reimagining its business model from an electric utility to an “energy transformation company,” designed to deliver low-cost, clean, innovative energy services to customers. As part of the process of realigning the organization with its customer’s interests at the fore, GMP became the first utility in the world to be certified as a B Corp.¹⁵ This certification institutionalizes and formalizes GMP’s commitment to customers and stakeholders through legal steps to hold directors and officers of the company accountable to these interests.¹⁶ GMP has also taken a number of specific steps to build customer-facing energy products and services beyond standard electricity service.

CURRENT OFFERINGS

GMP has directly introduced a suite of innovative offerings to individual customers to advance the transition to a reliable low-carbon energy system and return benefits to all customers.

These include individual energy-efficiency, storage, and EV products:

- **Cold-climate heat pump and heat-pump water heater** – efficient electrification technologies to replace natural gas or fuel oils with leased, GMP-owned equipment. These pilots leverage Efficiency Vermont incentives, and include discounts for utility dispatch of some grid-interactive heat-pump water heaters.
- **Tesla Powerwall** – offering batteries paired with a bidirectional inverter to residential customers through sales agreements or on-bill tariff riders. Customers have the option to grant GMP shared access to the equipment to lower system energy costs, as well as capacity and transmission expenses, in exchange for a bill credit.

WHAT IS A B CORP?

B Corps are for-profit companies that have committed to meet high standards for social and environmental performance, accountability, and transparency. These companies’ performance against these standards is certified by an independent nonprofit. B Corps also amend their governing documents to ensure by law that management considers the interest of all stakeholders—not just shareholders—when making decisions.

GMP is the first utility in the world to achieve B Corp certification. In addition to demonstrating a commitment to environmental performance, this status helps address a persistent concern with the traditional utility business model—that it incentivizes increased capital expenditure even when that is not in the best interests of customers or environmental performance. As a B Corp, GMP’s commitment to considering those interests equally alongside shareholder returns is now enshrined in its legal structure.¹⁷

- **EV charging infrastructure** – partnership with EVgo to build infrastructure in residential, workplace, and public spaces, and to subscribe customers to a charging network membership.
- **Home EV-charging incentive** – offering customers a free level 2 EV charger if the customer subscribes to unlimited monthly off-peak charging for \$29.99/month. Customers who opt to charge during peak events pay \$0.60/kWh, and peak events occur 5–10 times per month.
- **Electric thermal storage pilot** – campus pilot of grid-interactive electric thermal storage, which uses off-peak electricity to store heat in ceramic bricks for use during on-peak times or as a heating source.

- **eControl** – customers with ductless heat pumps can receive a free Sensibo Wi-Fi-connected control unit and gain new control functionality through a smart phone app. GMP can adjust the set points on these devices for load shifting benefits.

GMP also provides holistic bundles of products for residential customers:

- **Off-grid program** – a holistic offering to plan and manage energy for rural customers going off-grid, including a home energy-efficiency audit and energy system controls, with a customizable package of solar, battery storage, and a back-up generator.
- **eHome** – a holistic home-energy audit and energy offering with customizable bundles of the services listed above and other partnerships, including weatherization, solar, electrification of space and water heating, and mobile energy-management apps. This service will evolve over time to address additional aspects of home energy needs, potentially including self-generation and transportation.¹⁸
- **eWater** – a bundled offer for residential customers including a Nest thermostat and grid-interactive control for electric water heaters, to be dispatched by GMP to meet system needs and lower costs.

INNOVATING TOWARD VERMONT'S PRIORITY OUTCOMES

Each of these programs helps support GMP's objectives to keep energy affordable, advance the transition to a reliable low-carbon energy system, and provide sufficient revenue to support investment in the energy system.

AFFORDABLE ENERGY

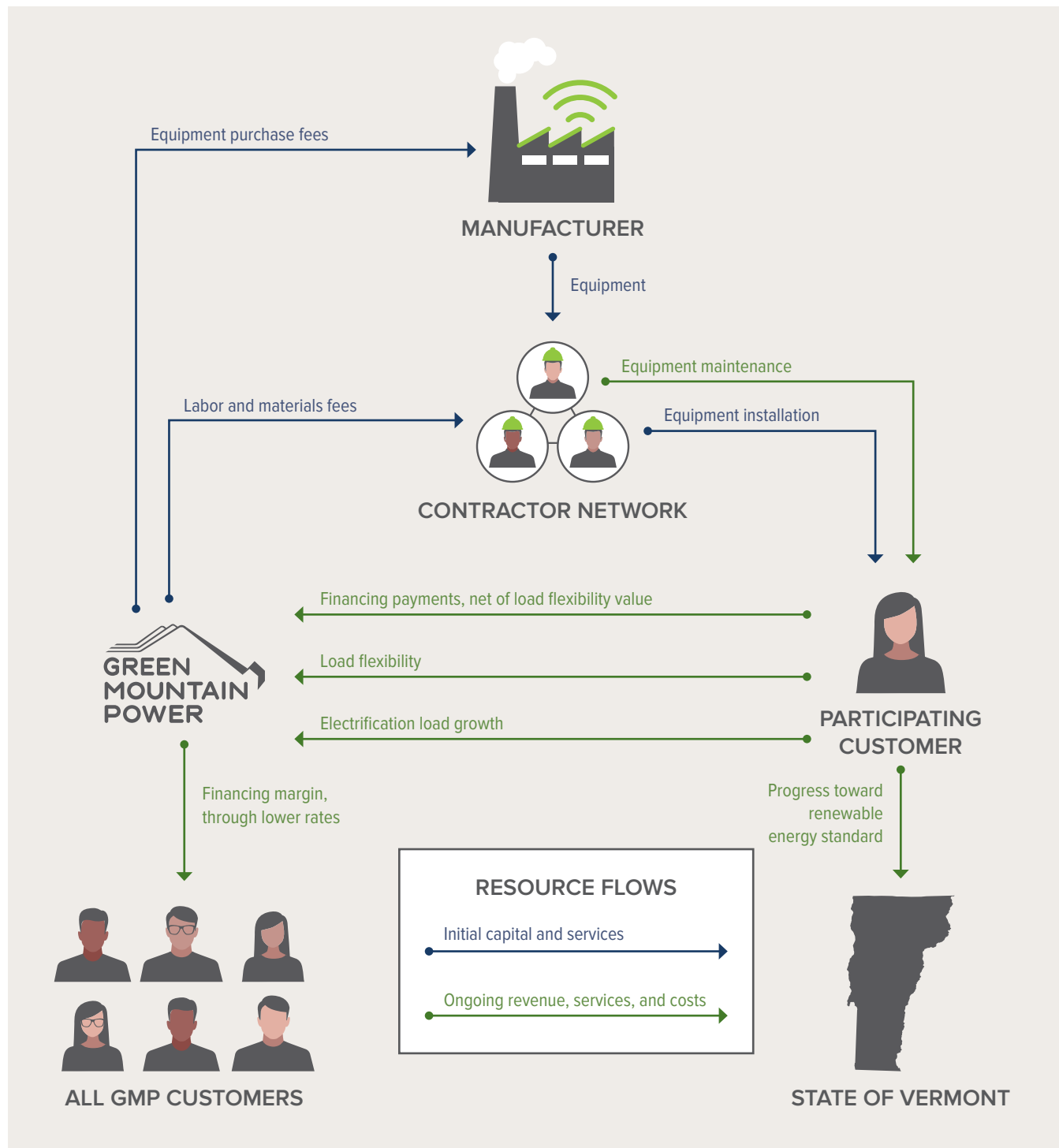
The offerings reduce energy costs for participating customers by generating savings on their energy bill, and through discounts for services that their devices

can provide to the grid in the Powerwall offering. However, GMP's key innovation is to structure pilots that also keep energy affordable for all customers, including those who do not directly participate in programs. Financing or sales payments to GMP exceed the customer-funded cost of equipment and program administration, returning a margin that helps offset rates for all customers. In addition, the heat-pump and water-heater programs add new electricity sales by switching away from gas and oil appliances, producing marginal rate revenues in excess of marginal power costs, which mitigate rate pressure for all customers.¹⁹ Overall system costs decline from load flexibility in the Powerwall and water-heater programs as well as the energy efficiency produced by the space- and water-heating pilots, further reducing costs for all customers.



FIGURE 5

STYLIZED ILLUSTRATION OF RESOURCE FLOW FOR PARTICIPANTS AND NONPARTICIPANTS IN GMP'S INNOVATIVE PILOTS



LOW-CARBON SYSTEM

These offerings are all designed to advance the transition to a reliable low-carbon energy system. Because of the low carbon intensity of GMP's power supply, electrification of space and water heating reduces fossil-fuel usage, creating "beneficial electrification" for the system as a whole through strategic fuel switching that reduces greenhouse gas emissions.²⁰ It also satisfies Tier III requirements under the state's Renewable Energy Standard. Efficiency offerings reduce the need for generation, and the carbon associated with it,²¹ and Powerwall and water-heater offerings with load-flexibility access for GMP help create a dynamic energy system capable of integrating more renewable energy.²²

HIGH RELIABILITY

Offerings that include GMP management of flexible demand and storage have the effect of

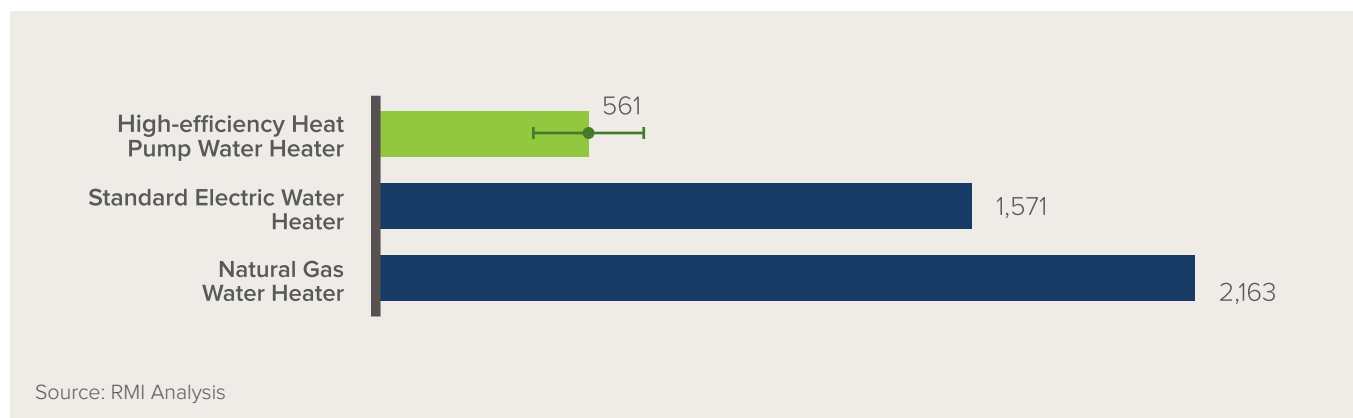
supporting system reliability by reducing costly peak loads and helping GMP integrate new, more variable, less centralized loads. The Powerwall offering provides up to four hours of backup power for participating customers.

SUSTAINABLE INVESTMENT

These new offerings enable GMP to test new revenue models for the utility, and are designed to diversify revenue sources beyond electricity sales. They support revenue stability as underlying demand decreases. Each cold-climate heat pump, heat-pump water heater, and electric vehicle adds an estimated \$600, \$150, and \$300, respectively, of annual revenues through load growth.ⁱⁱ At scale, these offerings can help generate funds for needed investments in a clean, distributed, flexible energy system without overburdening customers.

FIGURE 6

ANNUAL CO₂ EMISSIONS FOR TYPICAL RESIDENTIAL WATER HEATERS IN GMP SERVICE AREA,ⁱ LBS CO₂



ⁱRange considers very high efficiency (e.g., uniform energy factor [UEF] of 3.55) or modest average efficiency of 2.13 as modeled by NRDC for Vermont heat-pump water heaters; compared to natural gas water heater with UEF of 0.81

ⁱⁱRMI analysis, assuming \$0.15/kWh and 4 MWh annual consumption for each cold-climate heat pump, 1 MWh for each heat-pump water heater, and 2 MWh for each EV

PROGRESS IN REACHING BUSINESS MODEL GOALS THROUGH CURRENT INNOVATIVE OFFERINGS

The current set of innovative offerings are all less than two years old, and achieving meaningful impact for affordability, carbon, and reliability goals will require dramatic increases in customer participation. The current programs include approximately 6,000, or 2.7% of the total 220,000 residential customers who have participated in any innovative offering.

About 1,500 cold-climate heat pumps have been deployed, although over 30,000 may be needed by 2026 to meet targets under Tier III of the Renewable Energy Standard.ⁱⁱⁱ Meeting Vermont's transportation goals will also require major increases in scale. To reach the state's goal of 10% electrification of the passenger vehicle fleet by 2025,²³ the number of electric vehicles in GMP's service territory will have to increase by a factor of 20, from 1,500 today,^{iv} to over 32,000.^v



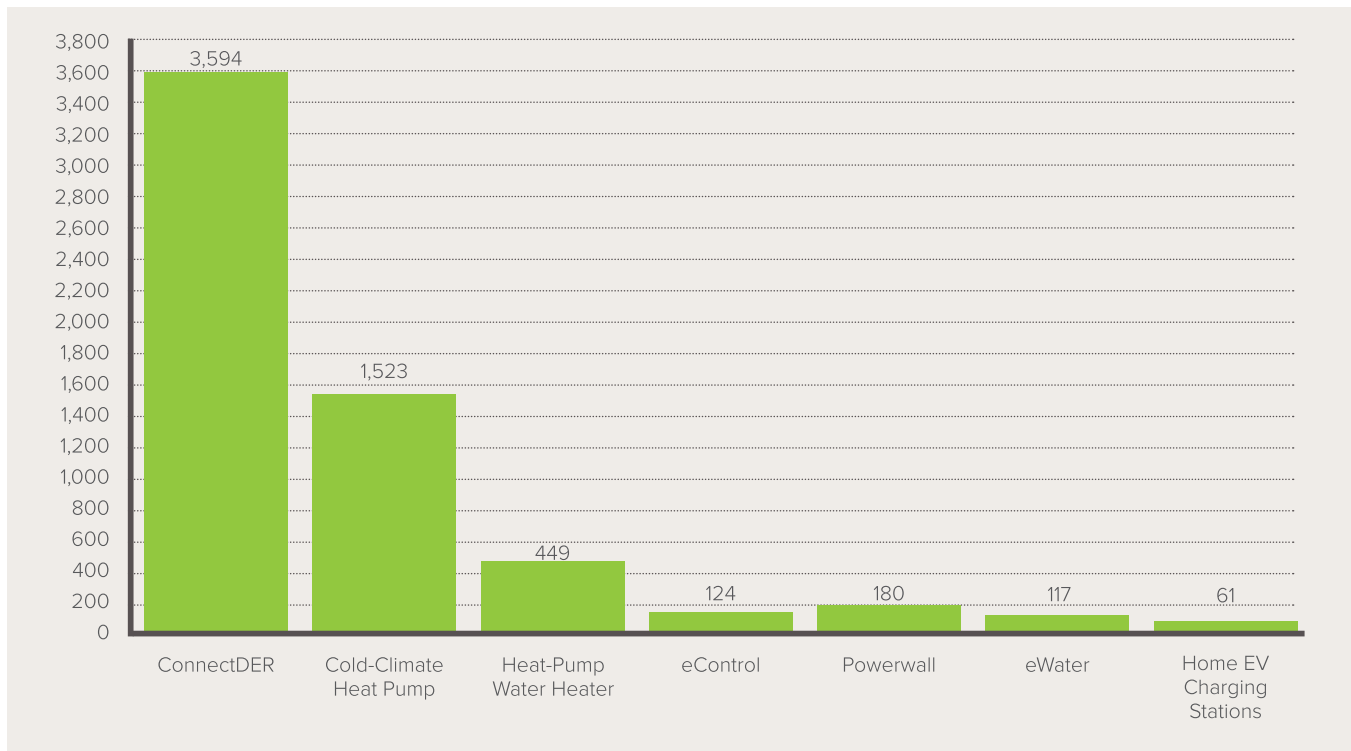
ⁱⁱⁱ Estimated assuming cold-climate heat pumps (CCHPs) comprise one quarter of GMP's 8% Tier III requirement in 2026, out of 4.1 TWh projected electricity sales; each CCHP is credited for 5 MWh energy transformation, and GMP and Efficiency Vermont each receive 50% program credit for CCHP deployment.

^{iv} Green Mountain Power estimate

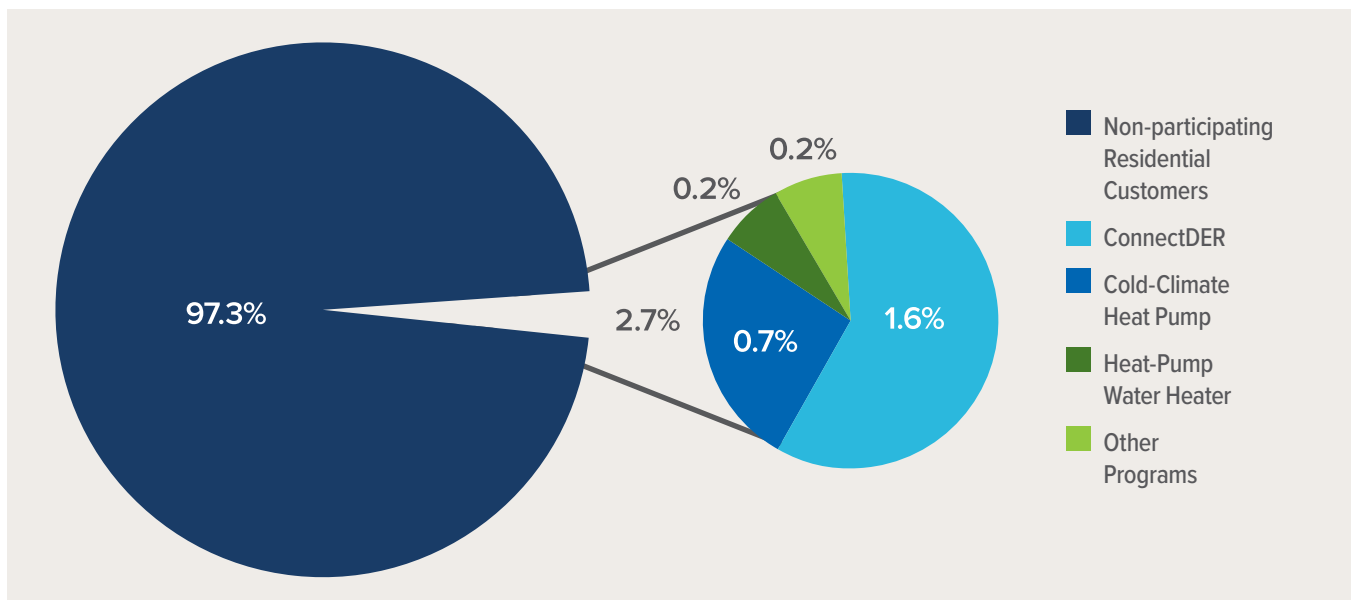
^v Calculated by applying the 10% target to the Vermont Agency of Transportation forecasts and estimating GMP's portion of the state total as 73%

FIGURE 7

CURRENT RESIDENTIAL CUSTOMERS IN EACH GMP INNOVATIVE PILOT (AS OF MARCH 2018)

**FIGURE 8**

SCALE OF CURRENT GMP PILOTS RELATIVE TO TOTAL RESIDENTIAL CUSTOMER BASE





GMP's initial offerings are opportunistic, with most focused on specific technologies or bundles for unique situations, like the off-grid program. GMP's offerings can expand in scope to address gaps in the end uses targeted, the customer groups served, and the range of value streams available for participants and nonparticipants. The current set of pilots primarily supports residential customers, some municipal towns and campuses, and large commercial customers, creating opportunities to design offerings that create value for small and medium business and low-income residential customers. GMP has tested power sharing through its Powerwall program and eWater program, and can expand the number of flexibility offerings to other end uses. Ultimately, GMP can achieve meaningful impact by both increasing the size, or scale, of these programs and expanding the scope and reach of offerings.

03

HOW CAN GREEN MOUNTAIN POWER SCALE ITS OFFERINGS?



HOW CAN GREEN MOUNTAIN POWER SCALE ITS OFFERINGS?

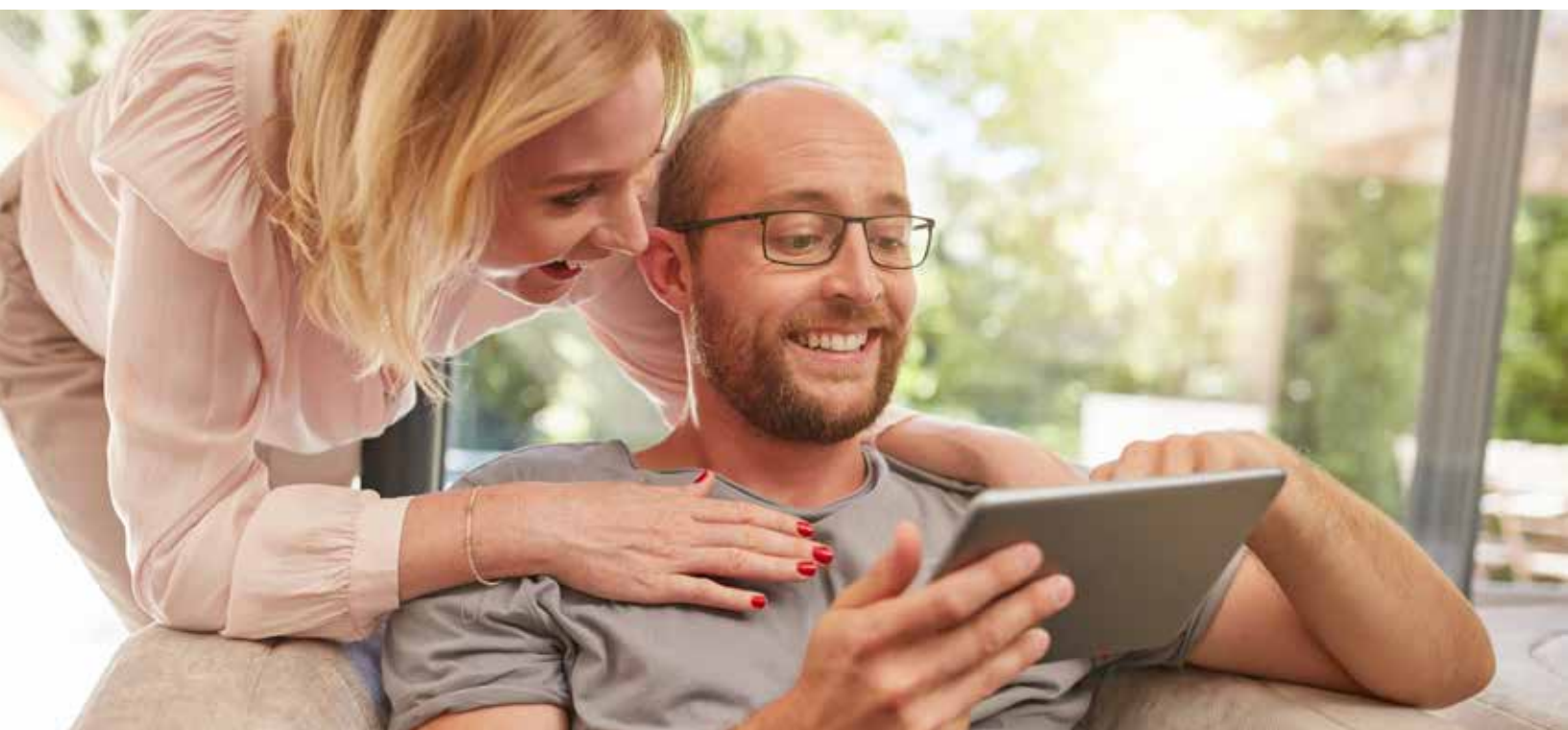
GMP CAN ADOPT NEW APPROACHES TO INCREASE THE SCALE OF PROGRAM PARTICIPATION IN ITS CURRENT OFFERINGS

Achieving GMP's business goals and its share of Vermont's environmental goals will require the utility to execute at scale, reaching vastly more customers with its innovative offerings. The challenge facing GMP is the need to transform the relation it stands in to each customer from energy provider to services provider, creating the connections needed to drive adoption of new offerings.

To achieve its vision, GMP will need to significantly ramp up programs over the next 10 years, by as much as ten- or twentyfold. In this section we present four ways GMP can build on the programs described above to ensure that more customers participate in

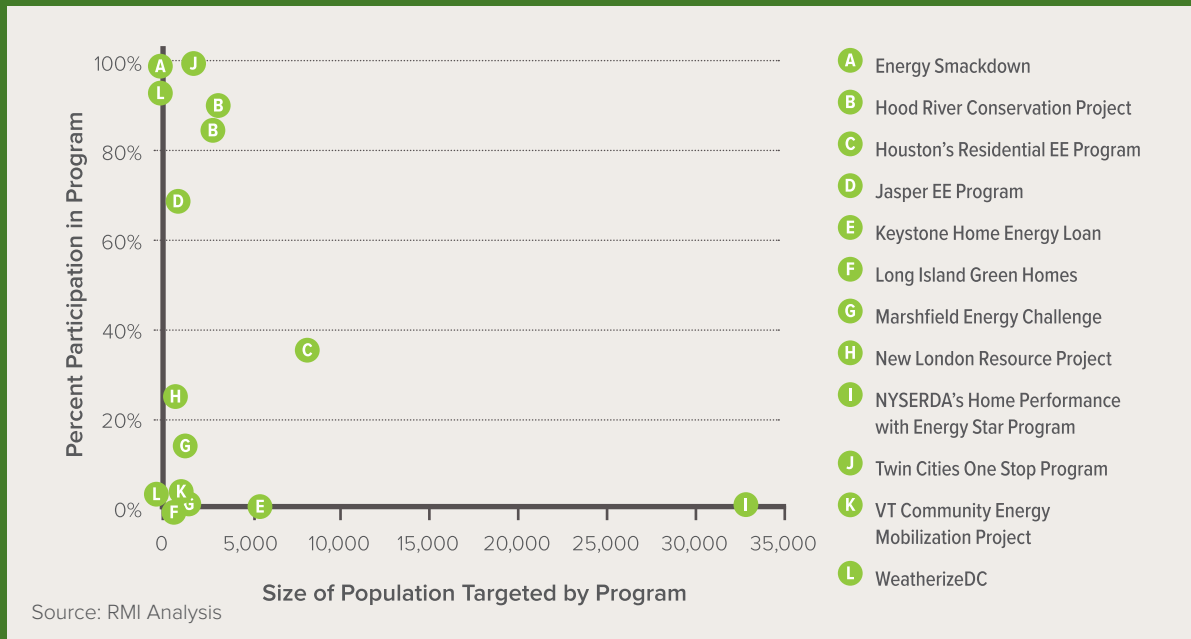
programs. For each, we describe the recommendation, how it would contribute to scaling, and some examples of similar offerings elsewhere, if they exist. The four recommendations are:

1. Ramp up efforts to understand customer needs, segment into customer groups, and use those insights to inform product development, sales, and marketing
2. Test high-saturation adoption opportunities that leverage tight-knit social networks, bulk purchase structures, and well-timed default customer offers
3. Design bundled offerings to overcome confusion and leverage integration
4. Test alternative financing options that support DER affordability



DRIVING HIGH PARTICIPATION IN UTILITY DER PROGRAMS

There are limited successful models of robust scaling for utility DER programs to point to across the country. Evidence from a wide set of home retrofit programs demonstrates that, as programs scale, adoption rates tend to suffer.



However, three tactics appear to mitigate the impact of this effect for successful utility programs:

- Default enrollment structures:** By opting customers into programs by default, utilities can dramatically increase the number of participants, with participation rates as high as 85% for behavioral energy-efficiency programs,²⁴ and 90% for time-of-use rate design experiments.²⁵ However, these tactics tend to drive small changes in behavior of less than 10% savings,²⁶ rather than encouraging purchasing behavior for large equipment and drastic changes to home or business envelopes. Nonetheless, GMP can leverage lessons suggesting more default enrollment structures in how it frames and markets programs, as the company has already done for electronic billing. By presenting offerings as “default service” at the time of new customer enrollment, GMP can set the expectation that part of GMP service is enrollment in an eHome bundle. We recommend piloting this type of framing and marketing to test how GMP customers respond, given the utility’s customer-centric focus and concerns about how customers will respond to this framing.
- Neighborhood-based programs:** Some cities and utilities have found 80%+ participation from highly marketing-intensive programs that use social networks and word-of-mouth marketing within a small, geographically targeted community to drive results.²⁷ These are often limited to relatively small, dense areas, but GMP can leverage lessons learned from these programs in partnerships with neighborhoods and other small, tight-knit communities.
- Leverage competitive structures for contractors and vendors:** Southern California Edison is working with Nest to meet the excess demand arising from the shutdown of its Aliso Canyon plant through a virtual power plant for 50,000 thermostat customers, suggesting that where vendors have strong customer relationships or brand, they can support a utility’s customer acquisition.²⁸ GMP can use vendor RFPs or support contractor training and incentives so that such competitive actors are motivated to support a continued customer relationship on behalf of GMP’s eHome program.

RAMP UP EFFORTS TO UNDERSTAND CUSTOMER NEEDS, SEGMENT INTO CUSTOMER GROUPS, AND USE THOSE INSIGHTS TO INFORM PRODUCT DEVELOPMENT, SALES, AND MARKETING

UNDERSTAND CUSTOMERS

GMP has already made a commitment to transform to a customer-centric organization through its decision to become a B Corp and branding itself as Vermont's energy transformation company. When the utility offered only monopoly electricity service, it could best serve customers by assuming they would behave as relatively similar, demand-inelastic consumers of energy. As the company transitions to offerings dependent on customer choices, it will require a deeper understanding of the current and changing needs of customers in order to design, market, and deliver energy transformation products and services.

GMP has already begun the process of identifying and understanding customer needs through outreach and technology investments. GMP actively and regularly surveys customers to better understand their needs at a group level, finding that their top priorities are cost, carbon, and reliability. Additionally, GMP has installed smart meters for almost 100% of customers,^{vi} and has used data about abnormally high summer or winter peaks to inform some initial pilot targeting and when it does direct outreach regarding usage anomalies.

However, GMP does not collect data in surveys specific to groups of customers or individuals, nor does it systematically use existing smart meter data to design and target offers. Today's customers expect

more: they are used to positive experiences with online retailers that provide tailored products and personalized advice, and are more easily frustrated by antiquated systems or interactions that include irrelevant or poorly timed suggestions or offers.^{vii} GMP is well positioned to leverage existing smart meter data and collect new lifestyle data to better meet these expectations and design and deliver offerings that anticipate customers' needs. We recommend the following steps, in order of priority and likely ease for GMP:

1. Segment customers using existing smart meter

data: Smart meter data provides observable information about a customer's energy needs and likely ability to find value from offerings that reduce or shift usage. GMP can begin with analytics to determine and segment customers based on their typical peaking profiles, differentiating customers into discrete groups based on the time of day and size of their typical peak (e.g., "evening," "morning," "dual," "always" peakers). Pacific Gas & Electric, a large California IOU, uses such usage-based customer segmentation and targeting for its energy-efficiency and demand-response programs.²⁹

2. Collect diverse data about customer priorities:

Customers can surprise utility program managers with their needs, especially when utilities assume that the preferences of one community apply to another. For example, Duke Energy assumed that Asheville residents would prioritize affordability to meet demand growth around the city, but found that the community wanted a more dispersed, community-driven set of options than the additional 190 MW of natural gas capacity proposed by the

^{vi} FEIA Form 826, November 2016 details: 224,409 residential, 38,115 commercial, 43 industrial meters installed over time, out of 262,315 total current customers as of 01/01/2017 (GMP Fact Sheet)

^{vii} 41% of consumers believe their digital experience with their energy providers is more difficult than with other types of providers. Accenture, "The New Energy Consumer: Unleashing Business Value in a Digital World," 2015, <https://www.accenture.com/us-en/insight-unleashing-business-value-main>

utility.³⁰ GMP can strategically solicit input from customers during sales interactions and through focus groups that provide another lens on the data already collected in regular surveys.

3. Assemble additional demographic and psychographic data: Other than smart meter usage data, GMP’s customer-specific information is limited to a small number of attributes—the customer’s name, contact information, tariff choice, past participation in programs, and billing history. Where cost-effective, GMP can collect publicly available or customer-specific data, or work with a third party to purchase demographic and customer decision-making (psychographic) data. This kind of data can be a key input to building customer personas and cohorts and better understanding customer needs.

4. Map locational needs for DER services: Although GMP anticipates limited new capacity needs given its declining load forecast, Vermont’s ambitious carbon goals may require strategic investment in DERs to support renewables integration at higher penetrations.³¹ GMP has begun the process of mapping distribution-system upgrade needs and constraints through its Solar Map, which details operational and proposed projects by substation and circuit and lists a distribution circuit rating for new interconnections. GMP can also identify which customers are within areas that are currently or are projected to be constrained or experiencing higher locational marginal price (LMP) volatility on the transmission system. Where there are economic incentives to place DERs in certain areas, GMP can provide discounts or other offers to drive adoption in particular locations.

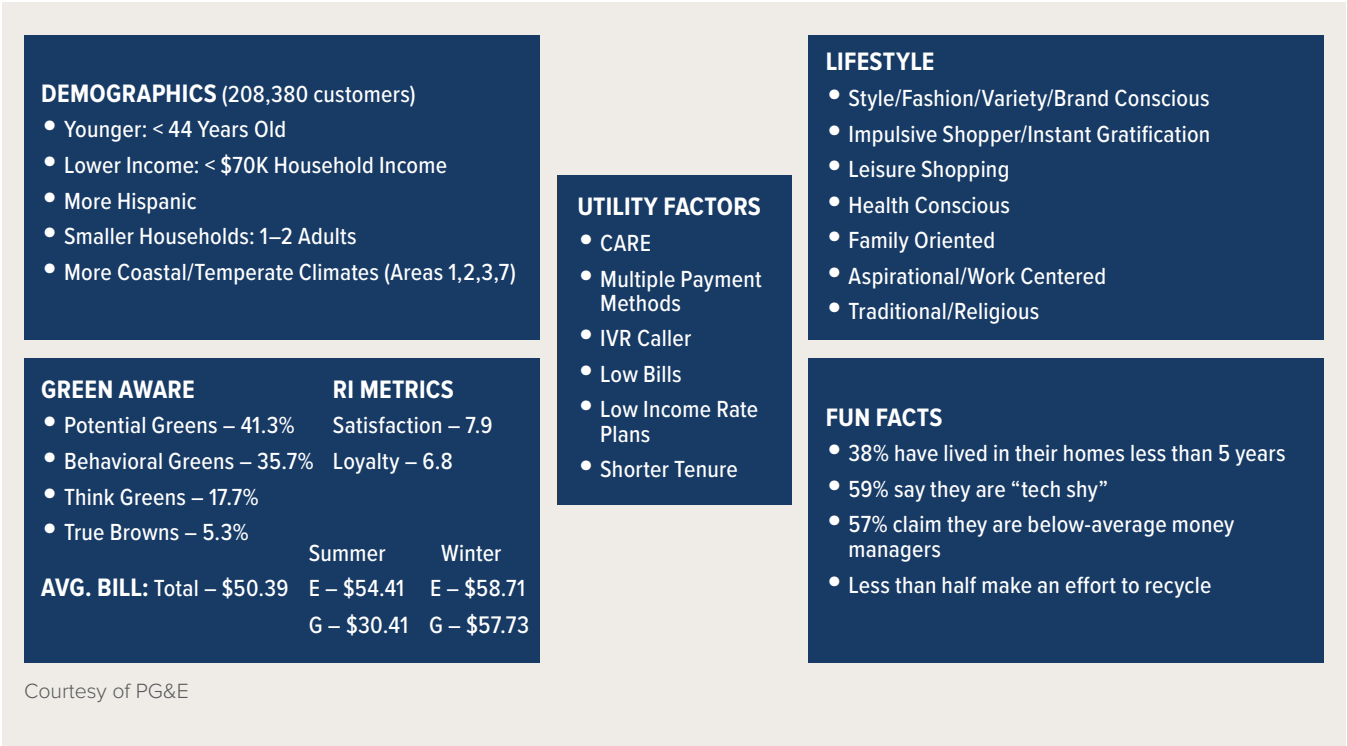
GMP can also create feedback loops to refine the way data is used over time, as additional data is collected—using categories like energy use, payment style, key demographics, past participation, service experience, or other key determinants—by developing algorithms to reveal meaningful patterns. Based on the data that GMP collects and analyzes, it can package, build, market, and sell more customized, relevant customer offerings. If GMP does not already have team members that provide this type of assessment and analysis, the utility can designate this responsibility or build this capacity within the team.

SEGMENT CUSTOMERS INTO PERSONAS AND COHORTS

To create relevant offerings, GMP can use customer personas (for residential customers) and cohorts (for business customers) to help develop a better understanding of specific customer problems and how to solve them. Customer personas are archetypes that represent the key traits of a segment of customers, defined by behavioral, attitudinal, and personality characteristics. Cohorts are similar to customer personas, but for groups of small–medium businesses with similar operating styles, motivators, industries, needs, and opportunities (e.g., gas stations, convenience stores, etc.).

Most consumer-facing companies, including utilities like PG&E and Florida Power & Light,³² use a handful of key personas, based on a composite picture of the archetypal customers’ behavioral, attitudinal, and personality characteristics; emotional levers; the processes and channels used for buying products and engaging with the utility; and the decision criteria that matter the most for them. Figure 9 shows an example of one of PG&E’s 11 customer personas, “Style Seekers,” “younger, lower-income aspirational customers who focus a lot on looking good”.³³

FIGURE 9
USING CUSTOMER DATA THROUGHOUT THE PRODUCT PIPELINE



TAILOR PRODUCT DEVELOPMENT, SALES, AND MARKETING USING CUSTOMER ANALYTICS

Individual customer data and group personas only support scaling if they are incorporated throughout the product pipeline, from initial idea to marketing plan to customer interactions. Figure 10 outlines key opportunities throughout offering development to drive scaling through better understanding of customers as individuals and groups.

Each marketing campaign and sales interaction offers an opportunity for GMP to assess its success for different personas and cohorts, and then use that information to refine the segments for future use in product development, new campaigns, and sales interactions.

TEST HIGH-SATURATION ADOPTION OPPORTUNITIES

As GMP builds its sales and marketing capacity, it faces the challenge of changing its customer relationships from static bill interactions to those that drive retail products and services sales. GMP has high customer satisfaction ratings, but given its small staff and distributed customer base, the company will need to find high-leverage, more proactive outreach structures for customer enrollment.

Using “high saturation” opportunities, GMP can experiment with new types of interactions with customers, different social structures beyond individual outreach, different timing structures, or all of the above to drive adoption.

FIGURE 10

USING CUSTOMER DATA THROUGHOUT THE PRODUCT PIPELINE



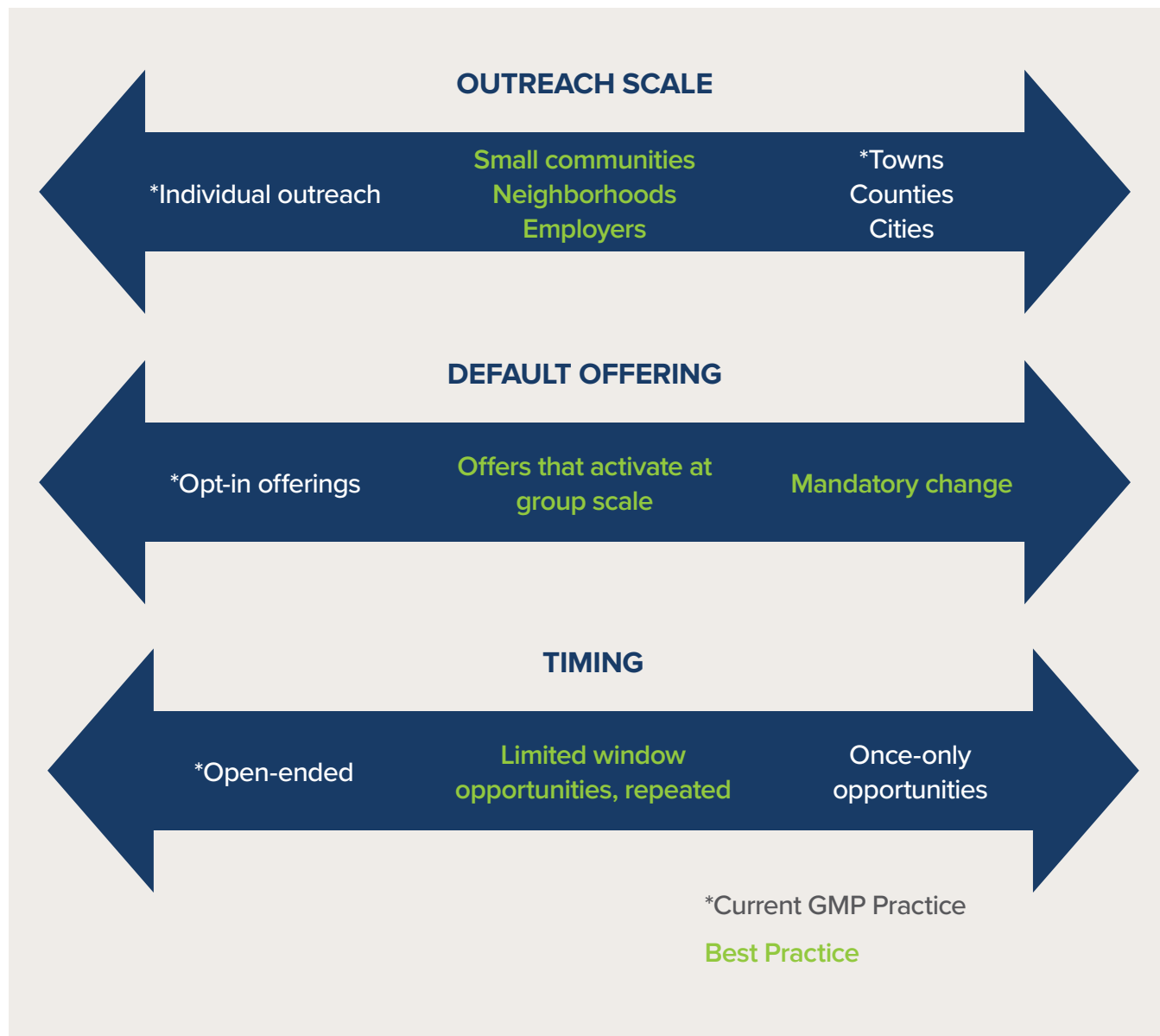
- **Social structure:** the current set of pilots focuses on individual outreach or municipal outreach, but outreach can also focus on smaller groups like neighborhoods or employers.
- **Type of interaction with customer:** customer interactions range in the level of choice or default offered from entirely mandatory changes, like those that typically happen in rate design, to offers that only activate when multiple participants opt in, like bulk purchases, to fully opt-in offerings, like the current set of innovative pilots.

- **Timing:** Timing options range from open-ended offers, like the current set of pilots, to limited, repeated windows of opportunity, to once-only opportunities.

As GMP tries to drive rapid scaling, it can experiment along each of these axes to determine the structure that best encourages adoption, balancing faster scaling opportunities with concerns about customer choice, independence, and privacy.

FIGURE 11

HIGH-LEVERAGE SCALING OPPORTUNITIES FROM DIFFERENT OUTREACH, DEFAULTS, AND TIMING-DESIGN CHOICES



TIGHTLY KNIT SOCIAL NETWORKS

GMP has already begun testing “high saturation” opportunities through its partnerships with individual communities such as Rutland. GMP built a solar and storage installation on a Rutland brownfield, located its

energy advisory services in the Energy Innovation Center in downtown Rutland, and is driving adoption of customer programs in collaboration with other communities.

Community efforts like those in Rutland can leverage the power of local leaders to spread information and use the power of social networks to spread adoption.³⁴ Studies of solar programs in Connecticut found that the best predictor of whether a homeowner adopts solar is the presence of solar panels on a neighbor's home, suggesting that spatial peer effects might be used to drive adoption of other DERs, as well.³⁵ To take advantage of these effects, GMP can experiment with partnerships at different scales, where identity may be stronger—as with campuses, neighborhoods, community-based organizations, churches, schools, or employers—to determine which might best leverage community relationships to drive adoption of particular offerings.

CUSTOMER INTERACTION – BULK PURCHASES

To leverage the social connections within these peer groups, GMP can test group-sales structures, like bulk purchases. These structures use the power of social pressure to spur participation, with a given “deal” only activating at scale, which encourages participants to get members of their network to participate. Bulk purchases for DERs originated in Solarize campaigns, which include a competitive selection process to choose contractors, an outreach effort led by local government or community organizations, and a limited-time offer to drive people to act quickly. Solarize programs are offered across the country, and DOE Solar Energy Evolution and Diffusion Studies researchers found lower customer acquisition costs (system prices 16% lower than market rate) and higher levels of customer adoption (20% of those who installed were previously not interested in solar) for one model Solarize program.³⁶ Bulk purchases reduce costs at the community scale as well: a recent RMI-led community-scale solar procurement for small utilities in New Mexico found that by increasing the portfolio size from 1 MW to 20 MW, the utilities realized a 6–12%

decrease in costs.³⁷ The bulk purchase model has been successfully extended to other technologies, like electric vehicles.³⁸

TIMED DEFAULT OFFERS

In addition to using social connections to drive action, some bulk purchase campaigns use a limited-time offer to overcome “myopic procrastination,” the tendency to think that the future holds more resources.³⁹ By framing offers as a default offering at critical points in the customer life cycle, GMP can encourage higher levels of adoption.

Better timing of offers can be as important as the offers themselves, the messages, and the messengers. GMP can pilot marketing and outreach programs that target customers at times when they might be more likely to participate in offerings:

- Target new account activations for offers, because of higher propensity to adopt and opportunity to shape the relationship with GMP. Each year, approximately 3.8% of GMP's customers are new accounts, starts/stops, or moves, and these customers are already interacting with GMP to open their accounts.^{viii} Recent home purchases drove 26% of home renovations, and preparation for resale led to 13% of renovations.⁴⁰ It's a natural point of outreach, when the relationship can be established as more than just electric service delivery.
- Through employer-based programs, target offers when workers receive a raise, promotion, or new job, and have more disposable income available. This strategy of default reinvestment at promotion has been used successfully to incent workers to increase contributions to retirement savings at key career moments.⁴¹

^{viii} Assumes that 10,000 of 262,000 accounts are new accounts, customers starting or stopping existing accounts, or moves within GMP's service territory. (Green Mountain Power)

DESIGN BUNDLED OFFERINGS TO OVERCOME CONFUSION AND LEVERAGE INTEGRATION

GMP is likely to face significant challenges in driving the adoption of complex, largely invisible energy products and services. In addition to efforts to scale up through investment in marketing and sales, customer analytics, and high-saturation opportunity experiments, GMP can use the simple and cost-efficient tools of choice architecture to influence customer decision-making toward adoption.

GMP already provides concierge-type, “one-stop shop” services at its Energy Innovation Center in Rutland for residential customers, and through energy advising for large commercial and industrial accounts and the off-grid program. Most recently, GMP launched its eWater bundle in May 2017, offering a Nest thermostat along with controlled electric-resistance water heating for \$0.99/month. These offerings are already vetted for technology and integration issues. As GMP continues to offer an increasing number of customer programs, bundling and one-stop shopping will be important strategies to avoid dilution of each program’s value amid an ever-expanding menu of options for customers. In addition, GMP is evaluating

options to roll out new bundled offerings for specific customer needs as part of its innovation pipeline. These include:

- **Energy Saver Bundle** – includes a heat pump with control, Nest thermostat, LEDs, Nest Protect, and a water-heater control, and includes electricity for a flat monthly price that varies based on the customer’s usage tier
- **Reliability Bundle** – same as Energy Saver but includes a home battery system

GMP also leverages rebates offered through the state’s energy-efficiency utility, Efficiency Vermont. Continued coordination in marketing and incentive offers between GMP and Efficiency Vermont can simplify the experience for customers who may be pitched multiple offers from different entities, and ensure a customer is exposed to the full range of available opportunities whether they initiate contact through one organization or the other.

GMP can enhance the effectiveness of those offerings by using improved customer analytics to create strategic, staged bundles of product and service offerings based on customer needs and



usage patterns that are delivered through concierge services. In building these bundles, GMP can leverage best practices from across the utility and consumer-products industries:

- **Support staged engagement** – GMP’s current offerings are mostly individual technologies offered à la carte. Customers may find these individual offerings more accessible than bundles, because one technology will have a lower up-front cost than a basket of offerings, and customers may initially see the need for only one product or service, especially during a transaction like equipment replacement or remodeling.⁴² Once GMP has changed the customer relationship through the initial offering, it can then create pathways from individual offerings to the rest of the bundle, through staged good/better/best options and program design that includes maintenance checks as an opportunity for follow up sales.
- **Keep it simple and personalized** – Customers should initially face a limited number of easy-to-understand offerings or packages that are relevant for their needs. Although more options increase the chances of offering a preferred match to the consumer, they also place a greater cognitive burden on consumers because of the additional need to evaluate options.⁴³ Online and energy-advisor referral services can leverage data from customer analytics and persona efforts to present the options most likely to support customer needs.
- **Build integrated packages with strategic defaults** – GMP can continue to build and test bundles that support participating customers, all customers, and grid needs, and that integrate technologies with each other and with a customer’s particular usage patterns. By starting with typical customer usage profiles based on existing smart meter data, GMP can build packages based on the set of technologies that best serves customer needs.



It can consider a broad range of services and products to include in packages, including mobility and flexible load options, as well as partnerships with Efficiency Vermont and solar developers. Customers are more likely to choose the options presented that are preselected as a default, so use default options that support higher adoption levels or specific goals.⁴⁴

- **Concierge services** – GMP already provides concierge-type, one-stop shop services to help address customer inquiries and to walk customers through the process of selecting and implementing one of its eHome offerings. GMP can provide back-end customer data systems that connect to the customer analytics and personas work, helping to reveal the usage, demographic, psychographic, and grid-location information about each customer to GMP’s energy advisors. In addition, advisors should also have access to the recommended packages for each customer, and to customized engagement tools that align with different customer needs and “entry points” (e.g., “my water heater broke,” “my house is drafty,” “I’m interested in going off-grid,” etc.).



TEST ALTERNATIVE FINANCING OPTIONS THAT SUPPORT DER AFFORDABILITY

Affordability of the DER products and services GMP is offering may be a primary concern for customers, given the high up-front costs of DERs, and the comparatively dispersed benefits from bill savings over time. By allowing anyone to invest in DER offerings that generate returns over time, financing expands the reach of programs to those who might not otherwise have sufficient resources, and supports investment in larger projects that deliver more benefits.

Most of GMP's current pilots use a financing model to address these up-front cost barriers: GMP owns DER equipment and customers pay a monthly charge on their utility bill. Financing payments reflect the full carrying cost of the service with the asset itself included in the rate base, and with general and administrative costs associated with the pilot included in utility expenses. At the end of the financing period (typically 10–15 years), the customer assumes ownership of the equipment.⁴⁵

Although this initial revenue model has been successful for small pilots, GMP and policymakers can consider testing additional alternatives for financing and ownership of DER offerings to see what best supports scaling. In the short term, GMP can propose an on-bill tariff option in parallel with the existing option to test its effectiveness in scaling the offering for customers. On a longer time horizon, GMP has the opportunity to build programs that leverage different sources of capital to support scaling off-balance sheet.

ON-BILL TARIFF OPTIONS

An alternative customer-ownership model to consider is on-bill repayment, specifically on-bill tariffs, in which a customer owns an asset and finances the improvement through loans paid back to a utility on the monthly bill, so there is no up-front payment for the improvements. In this model, GMP would earn revenue to return to the whole customer base through an administrative fee for the on-bill financing. This model offers three potential advantages for some groups of residential customers:

- 1. Customer ownership:** Some customers will prefer an on-bill tariff to an energy services or leasing model because of the chance to own the equipment and

build their credit history. Some customers simply prefer ownership,⁴⁶ and they may be able to collect tax benefits not available under other models.

2. Alternative underwriting: If GMP is interested in extending services to a broader range of customers, including those low- to middle-income customers who might want to use equipment ownership to build credit, it can create modified underwriting standards to focus on utility repayment history instead of FICO scores.

3. Transferability: leases require customers to pay off the equipment at sale of the home. Typical on-bill tariff programs are loans that are tied to physical property rather than an individual or company, which

makes it easier to transfer the obligation to a new owner when the property is sold, and allows renting customers to participate.⁴⁷

By testing this additional on-bill repayment financing option with similar products and bundles, GMP can understand the impacts of different models on scaling, and can best determine which financing options to offer to customers as fully tariffed offerings.

PRIVATE CAPITAL

In addition to options that involve rate-basing assets on its balance sheet, GMP can consider working with private lenders to finance DER investment. In these cases, GMP would contract with one or more third-party entities to finance the equipment for the

TABLE 1
FINANCING ALTERNATIVES

	GMP - Existing ⁴⁸	On-Bill Tariff
Method	Financing payments on monthly bill with GMP ownership until end of financing term	Financing payments on monthly bill with customer ownership
Incentive (rebates, tax) - eligible	Yes, pass through to lower payments	Yes
Recourse	Repossession of the asset	Repossession of the asset
Equipment Ownership	Utility	Customer
Transfer	Considered early termination (payout of remaining value), unless new owner assumes rights under lease. At end, customer assumes ownership, or requests removal for fee	Obligation can be transferred upon sale or exit of property
Revenue stream to utility and all customers	<ul style="list-style-type: none"> Financing payments (revenues > costs) Electrification sales benefits 	<ul style="list-style-type: none"> Admin charge for financing or financed at rate of return or lower Electrification sales
How administered/ capitalized	GMP raises funds as with other capital investments	Utility administers funds and capitalizes through private capital, pooled in a special-purpose vehicle (like a revolving line of credit for utility)



customer. GMP would charge administrative and customer-origination fees, and would manage the financier-customer matching, aggregating across a group of customers to provide financiers (capital providers) with stability.⁴⁹

This model can support scaling: by working with private lenders, investment can happen off GMP's balance sheet. At large scale, on-balance sheet investment in DERs might begin to affect GMP's cost of capital, affecting affordability for all customers. However, the primary challenge for these programs is likely to be the ability to generate enough volume to interest private lenders. Promising examples do exist, such as the Energy Trust of Oregon's program with community development financial institution (CDFI) Craft3. The program uses on-bill repayments to underwrite borrowers,⁵⁰ and successfully resold a \$40M portfolio of 3,000 energy-efficiency loans to Self-Help Credit Union, enabling Craft3 to mitigate its risk and replenish its funds for additional lending.⁵¹

As these innovative programs get to larger scale, GMP may need to test whether other models of capitalization are viable, building relationships and the institutional structures to work with private lenders, enabling more dramatic scaling as customer interest in its innovative products and services grows.

WHAT NEW CUSTOMER PROGRAMS CAN GREEN MOUNTAIN POWER OFFER?



WHAT NEW CUSTOMER PROGRAMS CAN GREEN MOUNTAIN POWER OFFER?

GMP CAN EXPAND THE SCOPE OF ITS PROGRAMS TO BUILD A ROBUST PORTFOLIO OF CUSTOMER OFFERINGS SUPPORTING THE TRANSFORMATION TO AN AFFORDABLE LOW-CARBON FUTURE

In this section we present four ways GMP can build on the programs designed above to broaden its range of customer offerings and meet the needs of more customers. We have already described GMP's strategic goals to keep energy affordable for customers; advance the transition to a low-carbon energy system; maintain the high reliability customers expect; and provide sufficient revenue for investment in the energy system. While scaling up the current programs is critical, GMP can also expand the scope of its customer offerings to support these goals. (RMI initially presented these recommendations to GMP in early 2017, and GMP has since launched new programs like eControl, eWater, and the home EV charging incentive.) For each of the four opportunities presented here, we describe how the offering would work, how it would benefit affordability for both participating and nonparticipating customers, how it supports the transition to a low-carbon energy future, and a few examples of similar offerings elsewhere, if they exist. The four recommendations are:

1. Provide holistic energy concierge offerings to small and medium businesses
2. Encourage EV adoption and flexible charging with an EV charging incentive program
3. Enroll customer devices in a load flexibility program to optimize loads for grid benefits and offer customer savings

4. Revamp rate designs offered to customers with an emphasis on time-varying pricing

OPPORTUNITY #1 – PROVIDE HOLISTIC ENERGY CONCIERGE OFFERINGS TO SMALL AND MEDIUM BUSINESSES

SUMMARY:

Provide new offerings to small and medium business (SMB) customers, and a one-stop shop for those customers to access GMP's offerings, similar to the eHome program. SMBs as a segment are not well served by GMP's current innovative offerings.

HOW IT WORKS:

Small and medium businesses comprise about 15% of GMP's customer base but represent 37% of energy sales forecast through 2026.⁵² This program would target the SMB segment under a comprehensive concierge structure modeled after eHome, supported by effective customer-segmentation and marketing approaches, and with a suite of offerings tailored to SMB customers.

IDENTIFY NEW OFFERINGS

- **Understand subsector needs:** Using customer segmentation, GMP can classify the SMB market into subgroups with similar energy or reliability needs and characteristics, such as convenience stores, and offer products and financing tailored for each customer group. GMP can use this data to identify priority target businesses for offerings, based on their energy burden or other pain points.
- **Expand product offerings:** Some offerings may translate directly from the residential class, such as heat pumps and heat-pump water heaters.

The specific products offered would differ from the residential segment to meet the size and performance specifications needed for retail, schools, hotels, or other SMB subsectors. Other products would be specific to the SMB customer class, such as workplace EV charging infrastructure.

- **Flexible loads:** Depending on the type of business, GMP can offer options to access and manage power from large end-uses or storage devices for a bill discount. Examples could include municipal water-pumping loads, which can be managed through an advanced demand-response program controlled by GMP, or an energy storage offering that pairs demand-charge management for customer bill reduction during some hours of the day with GMP-managed dispatch during other periods.

EXPAND CONCIERGE SERVICES

SMB customers typically have limited bandwidth for energy management (compared to large commercial

and industrial customers). As a result, GMP can provide significant value by creating bundled offerings and services to meet customer needs with minimal transaction time and effort:

- **Energy management:** Using its smart meter data and in partnership with Efficiency Vermont, GMP can provide business energy assessments to identify core opportunities for efficiency, electrification, and power management.
- **Bundles:** GMP can develop prepackaged bundles of measures, products, and services targeted to specific business types and financed in a single package to the customer with a lease or on-bill tariff model.
- **Specialize in target businesses:** By developing experience with priority SMB customer segments, representatives from both GMP and core service-provider partners can provide a more accessible customer experience that increases uptake of energy products and services.



BENEFITS FOR AN AFFORDABLE, LOW-CARBON ENERGY FUTURE:

Advance the transition to a reliable low-carbon energy future

- Much as the eHome program and associated offerings will do for residential customers at increasing scale, the SMB concierge program will reduce energy consumption from customers through energy-efficient products and renovations.
- The increased adoption of flexible load and storage programs will support shifting demand to periods of lower net load. This will enable increased penetrations of variable renewables as demand on GMP's system becomes more responsive to dynamic grid conditions, including variable weather and renewable generation.
- SMB customers will increasingly adopt fuel switching from natural gas and heating oil to high-efficiency electric heat pumps for space and water heating, reducing on-site consumption of fossil fuels.

Maintain customer affordability and business model sustainability

- These programs will support participating businesses by helping lower their energy bills through greater efficiency, self-generation, or bill savings associated with flexible loads.
- GMP financing for these products and services brings in marginal revenue that fulfills a portion of GMP's revenue requirement each year and reduces the amount that must be recovered through other customer rates.
- Increased enrollment in flexible loads programs will help GMP lower system costs and reduce both

capital and energy procurement expenses passed on to customers.

- Beneficial electrification resulting from heat-pump and water-heater programs offsets underlying declines in energy demand and sustains GMP revenues and the ability to invest in the future grid.

EXAMPLES:

- The Boulder County Business Sustainability Program is targeted at SMB,⁵³ and is run in partnership with a nonprofit (Partners for a Clean Environment), a concierge third party (EnergySmart), and the local utility (Xcel). It includes SMB-specific energy advising, specific rebates, and a recognition program.



OPPORTUNITY #2 - ENCOURAGE EV ADOPTION AND FLEXIBLE CHARGING WITH AN EV CHARGING INCENTIVE PROGRAM

SUMMARY:

GMP has estimated it has roughly 1,500 electric vehicles in its service territory and, as of early 2017, none were known to participate in programs or rate structures to charge at times beneficial for the energy system. Hitting the goal in the Vermont Comprehensive Energy Plan of 10% fleet electrification by 2026 will require more than 32,000 EVs among GMP's customers,⁵⁴ a twentyfold increase over the current EV penetration.^{ix} Ensuring that their charging benefits the grid and adds minimal cost will require managing these vehicles so that they charge at beneficial times. This recommended program provides new incentives, including a charging rewards program to encourage both increased adoption of electric vehicles and increased flexibility of the EV-charging load. (GMP's recently launched home EV charging incentive is similar to this recommendation. We've kept the full text of this opportunity here for a full description of the recommendation and its benefits.)

HOW IT WORKS:

GMP has already begun building public charging infrastructure in partnership with EVgo. This program would target personally owned vehicles charging at home. It would attract customers through a modest rebate and financing on home charging equipment, and manage charging through a centrally controlled rewards program.

- **Rebate offer:** As a new incentive for first-time EV purchasers, and for engaging customers in this

utility program, GMP could offer rebates on the EV service equipment (EVSE), commonly called an EV charger, that customers typically install in their garages. In keeping with GMP's goals of providing a net benefit to all customers (rather than a subsidy to participants), this rebate would be designed to be of modest size, but large enough to attract customer interest.

- **Financing:** GMP could offer financing for the EVSE (less the rebate value) just as it already does for cold-climate heat pumps and heat-pump water heaters, with zero up-front investment. A typical EVSE for home use costs \$600 to \$700.⁵⁵
- **Low-cost, flexible charging:** Customers could be offered enrollment in a charging rewards program in return for a monthly bill credit. GMP would centrally manage the timing of EV charging through a grid-interactive charging system to optimize load balancing. Monthly bill credit may vary depending on the amount, duration, and timing of customer charging activity, but GMP could offer a minimum value so long as customers regularly charge their cars at home. Customers could be offered enrollment in a time-of-use rate as an alternate method of saving money through off-peak charging.
- **Reaching customers:** To enroll as many customers as possible, GMP could partner with auto dealerships to communicate this program to customers at the time of purchase, and/or with the Vermont Department of Motor Vehicles to reach customers registering their EVs. These partners could share GMP marketing collateral with customers and communicate the opportunity to save on both the EVSE and home charging.

^{ix} Assuming 450,000 passenger vehicles in Vermont, based on Vermont Agency of Transportation estimates, and that GMP represents 73% of the state vehicle fleet.

BENEFITS FOR AN AFFORDABLE, LOW-CARBON ENERGY FUTURE:

Advance the transition to a reliable low-carbon energy future

- Given the low carbon intensity of GMP's energy supply, EVs are responsible for much lower carbon emissions than conventional cars.⁵⁶ Increasing the adoption of EVs as alternatives to conventional cars will directly displace fossil fuels.
- Furthermore, EVs represent a flexible, mobile load on the electric power system. Shifting the timing and location of these loads may allow GMP to incorporate higher penetrations of variable renewable energy onto its grid. Both increasing adoption of EVs and increasing the portion of the EV load that is grid interactive will enable greater renewable penetration.
- The Vermont Comprehensive Energy Plan sets a 2025 goal of sourcing 10% of transportation energy from renewable sources, and specifically for electrifying 10% of the passenger vehicle fleet, up from about 0.3% in 2016.⁵⁷ Based on the Vermont Agency of Transportation's estimates of the state's passenger fleet size and the portion of the state's population GMP serves, this goal will require an additional 31,000 electric vehicles in GMP's territory

nine years from now. This proposed program would both encourage customer adoption to meet that goal and ensure that large a volume of new EVs is managed for grid benefit.

Maintain customer affordability and business model sustainability

- If effectively integrated, grid-interactive EV charging has the potential to increase the efficiency of the electric system and lower system costs for all customers. If charging is uncontrolled, it risks increasing system peak and increasing costs, so it is imperative that charging be integrated appropriately for system-wide cost savings.⁵⁸
- Time-varying rates or charging rewards programs can allow EV owners to charge at lower cost than possible under a standard rate.
- Both the increase in electricity sales to customers and the returns to GMP from customer financing payments provide more revenue to fund necessary investments in grid modernization and reliability without increasing electric rates.

EXAMPLES:

- Many utilities around the country already provide rebates for residential EVSE, including Anaheim Public Utilities (\$500), Burbank Water and Power (\$500), Gulf Power (\$750), and Alliant Energy (\$500).⁵⁹
- eMotorWerks offers a charging rewards program to California customers and optimizes their charging in a manner that is unobtrusive for the customer. It aggregates these resources and bids into California ISO markets.⁶⁰
- Many utilities offer time-of-use (TOU) rates targeted to EV owners, including SDG&E, SoCal Edison, and PG&E.⁶¹



▶ ADDITIONAL EV OPPORTUNITIES

BENEFICIAL PUBLIC CHARGING

GMP can also do more to support beneficial charging at public charging stations by introducing a rate tailored to public EV charging. Existing rates nationwide tend to use large demand charges, which lead to high bills for charging stations that may be used infrequently and make many charging stations unprofitable for private companies to build and operate. These stations also typically have no incentive for customers to charge during off-peak hours.

Instead, GMP can introduce a rate structure with little or no demand charge and a time-of-use volumetric rate. This can make charging-station construction more attractive for private investment than would demand rates. It also provides an incentive for charging companies to pass on time-varying prices to customers, thereby encouraging charging at periods

of high renewable generation and/or low demand.

Further innovations in rate design and charger configuration will continue to emerge as other states and utilities encourage EV growth, including rewards-based managed charging at workplaces and public spaces. High-powered DC fast chargers may require alternate rates or fees in cases where they drive additional infrastructure investment. The grid impacts of DC fast charging may also be mitigated by new technology deployments, such as storage colocated with the chargers, or mobile charging units.

SUPPORTING E-MOBILITY SERVICES

RMI anticipates the growth of e-mobility services, with shared, autonomous, electric vehicle fleets providing ride services for customers across the country.⁶² While these services are likely to come to dense urban areas before the small towns and rural regions of GMP's service area, GMP can prepare for their arrival by planning for the EV fast-charging hubs that will likely be needed to support these fleets.

OPPORTUNITY #3 - ENROLL CUSTOMER DEVICES IN A LOAD FLEXIBILITY PROGRAM TO OPTIMIZE LOADS FOR GRID BENEFITS AND OFFER CUSTOMER SAVINGS

SUMMARY:

Install controls on flexible devices and loads that can be optimized and controlled remotely in a manner that is unobtrusive to customers, such as water pumping, water heating, space heating, and air conditioning. Develop compensation and dispatch mechanisms for DERs to provide grid support services. (Since RMI presented this recommendation to GMP in early 2017, GMP has launched eWater, with control for water heaters and smart thermostats, and eControl, with control for ductless heat pumps. These represent

notable progress in capturing this opportunity. Further expansion into expanded value streams and more types of flexible loads can continue to add value to GMP's portfolio.)

HOW IT WORKS:

- **Current offering:** GMP already has enrolled some flexible loads, including 300 water heaters under a legacy program and 20+ Tesla Powerwall batteries.⁶³ Powerwall customers pay only \$15 per month for their battery; a low price reflecting the system value GMP gains from controlling their batteries. GMP dispatches the batteries to take advantage of three value streams:
- **ISO New England peak reduction:** GMP uses the batteries to reduce its demand during the system-

wide peak for ISO New England. This reduces GMP's need for capacity in the ISO's forward capacity market and therefore lowers costs.

- **Local peak reduction:** GMP manages its monthly peaks to reduce the transmission expense for its service territory.
- **Energy arbitrage:** GMP will charge and discharge to capture value from the spread in locational marginal pricing in the ISO market throughout the day.

This program would ultimately aim to dramatically expand the scale of flexible loads, increase the

value captured by considering additional and more advanced value streams, and compensate customers for the benefits of this demand flexibility.

RESIDENTIAL FLEXIBLE LOADS PROGRAM

The residential program would add grid interactivity to existing offerings, enroll new loads, and compensate customers for their demand flexibility.

- **Add options to existing programs:** GMP could offer load flexibility alongside the heat pumps and heat-pump water heaters it already installs. Since load flexibility is very unobtrusive for water heaters, GMP could make this the default option when installing



a new water heater, although a default option may be less appropriate for ductless heat pumps. These options would come with a fixed monthly bill credit for customers to offset a portion of their financing payment, just as the Powerwall program is currently structured. GMP could offer six or 12 months of this bill credit up front to make the offer more attractive and provide increased value to low-income customers. In return, these loads can be managed in response to grid needs.

- **Enroll new residential loads:** Offer a demand-response program targeting air conditioning and, where present, electric space heating, as an expansion to the eWater Nest thermostat offer. Although GMP's system is winter-peaking, the ISO New England peak occurs in the summer, and GMP can gain substantial value from summer peak mitigation, as well as from the values from monthly peak mitigation and energy arbitrage described above. This program would be constrained by predetermined comfort bands and would offer the customer either a fixed monthly bill credit (during summer months) or an annual bill credit. Other devices, such as advanced inverters packaged with rooftop solar systems, could also participate in this program to offer grid support services.

COMMERCIAL, INDUSTRIAL, AND AGRICULTURAL FLEXIBLE LOADS

A separate program could target flexible loads among nonresidential customers. The specific loads and customers will depend on the prevalence of different loads in GMP's service territory. In particular, water pumping for municipal and agricultural customers may be attractive, as it consumes significant amounts of energy and is typically highly flexible. The same loads managed in the residential program (e.g., heating, air conditioning, and water heating) will also apply for many commercial customers. Again, customers could be offered fixed bill credits in return for utility "power sharing" agreements that allow GMP to call these resources on a daily basis.

MAXIMIZING THE VALUE STREAMS FROM FLEXIBLE LOADS

As described above, GMP currently captures value from ISO peak reduction, local peak reduction, and energy arbitrage. As GMP enrolls more devices into this flexible loads program, there is the opportunity to iteratively increase the value captured by adding new sources of value and working with vendors to implement more sophisticated optimization across different value streams to capture the greatest benefit. Additional sources of value include:

- **ISO frequency regulation:** GMP may aggregate loads and storage devices and bid them as a resource into the ISO frequency regulation market. This would require a total of 1 MW available load under current rules, but smaller aggregations may be eligible in the future.
- **Other ancillary services:** ISO New England also offers operating-reserves markets into which GMP may bid aggregated loads.
- **Neighborhood-level peak management:** Within specific distribution circuits experiencing load growth, GMP may have the opportunity to defer capital infrastructure costs by reducing local peaks at the neighborhood level. Where these situations exist, flexible loads can help avoid or defer these costs.
- **Neighborhood-level grid support services:** Distributed loads, storage, and advanced inverters have varying capabilities to provide local management of frequency, voltage, and power quality. In circuits with high penetrations of rooftop solar, this may be particularly valuable, and GMP can dispatch these assets for local value.

Optimizing across many value streams will be complex and will require iterative learning and capable technology partners. As GMP is able to capture more of these value streams in the future, it could increase

the monthly bill credits for subscribed customers. It will also be reasonable to direct a portion of these value streams for the benefit of all customers by offsetting a portion of GMP's revenue requirement, reflecting the value of the optimization services GMP is offering.

BENEFITS FOR AN AFFORDABLE, LOW-CARBON ENERGY FUTURE:

Advance the transition to a reliable low-carbon energy future

- Shifting the timing of these loads will allow GMP to incorporate higher penetrations of variable renewable energy onto its grid and minimize curtailment of renewables.
- Enabling DERs such as advanced inverters, behind-the-meter batteries, and flexible loads to provide grid-support services to aid grid stability can increase the hosting capacity of local distribution circuits for distributed PV.
- Increasing the capacity of load to act as a flexible resource will improve grid reliability by enabling greater responsiveness to grid faults and provide extra capacity to serve load during peak periods.

Maintain customer affordability and business model sustainability

- Increasing the ability to reduce load during peak periods reduces overall system peak demand and costs of generation, transmission, and distribution infrastructure that is sized and built to meet peak load.
- Improving the flexibility of load on a daily basis reduces the cost of renewables integration by balancing fluctuations in generation, reducing the need for fast-ramping fossil resources, and reducing curtailment of renewable power.

- Compensation for residential customers increases the options for saving on monthly energy bills, especially when combined with highly efficient devices such as heat pumps. This also increases GMP's ability to offer savings solutions for low-income customers.
- Providing more options for customers to receive compensation for their devices will improve the value proposition of offerings like heat pumps, heat-pump water heaters, and Tesla Powerwalls, helping to increase the adoption of these programs and increasing the revenue streams associated with them.

EXAMPLES:

- New Brunswick Power's PowerShift Atlantic demonstration project aggregated 17 MW of distributed load across 1,400 residential and 30 business customers, including municipal water pumping at residential water heaters to operate a virtual power plant.⁶⁴
- Nest is developing a 50 MW virtual power plant by aggregating air conditioner loads across 50,000 homes in Southern California.⁶⁵
- Southern California Edison offers specific TOU rates for agricultural pumping.⁶⁶
- Water heaters have been aggregated in PJM for frequency regulation, generating roughly \$140 per unit in annual revenue for electric-resistance water heaters or \$20 per unit from electric heat-pump water heaters.⁶⁷
- Hawaiian Electric Company has proposed new tariffs to compensate DER owners for providing a range of grid services including fast frequency response, regulating reserves, and operating reserves.



OPPORTUNITY #4 - REVAMP RATE DESIGNS TO OFFER CUSTOMERS MORE OPTIONS TO SAVE WHILE SUPPORTING THE GRID

SUMMARY:

Well-designed time-varying rates can reduce peak consumption without compromising customer satisfaction.⁶⁸ While GMP has substantial potential to manage and optimize flexible loads on behalf of customers, many customers who will prefer not to enroll in central management of their devices could still save on their bills and support a more efficient system with time-varying rates. In particular, these customers may find increasing opportunities to use automated devices in their homes or businesses to help them save through granular rates while maintaining greater control of their comfort settings. GMP has an opportunity to update its rate offerings to provide distinct and attractive value propositions to customers and to communicate this value more effectively.

HOW IT WORKS:

POTENTIAL VALUE: When designed and deployed well, electric rates can provide effective signals for customers to change how and when they use energy and invest in technologies that make the energy system more efficient while reducing the customer's bill. In particular time-varying rates can reflect the changing cost of generating and supplying electricity throughout the day or year. They can reduce peak energy demand and therefore the costs of building, maintaining, and operating an energy system designed to meet peak needs. And they can shift more consumption into periods of higher renewable generation, helping to integrate greater quantities of clean, cost-effective resources. With the introduction of effective time-varying rates, rate design need not be a zero sum game that only shifts costs among customers. By encouraging load shifting and investment in a more efficient grid, effective rate design can offer individual customers the ability to

save and to lower system costs, improving affordability for all customers.

GMP has an opportunity to revamp its rate offerings to provide customers a set of attractive choices that allow them to save while making the system more efficient, without requiring major inconvenience to respond to price signals. These offer many of the same benefits as the flexible loads programs described above, but would appeal to a set of customers who want more personal control over their energy use or choose not to participate in GMP-managed load programs. GMP can improve upon the current offering by redesigning and streamlining the set of rates currently offered and by effectively communicating their value to customers.

REDESIGNED RATE OFFERINGS: GMP can offer a streamlined portfolio of rates that appeal to different customer groups. For residential customers, GMP currently has two basic TOU rates, the option of adding critical peak pricing either to a TOU rate or to a standard rate, and two different separately metered water-heating rates. In considering a redesigned suite of rate offerings, GMP can aim to design rates to provide clear value suited to different customer segments and enable customers to participate and respond without major inconvenience or confusion. A few examples for consideration are presented here, recognizing that GMP's rate redesign efforts will include further research on the needs of its own customers before designing specific rates.

- **Smart home rate:** GMP can consider a more sophisticated, highly granular time-varying rate. To date, most time-based rates have three or fewer different periods throughout the day, but a few programs have many more, such as ComEd's hourly pricing program.⁶⁹ The availability of enabling energy management technology increases the ability of customers to respond to more granular rates and to save on their bills while helping make GMP's system more efficient. GMP can consider



an opt-in “Smart Home” rate structure for customers who want to maximize their ability to save with new technology, but don’t want to enroll in utility control of their loads. Such a rate could vary in one-hour (or smaller) increments, and could be based on either the day-ahead or real-time locational marginal pricing in the ISO New England market. This would allow third parties to pitch competitive, innovative solutions to customers to help them optimize their bills.

- **Smart business rate:** GMP could offer a similar, highly granular rate to commercial and industrial customers. This rate could reduce demand charges and instead offer dynamic pricing in increments of 15 minutes or one hour, based on the ISO locational marginal pricing and even dynamic utilization of the distribution system. As these customers typically have higher energy use and greater sophistication in energy management, they may be able to take advantage of highly dynamic rates. While traditional demand-charge rates typically encourage flat load profiles, dynamic LMP-based rates can help concentrate load in low-price periods and reduce GMP’s energy commodity costs.
- **Fixed “super saver” rate:** GMP can consider a fixed rate plan, offering the customer a fixed monthly bill and significant discounts in return for enrolling multiple devices into GMP’s load flexibility program. The customer’s bill would be flat but would be tiered according to total usage, as are many cell phone data plans. To ensure customers retain incentives to reduce load through energy efficiency, usage tiers should be close enough that reaching a lower tier through efficiency is an achievable prospect. For each device enrolled in the load flexibility program, GMP would optimize dispatch for maximum grid benefits within predetermined constraints for customer comfort. Customers who enroll many devices would earn credits for each, maximizing their bill savings, and GMP would enroll more flexible loads into its program for a more efficient system.

This option could become particularly attractive to the most price-sensitive customers, as it would maximize the potential bill savings and deliver a fixed, predictable bill each month. To this end, it could be marketed as a super saver rate if GMP is able to offer significant savings in return for load flexibility.

- **Modified basic TOU rate:** GMP currently offers two basic TOU rates, including one with a 16-hour peak period (Rate 61).⁷⁰ Customer research in other states indicates a preference for a peak period of 4–5 hours or less,⁷¹ and study has shown that enrollment rates drop by nearly one-third as the period stretches from three hours to six.⁷² GMP may consider eliminating this rate and keeping only one basic TOU rate.

CLEAR COMMUNICATION OF VALUE TO CUSTOMERS

To help customers take advantage of the benefits of their choice of rates, GMP can expand its communication of these options and their value to customers. Like many utilities, GMP primarily communicates its rate options by listing them on its website. On this site,⁷³ GMP currently offers minimal customer-friendly language describing what value the different rates offer, or helping a customer choose which rate is right for him or her. As GMP expands customer-rate options in the future, it could add clear messaging around the value of each rate option, promote rate options alongside complementary programs, and communicate individual value to customers who would benefit most.

- **Clear value communication:** On the section of the website that discusses rates and through other customer communications, GMP can provide a clear and succinct explanation of each rate and how it could be valuable to a customer, and can customize these communications based on customer segmentation and analytics.

- **Offer rates alongside complementary products:**

With the suite of eHome bundled offerings, GMP will continue to interact with customers who adopt energy efficiency, heat pumps, electric vehicle charging, and many other products. We've described above how GMP can offer enrollment in load flexibility programs to these customers. For those customers not interested in GMP-managed load offerings, time-varying rates may be a more attractive way to save, and the eHome team can communicate this option to customers during the project.

- **Encourage technology providers to offer complementary customer solutions:** Companies selling controllable devices such as smart thermostats and EV chargers can offer customers options to maximize bill savings with load flexibility. Strong offerings from these companies will bolster the value proposition to customers for enrolling in time-varying rates.

- **Shadow billing and bill calculators:** GMP has access to a rich set of customer insights through its smart meter data. With advanced analytical tools, GMP could calculate shadow billing for customers and communicate with each bill how much the customer could be saving on an alternate rate. Or, GMP could analyze 12 months of historical data to identify the customers who would have saved the most under alternative rate designs and conduct outbound marketing communication to those individual customers, letting them know how much they could save even before they take actions to shift their load.

BENEFITS FOR AN AFFORDABLE, LOW-CARBON ENERGY FUTURE:

Advance the transition to a reliable low-carbon energy future

- Time-varying rates have been shown to reduce peak and shift load into off-peak periods.⁷⁴ When applied to periods of net load—load minus generation from variable renewables—these rates can help shift load to periods of high renewable generation and integrate more renewables.

Maintain customer affordability and business model sustainability

- Time-varying rates can offer many customers the ability to save on their bills by shifting consumption to periods of low cost. When customers make these decisions to shift loads—or when their automated devices do this for them—they make the energy system less costly overall.

EXAMPLES:

- ComEd offers an hourly real-time pricing rate plan, in which the hourly prices vary with the PJM real-time locational marginal pricing.⁷⁵
- Southern California Edison offers a rate assistant that guides the user through different rate options and communicates their value in clear, succinct language.⁷⁶
- Pacific Gas & Electric offers “My Rate Analysis,”⁷⁷ where customers can compare what they would have paid over the prior 12 months across different rate plans.



CONCLUSION

Vermont has taken bold steps to address climate change and support rapid energy system transformation through legislative and regulatory mandates, including changes to the utility business model. GMP has responded to these changes by articulating a vision for its future and proactively implementing a pipeline of customer offerings to aid the transition to an affordable low-carbon energy system.

To achieve transformative change, the state will need to continue to align the incentives of Green Mountain Power, the emerging marketplace of DER providers, and customers with state energy goals. Regulators can do so by setting a vision of GMP's role in enabling value through DERs; creating flexible, accountable, and fair measures for oversight of GMP's changing business; and providing the right utility-performance incentives.

Although the state regulators are lead players in setting a framework for Vermont's clean energy future, GMP has a key role to play. If GMP's innovative pilots return value from DERs to customers at scale, they will offer a pathway to a more sustainable business model that drives down system costs through efficiency, beneficial electrification, load flexibility, and renewables generation.

By expanding marketing and customer engagement, targeting high-saturation deployment, and testing new program designs that inspire customers to adopt DERs, GMP can scale its offerings to reach more customers and create more value for Vermont's energy system. GMP can also expand customer DER opportunities by introducing new programs for beneficial electrification, load flexibility, and innovative rate design for residential and small business customers.

At first glance, Vermont and GMP may appear to be unique, with ambitious energy transformation goals, revenue regulation, and an existing B Corp commitment. But in fact, the challenges of declining energy sales, disruptive DER technologies, and clean energy goals face many states and utilities across the country. As a result, Vermont and GMP's progress in building a sustainable utility business model with innovative products and services for customers will give the industry a critical reference point for energy system transformation, adding to the growing experience of leading utilities and states like Hawaii, California, Minnesota, and New York.



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