STATE OF VERMONT
PUBLIC UTILITY COMMISSION

Petition of Green Mountain Power Corporation for approval of its new Multi-Year Regulation Plan pursuant to 30 V.S.A. Sections 209, 218, and 218d	)))	Case No. 21-____-PET

PREFILED DIRECT TESTIMONY OF JOSHUA CASTONGUAY ON BEHALF OF GREEN MOUNTAIN POWER

September 1, 2021

Summary of Testimony

Mr. Castonguay describes the critical role of innovation in GMP's work to provide low-cost and carbon-free energy along with customer-focused services. He describes how GMP's proposed new Multi-Year Regulation Plan supports these innovative efforts. These include GMP's New Initiative and Innovative Pilot programs, anticipated capital investment in fleet electrification, and provisions to track, report, and analyze the performance of innovation efforts.

TABLE OF CONTENTS

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I. Introduction

Q1. Please state your name and occupation.

A1. My name is Joshua Castonguay. I am employed by Green Mountain Power ("GMP") as Vice President, Chief Innovation Executive.

Q2. Please describe your educational and business background.

A2. I have been employed by GMP since 2003, working in engineering until 2009, and then moving into various leadership positions throughout the organization, including the control center and the transmission and distribution line department, among other responsibilities. In 2017, I became Vice President, Chief Innovation Executive, leading generation, engineering, and the team working on our innovative technology and service. I graduated from the University of Maine in 2003 with a Bachelor of Science in Electrical Engineering Technology.

Q3. Have you previously testified before the Public Utility Commission?

A3. Yes, I have provided testimony on behalf of GMP in numerous proceedings, including, most recently, GMP's 2019 Rate Case (Case No. 18-0974-TF), GMP's Multi-Year Regulation Plan (the "Current Plan") proceeding (Case No. 18-1633-PET), GMP's BYOD & ESS joint tariff proceeding (Case Nos. 19-3167-TF & 19-3537-TF), GMP's Climate Plan proceeding (Case No. 20-0276-PET), GMP's petition to modify its service territory in support of GlobalFoundries U.S. 2 LLC's request to operate a self-managed

utility (Case Nos. 21-1109-PET & 21-1107-PET), and GMP's petition to modify the current MYRP (Case No. 21-1965-PET).

Q4. What is the purpose of your testimony?

A4. In my testimony I describe the central and ongoing role that innovative services—known as New Initiatives—perform in our proposed regulatory plan framework. I start by summarizing the important innovative work we are engaged in under the Current Plan. I then explain the revised regulatory treatment of New Initiatives we propose in the Multi-Year Regulation Plan set forth in this Petition (the "New Plan"), which will help us expand and accelerate this critical work for customers. These changes include tailoring the regulatory mechanisms in the New Plan to more clearly differentiate between our broader, generally available, tariffed New Initiatives programs, the timing and scale of which are driven by customer uptake, and our Innovative Pilots, which are intended to test new potential systems and programs. I also discuss GMP's focus on fleet transformation, describing how we will electrify our fleet where possible while responding to our need to restore our fleet of large vehicles to safely serve customers. Finally, I describe the suite of performance metrics GMP proposes to track under the Plan, which provide important feedback for our teams and our customers in relation to service quality, customer support, and energy transformation efforts.

II. Summary of GMP's Innovation Work Under Current Plan

Q5. Can you provide some context on the innovation areas GMP has been focused on under the Current Plan?

A5. Over the past several years, innovation has been a central element to GMP's work under our regulation plans as we decarbonize and transform the energy sector to provide greater value and improved service for our customers. To confront the current challenges of climate change, we are intently focused on reducing our contribution to greenhouse gas emissions, while also better preparing our system to be more resilient in the face of the inevitable impact our changing climate is bringing. The New Initiatives and Innovative Pilot programs in our Current Plan have a critical role in our success in these areas for customers, allowing us to make rapid advancements in several areas, including battery storage, resiliency improvements, integration and management of Distributed Energy Resources, load control/demand management, and electrification of Vermont's transportation sector. As discussed below, there is much more that must happen in these areas, and we expect to accelerate and expand this important work under the New Plan.

Q6. Can you elaborate more on the work GMP has been doing to develop battery storage?

A6. Battery storage is an essential tool in reducing and eventually eliminating the need to employ carbon-emitting peaking plants and has an important role in supporting renewable development through its balancing capability. Robust battery infrastructure paired with renewables in the right circumstances can compete with conventional generation. It also allows GMP to create rate savings for customers through peak

reduction and energy arbitrage and increases grid resiliency and reliability. Therefore, we have been developing battery storage solutions at many different levels, including megawatt-scale installations. We also see residential battery storage as an important component of our storage strategy and have successfully implemented several programs to develop this capability. Residential storage allows participating customers options to increase resiliency—and is an especially useful reliability solution in remote locations—while GMP can use the energy to benefit all customers through reduced power supply costs along with a lower carbon profile.

After previous smaller pilot programs proved out this concept, we implemented two larger residential battery storage pilot programs. Based on the success of those pilot programs, we are now in the middle of our rollout of our Energy Storage System ("ESS") and Bring Your Own Device ("BYOD") tariff programs. Each tariff allows for 500 yearly battery installations that are forecasted to provide net positive benefits to all customers over the life of the systems while jump-starting the residential battery market in the state. Additional pilots continue to explore this area, whether to evaluate new battery technology (Enphase Battery pilot) or to further leverage the ability of these assets to provide grid services (Frequency Regulation pilot) to further drive down costs for all customers.

Ultimately, GMP envisions a battery in every home and in many businesses, which will help create a closer, more connected system that empowers customers. One of the most important things we have learned, thanks to our Innovative Pilot programs, is that distributed battery storage—meaning small and primarily residential batteries—can

be aggregated in such a way that they can act like a much larger single battery installation when necessary. This is a significant breakthrough in the use of small-scale distributed storage. The many benefits that can already be achieved with this approach are significant, and we expect other important but not yet discovered benefits will emerge as distributed batteries become more widely adopted, and GMP will continue to be on the leading edge of these developments for customers.

To that effect, GMP is in the process of retiring one of our fossil fuel peaking facilities, the Vergennes diesel plant, with plans to retire a second facility as well. The Vergennes plant can produce approximately 4MWs of on-demand power when required by ISO-New England ("ISO-NE") and even though it runs rarely, it has emitted over 12,000 tons of CO2 over the last 10 years. While it has served our customers as an important resource for decades, we are working with multiple stakeholders to retire this old fossil-fuel resource as soon as possible. Our fleet of aggregated storage, along with our distribution-scale storage, is now providing the peaking capability to allow us to do just that. With over 14 MWs of distributed small scale battery storage already in customer homes, we can dispatch in any increment we need depending on the specific demand at that time. This can be as simple as running them all for a peak demand event, running a portion to provide frequency regulation to ISO-New England, running a local contingent to avoid a local system peak on a substation, and of course, to provide the host customer with emergency backup power in the event of a system outage—all without consuming a drop of fossil fuel. This carbon-free, flexible resource is invaluable as we

drive out carbon, fight climate change, and work to find ways to lower costs for customers.

Q7. Can you provide some context for the resiliency improvements that GMP is working on?

A7. Across all our departments, GMP is always thinking beyond the traditional utility goal of reliability to also prioritize resilient service—that is, an electric grid and customer experience that are not only reliable but also withstand and respond to major storms and other catastrophes. As part of these resiliency efforts, we are pioneering new ways to structure areas of the grid, most recently exemplified by our Panton microgrid project—a 5-MW solar facility and 1-MW/4-MWH battery facility capable of "islanding" in the event of storm damage or failures to the larger grid or substation. To our knowledge, this will be the first utility circuit-level islanding project using only inverter-based sources without a fossil fuel or similar rotating machine backup. Projects like Panton have the potential to bring the resiliency benefits of battery storage to larger scales and to support communities as they adapt to increasingly severe climate-change-driven weather events. Given the significant deployment of distributed solar across Vermont, creating the ability to add storage and develop microgrid capability across multiple systems is a significant added benefit.

We can also apply these microgrid principles on a smaller, targeted scale to provide long-duration outage resiliency through paired solar and storage to areas near critical infrastructure and disaster recovery functions. We have begun the evaluation and development of Resiliency Zones that locate solutions such as microgrid islanding

capabilities to support critical community facilities. A Resiliency Zone could be a small microgrid or as targeted as a single-building, long-duration backup system, for example in a health or first responder facility, and can be designed to be complementary to the work that communities across our service area are doing to shore up vulnerabilities to extreme weather events and other emergency rescue or response needs.

During the Current Plan and following approval of our Climate Plan, we began to evaluate our entire territory to target and pilot our first Resiliency Zones in partnership with Vermont communities. We focused on a few specific criteria to rank the communities including electric reliability, communications reliability, access to broadband, and screening using the Social Vulnerability Index, developed by the Agency for Toxic Substances and Disease Registry and the Centers for Disease Control and Prevention.[1] We identified 15 communities in our territory and reached out to all of them. We worked with the Department of Public Service throughout this process. We have now focused on four towns that we are actively engaged with for our initial Resiliency Zones. We are working with each to develop a solution that drastically improves customer electric reliability and resiliency in the area—which then leads to greater resiliency for communications and in the future, transportation, as we continue to electrify.

For example, many will remember how hard hit the Town of Rochester was during Tropical Storm Irene, essentially cutoff by the storm from the outside world. Rochester is one of the four towns we have engaged, and our goal will be to create

[1] *See* https://www.atsdr.cdc.gov/placeandhealth/svi/index.html.

complete microgrid capabilities for the core downtown infrastructure. This will include partnering with third parties to provide portions of the solution and develop a product for the town that will help it remain resilient in the event of significant flooding. Rochester residents are excited to be part of this work and have been great partners in developing their Resiliency Zone solutions. The three other towns that we are engaged with all have different solutions based on the needs of each area. The purpose of this is to leverage everything we have learned so far from Panton and other projects, to show that there are local, innovative solutions beyond traditional poles and wires that can and should be deployed to provide greater resiliency, particularly in our most rural areas. We are starting with these four towns, and would like to continue this work across the state over the coming years.

To be clear, we will continue to need very robust traditional grid infrastructure even with these local solutions, but multiple layers of protection will be needed as climate-change-driven weather impacts increase along with our reliance on clean electricity. Meanwhile, as Mr. Burke describes further, we are looking to innovate on the "traditional grid" with use of technology, controls, and new ways of installing distribution lines underground, in a cost-effective and less impactful way.

Q8. What steps has GMP taken to develop Distributed Energy Resource ("DER") management?

A8. Much of our resiliency work has been focused on incorporating controllable DERs into the grid. To clarify, while it is accurate to say distributed solar generation on its own can be a DER, we tend to focus on controllable energy resources—including solar when

paired with storage—when talking about our work with DERs. Increasingly, our pilots and other innovative programs are demonstrating the benefit of having connectivity to a variety of grid resources—including batteries, heat pumps/water heaters, electric vehicle ("EV") chargers, and more. Many of these resources are currently managed or dispatched manually or with specific software solutions. To orchestrate these diverse resources and maximize the available benefits, an automated communication platform will help bring these assets forward from managed pilots to valuable aspects of our service offerings. GMP has been investigating over the course of the Current Plan a comprehensive software platform, or Distributed Energy Resource Management System ("DERMS"), that can control, coordinate, and tie together our DER resources.

Q9. Can you expand upon GMP's work to develop load control/demand response programs?

A9. As I describe above, while energy storage is a very effective tool to respond to shifting power supply demands without relying on carbon-emitting generation, we are also exploring other options to respond to demand and the increasing saturation of distributed renewable generation on the grid. These include two iterations of our Flexible Load Management ("FLM") pilot, which compensates enrolled customers who shift their demand outside of GMP peak hours. With our increasing ability to see and control load through DER management and other means of grid connectivity, lessons learned from these pilots will continue to inform how we can reliably meet demand in a cost-effective and low-carbon manner. Effective load management deployment is all about flexibility and finding ways to appropriately compensate a customer when they can provide us with

a flexible load resource while still delivering benefits to non-participating customers to lower costs for all. This also includes a significant focus on the flexibility of electrified transportation and making sure we have the platform and programs in place to leverage that flexibility as we continue to electrify transportation in Vermont. Following various pilots related to flexible EV infrastructure, we created residential rates for EVs that provide greater flexibility to the grid while lowering the charging costs for EV customers and retaining the benefits of added load for all customers.

Q10. Can you expand upon GMP's transportation electrification efforts?

A10. Electrification of Vermont's transportation sector—the largest source of carbon emissions in the state—is central to the state's efforts to meet its decarbonization and energy goals. GMP fully stands behind this effort and has initiated a range of customer programs and offerings to help people drive EVs and address current barriers to transportation electrification. These offerings include purchase incentives for new and used EVs, smart level 2 chargers for the home, and new EV residential charging rates based on controlled charging to target off-peak periods. Several pilot programs are supporting this work and we are developing the EV charging network across our service area through a workplace charging pilot and public fast-charging stations (DC Fast Charging and Make-Ready pilots). Additionally, we are exploring the use of EVs as grid storage assets through our Vehicle-to-Grid ("V2G") project to further incent EVs and leverage the benefits of electrification for resiliency and load control.

We also have an opportunity to accelerate electrification of our own fleet of light- and heavy-duty vehicles, which I describe further below, and have launched a

demonstration project with a Class 8 all-electric bucket truck and a Class 6 stake-body field operations truck, which will replace diesel-powered vehicles. As an important step toward beginning our fleet transition, this demonstration project will generate data that will inform effective electrification of the heavy-vehicle sector in the state. In addition, we will rapidly begin replacing our passenger cars and light-duty trucks with full EV equivalents to further demonstrate how commercial fleet operations can leverage electricity for an increasingly seamless transition away from fossil fuels, while reducing operation and maintenance costs and drastically lowering the carbon footprint for transportation. Lastly, while the transition to fully electric heavy trucks will be slower as the market continues to move toward developing these offerings, we will tend to replace diesel trucks sooner in their lifecycle to improve fuel economy, lower end-of-life costs, and reduce the overall age of the fleet.

Thanks to the innovative EV Charging Pilot capabilities, GMP is a leader among U.S. utilities with our network of managed EV charging for customers. As with the battery storage pilots, we were able to quickly test what worked best for customers, adjust, test further, and ultimately deploy as a full Tariff offering for an EV rate paired with managed charging. Without the ability to pilot and quickly iterate, it would be much more challenging to assure we would effectively roll out the best programs for customers.

Q11. What innovation areas does GMP intend to focus on during the New Plan period?

A11. GMP will continue to focus on these established key areas of strategic grid evolution for customers. There are some existing programs and efforts we know we will continue to pursue. For example, we plan to propose to extend the successful ESS and BYOD tariffs.

We will also continue to enable, encourage, and support smart electrification of the transportation sector, including our own fleet. We will support continued development of software and systems such as microgrids and Resiliency Zones to manage the distributed, connected, and resilient grid we envision.

As with all new innovation programs, we develop each one with five key objectives in mind: 1) is it something that a customer would want to participate in—in other words, does it makes sense to the customer, whether the customer is residential or commercial, and provide some direct benefit; 2) does it produce value to all of our customers, be that financial, carbon, and/or a broader grid value; 3) does it provide us a new resource to either manage a distributed grid or produce clean distributed energy; 4) is there a path for energy service companies to help deliver it; and 5) is it available to all customers, regardless of income, which may require specific offerings to targeted customers.

Success will be built upon the work we have already done and will continue to be driven by helping customers switch off of fossil fuels and utilize new technology to improve resiliency while we continue to transform to a more flexible, distributed electric grid. We are focused on strategically creating flexible grid assets out of a mix of resources to unlock a range of reliability and cost-saving benefits. That coordinated effort, working closely with customers and partners, will allow us to shift to a truly distributed grid. We are at a tipping point in the ability to achieve these important outcomes for customers at scale in a cost-effective way, and we expect to expand our work in all of these areas in the coming years.

Q12. Before talking about the New Plan in detail, can you also explain how New Initiatives are handled under the Current Plan from a regulatory perspective?

A12. The Current Plan uses a largely uniform approach to all projects defined as a New Initiative, which included Innovative Pilots programs, traditional tariffed offerings, and other qualifying capital projects. Under the Current Plan, New Initiatives are, generally, transformative customer-facing energy projects or programs that require initial upfront capital investment from GMP and are forecasted to contribute a net positive benefit ("NPV") to non-participating customers through new sources of revenue or through cost savings over the life of the project.

The Current Plan fixed capital investment over its three-year period and allocated up to $5 million to New Initiative projects each year, built into base rates. Innovative Pilots also required PUC authorization prior to investing $5 million in any one pilot and were subject to the Innovative Pilot program requirements set forth in Attachment 2 to the Current Plan.

The Current Plan also included a provision allowing GMP to seek PUC approval to spend above the aggregate limit or the individual pilot limit if the opportunity would materially benefit customers. This provision was requested and approved in recognition of several factors that uniquely apply to these capital projects: (1) these are programs that by definition are forecasted to create net positive benefit for all GMP customers over the life of the investment; and (2) unlike other infrastructure and budget components, the

exact scale and timing of these investments are largely driven by new market and technological opportunities, along with customer uptake.[2]

Q13. How has this existing structure functioned?

A13. Implementation of Innovative Pilots under the Current Plan has worked well. Building on existing experience and framework with these pilot programs, the Current Plan supported many successful pilots and other programs, including some that have already evolved into tariffs, that are at the forefront of our energy transformation efforts. As I described in detail above, some of the offerings we were able to implement included:

- Battery storage: Powerwall Pilot, Resilient Home Pilot, Frequency Regulation Pilot, Residential BYOD Pilot, C&I BYOD Pilot, Aggregator Pilot, Energy Bundle Pilot, Enphase Battery Pilot, Battery Tariffs (ESS and BYOD)

- Transportation Electrification: EV Make Ready Pilot, Flat EV Charging Rate (ECHARGER) Pilot, DC Fast Charging Project, V2G Project, Workplace Charging Pilot

- Others: SPAN Pilot, FLM 1.0 & 2.0 Pilot, Energy Bundle Pilot, Vermont Green Pilot, Save and Share

We were also able to expand upon the success of prior battery storage pilot programs to implement our first New Initiative traditionally tariffed programs—the ESS and BYOD tariffs. These programs have seen substantial customer interest and are forecasted to create positive value for all customers over these batteries' lifetime. The New Plan should continue to support these innovative efforts.

[2] *See* Prefiled Direct Testimony of Brian Otley, submitted June 4, 2018 in Case No. 18-1633-PET.

However, this framework, while successful, still has room for improvement based on the lessons learned from implementing tariffed New Initiatives to date. In particular, the growth and success of these programs means that the regulatory framework initially contemplated may no longer be tailored to the scope of these programs and could be more efficiently designed to recognize the importance that customer interest and uptake plays in their deployment. This became clear in the implementation of our ESS tariff, where strong customer interest required GMP to request that the Commission authorize additional upfront capital investment to support the fully subscribed program even though these anticipated levels of investment had already been reviewed during tariff approval. Therefore, we believe that we can do a better job accounting for important differences in the size and "market-readiness" of tariffed offerings—namely by distinguishing further between the regulatory treatment for smaller-scale pilots and early-stage New Initiatives against these more mature tariffed offerings.

III. Treatment of New Initiatives in New Plan

Q14. What changes, if any, is GMP proposing to the New Initiatives framework in the New Plan?

A14. After reviewing the performance of the Current Plan, GMP believes there is an opportunity to better define the different types of New Initiative offerings, which now cover a range of offerings from small scale pilot programs, some of which may not involve any capital outlay, to larger commercially mature tariffed services subject to separate Commission review and offered widely across our service area.

The primary update to the New Plan is the treatment of new tariffed offerings that may be approved during the term of the Plan. GMP will continue to develop a capital budget for anticipated New Initiative programs, including our Innovative Pilots, and the planned extension of GMP's ESS and BYOD tariffs, which GMP anticipates requesting to extend before the end of FY22. These programs will be built into the capped capital budgets, as described further in Mr. Burke's testimony. All other new tariffed programs developed during the term of the Plan that are approved by the Commission will be treated separately outside of the capped capital amounts, in a manner similar to GMP's recent Climate Plan and Broadband Tariff Rider programs. When tariffs are approved, capital plant additions associated with the approved tariff program will be added to GMP's base rates after any capital projects close to plant as part of the next Annual Base Rate filing, as described further by Mr. Ryan and Mr. Bingel.

In conjunction with this update, it is no longer necessary to include a specific New Initiatives capital exception in the New Plan, as larger tariffed New Initiatives will be handled separately (and subject to separate Commission approval). Therefore, the Plan can be simplified and clarified so that all pilot programs and non-tariffed New Initiatives are handled under the established locked capital amount, subject only to the same general exception for strategic opportunities and unexpected circumstances that applies overall to this locked capital.

Lastly, we have refined the eligibility and framework governing Innovative Pilots. This framework has evolved and developed along with the expansion and success of the Innovative Pilots, and several of its provisions are dated or duplicative. These updates

are largely made for clarity going forward, as the Innovative Pilot framework was contained in several documents, but also responds to changes in technology and areas of focus for the Innovative Pilot program.

Q15. What is the rationale for treating tariffed New Initiative offerings separately from other New Initiatives?

A15. Tariffed offerings may have a very different function than pilots and other New Initiative programs. We view a tariff as a pilot offering that has transitioned to a commercial offering, shifting from an exploratory program to a more permanent new offering with proven benefits for customers. Unlike traditional capital investments, it can be difficult to forecast (or control) investment levels in these initiatives as the pace of implementation is driven by the desirability of the program and the rate of customer adoption. While this is true to some degree for pilots and other smaller New Initiatives, the difference in scale wholly changes the nature of the impact and the difficulty in forecasting uptake. Pilots especially are strictly limited in time and scale, unlike a broadly available and long-term tariff. Therefore, while budgeting within a fixed cap for pilots is reasonable, it becomes more difficult for tariffed offerings.

Tariffs also starkly differ from other offerings in their level of review. By statute, GMP must file with the PUC for approval of any new or continued tariffed offering. As part of that process, any tariff offering will be subject to detailed review, and must be found to result in just and reasonable rates. Once approved as a tariff, requiring separate authorization under the regulation plan to authorize required spending for the approved tariff—as was necessary for the ESS tariff—is duplicative and inefficient. Where

limitations on the scale of a New Initiative tariff investment may be appropriate, it makes more sense to consider those circumstances relevant to the individual proposed tariff program and its potential benefits within the tariff filing. This is especially so because these programs are designed to create value for our customers, whether direct financial value or through improved reliability, so it is more appropriate to consider the scale of the program during the tariff proceeding rather than in setting an estimated capital level at an earlier stage in the New Plan.

Having a portfolio of variable, customer-driven projects and programs also impacts planning for other New Initiative capital programs. Because all capital investments for New Initiatives are currently subject to the same capital cap, this variability can impact how we plan for and invest in later pilot offerings—especially when accounting for the magnitude of investment in tariffed programs such as the ESS, which exceeded the capital cap standing alone. While it is true that the Current Plan does include exceptions that create flexibility—exceptions that GMP has been able to avail ourselves of—the better solution is to separate out the variable impacts of these tariffed customer-driven programs so innovative planning can be balanced against the drivers relevant to the different program types.

Finally, as noted above, because larger New Initiative investments would be tariffed programs, and therefore handled outside of the New Initiative capital budget, there is no longer a need to provide for a specific capital exception for pilots and other non-tariffed New Initiatives. This exception provision was included in the Current Plan largely to mitigate the concern about customer-uptake driven variability. If tariffed

programs are handled separately, we believe budgets for pilots and other non-tariffed programs—including individual pilot budgets which will not exceed $5 million—can be set and locked and handled similarly to other capital programs under the New Plan subject only to its limited strategic opportunities and unexpected circumstances exceptions. To the extent new and emerging opportunities or technology not within our contemplation warrant additional investment, they may be appropriate for inclusion under this more stringent exception. This further simplifies the New Plan and regulation under it by limiting the number of exceptions, adding predictability by defining more clearly the circumstances that support an exception, and retaining flexibility to respond to novel opportunities.

Q16. Please summarize how tariffed offerings will be handled under the New Plan from a regulatory accounting perspective.

A16. As discussed further in Mr. Ryan's and Mr. Bingel's testimony, GMP is proposing a regulatory accounting approach for New Initiatives that is consistent with the approach recently approved by the Commission for GMP's Climate Plan projects and the Temporary Unserved Location Broadband Deployment Rider.[3] As with any tariff filing, any tariffed New Initiative proposed during the term of the Plan is subject to Department review and Commission investigation under 30 V.S.A. § 225. Once approved, GMP will not recover any cost-of-service impacts of a capital project in our base rates until after the

[3] *Petition of GMP for approval of its Climate Plan*, Case No. 20-0276-PET, Final Order of September 24, 2020; *Petition of GMP for approval of a Broadband Deployment Program*, Case No. 21-0546-PET, Final Order of March 12, 2021.

project is complete and placed into service. GMP will then track and record to a regulatory asset the net incremental cost-of-service impacts from the project and accrue a return on this asset from the time it is placed in service until it is included in base rates. GMP will specifically request that the Commission approve the inclusion of these cost-of-service impacts, including any regulatory assets, in the following Annual Base Rate filing or the follow-on traditional rate case for the fiscal year following the termination of the New Plan.

Under this approach, any tariff approved and first implemented during GMP's FY23, when rates are set subject to a traditional cost-of-service filing, would therefore not be included in base rates until approved during review of GMP's FY24 Annual Base Rate filing. Any existing approved tariffs at the time of the FY23 rate filing—including GMP's proposal to extend the current ESS/BYOD tariffs—will be incorporated in budgets for FY23–FY26. With this treatment, regulatory accounting is simplified because only closed projects are included in rates and therefore an element of uncertainty in predicting customer interest is removed and the risk of including the wrong amount in rates minimized. We believe this approach is in the best interest of customers.

Q17. Can you elaborate on GMP's proposal to update treatment of pilots and non-tariffed programs?

A17. Non-tariffed New Initiatives will largely proceed in the same manner as before, with minor updates informed by our experience and expectations for these projects going forward. Substantively, all pilot and non-tariffed capital-based projects will remain

within our proposed fixed capital budget, subject only to the more stringent Strategic Opportunities and Unexpected Circumstances capital exceptions.

The New Plan includes updates to the terms of its Innovative Pilot program, many made to clarify the definitions and provisions of the programs, which had often evolved in response to individual pilot proposals. These updates make clear the terms that apply generally to all Innovative Pilots. With these changes, we are continuing all relevant provisions of Commission orders and Memoranda of Understanding reached in developing the Innovative Pilot program unmodified in substance. Because these provisions often refer to concluded projects, we have cleaned up these references and collected all relevant provisions into Attachment 2 to the MYRP, so that it can now supersede all previous memoranda and orders.

The New Plan also updates Innovative Pilot eligibility. We identified a need to expand the definition of Innovative Pilots with respect to potential pilots that are designed to enable other future New Initiatives and support the overall purpose of innovation. For example, a customer-facing program to develop metering infrastructure that could enable future DERs or load control programs may not directly create an immediate benefit under the Renewable Energy Standard or Vermont's Comprehensive Energy Plan, but could be an important foundation for future programs that do create such benefits. Our recently filed SPAN Pilot shows why we are clarifying the definition. The SPAN panel replaces the main electrical panel in a residence and allows for circuit-by-circuit remote access and management. This first of its kind electric panel allows GMP to manage specific loads within the home directly through the panel while also

providing metering data comparable within our AMI network—ultimately such technology could provide a modern alternative to traditional utility meters.

Alternative metering technology is something we have been testing with other DERs, such as batteries and EV chargers, and is a good example of an area that is important to test before wide launch. In the case of our smart EV chargers, we were able to successfully determine that charger metering worked accurately so that we could design a tariffed rate specifically for such chargers, making it even more cost effective to purchase an EV.[4] The updated definition supports the intent of the Innovative Pilot program to encourage projects that warrant real-world investigation of the benefits such a device may unlock for customers, even though the initial scale and deployment cannot itself create immediate benefits. As such, we have expressly added eligibility for programs that "are otherwise designed to enable [Innovative Pilots] in the future," to capture these types of Pilots that have been valuable and necessary to pursue initially. *See* Attachment 2 to the MYRP for the revised eligibility definition.

The eligibility definition is also updated to provide current references to state energy policies and goals, such as the Global Warming Solutions Act. Additionally, we have clarified that programs that support equity of access to renewable and clean energy will be important in our Innovative Pilots.

[4] *See* Case No. 19-3586-TF, *Tariff filing of Green Mountain Power for approval to implement two new electric vehicle charging rates to be effective on bills rendered on or after November 4, 2019*.

Q18. What other clarifications or changes have you proposed in the New Plan regarding New Initiative spending?

A18. The New Plan, with its separate treatment of tariffed New Initiatives and Innovative Pilots, allowed us to clarify what the purposes and benefits of each program type should be, and what "benefit" means in the context of each program, with requirements specific to tariffed New Initiatives and Innovative Pilots.

As I have testified, tariffed New Initiatives are already subject to Department review and Commission investigation and must result in just and reasonable rates under 30 V.S.A. § 225. The benefits of any tariff can therefore be considered in detail within the context of each offering—some of which may not involve significant capital investment and instead be based upon expensed costs.

Our Innovative Pilot program, since its inception, is designed to foster experimentation and rapid evaluation of new technologies and ideas to focus our work on innovations that create value for our customers. Through this rapid testing of emerging ideas—limited by the scope and timing of pilot programs—we can ensure that we are taking advantage of cutting-edge solutions that benefit our customers, while also leading the adoption of these solutions in the industry. The pilot approach also ensures that only solutions that provide benefits are carried on to larger programs. Therefore, because of both the purpose of Innovative Pilots and the logistics of rapid implementation—where the information needed to evaluate the benefits of a possible pilot may not be available until after the pilots are initiated—a requirement that Innovative Pilots must initially

create positive financial value would limit the purpose and intent of this testing program. As was explained in a previous regulation plan proceeding:

> [T]he purpose of Innovative Pilots is to explore and test new methods for energy service delivery. . . . [T]he comprehensive details that would be necessary to perform a rate impact assessment or societal cost test are not knowable at the time of an Innovative Pilot being launched.

Petition of GMP for approval of a temporary limited regulation plan pursuant to 30 V.S.A. §§ 209, 218, and 218d, Case No. 17-3232-PET, *PUC Order Extending Temporary Limited Interim Regulation Plan* at 2 (May 24, 2018) (quoting joint letter filed by GMP and Efficiency Vermont (May 18, 2018)). Innovative Pilot programs, therefore, will be evaluated against the specific eligibility requirements set forth in Attachment 2 to the New MYRP. These eligibility requirements—with minor modifications to include pilots that support access for low-income communities and pilots that support other innovative programs—have guided successful implementation of the Innovative Pilot program since its beginning, and should continue.

IV. Fleet Electrification and Transformation

Q19. Please describe GMP's Fleet Electrification and Transformation Plan

A19. As mentioned previously, transportation is the leading cause of greenhouse gas emissions in Vermont. As we continually think of ways we can help our customers transition off fossil fuels, we must also consistently look to our own operations and how we can continuously improve our GHG footprint. Our own fleet is a prime opportunity for greater transformation. To deliver reliable service to customers, GMP currently operates a fleet of approximately 105 large trucks such as bucket and digger derrick trucks, 150

light-duty vehicles such as SUVs and smaller pickup trucks, and about 60 medium-duty trucks. We are proposing to take a multi-pronged approach that hits a few key targets:

- Convert 100% of our light-duty cars/SUVs and 25% of our light-duty trucks to electric by 2025
- Bring our medium- and large-vehicle fleet into an 8-year lifecycle starting immediately, which better prepares us for the conversion to electric when available as further described below.

Q20. What is GMP's typical medium- and large-vehicle fleet replacement schedule, and what are you proposing to change, and why?

A20. Historically, GMP attempted to replace bucket and digger derrick trucks after around 10 years of service based upon high maintenance costs and low reliability experienced in older vehicles that are subject to the corrosive environment of our rural service area, mainly from mud, snow, and salt/brine. In more recent years, to operate within the tight capital constraints of the Current Plan, we have worked harder than ever to keep our existing vehicles in service for as long as they can be made to pass their annual Vermont safety inspections. Currently, line crews are working daily out of bucket and digger trucks that are up to 19 years old and in very poor condition. About 40% of the 103 bucket trucks and digger derrick trucks are at least 10 years old. 20% of the line crew trucks are at least 14 years old. The average mileage for these line trucks is over 200,000 miles and the oldest 40% of those trucks average over 300,000 miles, both measures

including engine hour equivalent miles.[5] Extending the life of these trucks requires considerable maintenance expense, extended downtimes for repair, and extensive body work to address rust-through in frames, floors, fenders, etc. The longer replacement cycle, combined with the additional vehicle service intervals and wear caused by single-occupant COVID-19 safety rules, has caused a marked deterioration in our vehicle fleet that we need to proactively address for safety in the New Plan.

Safety is at the front of all our work, including our fleet replacement choices. Specifically, our large-vehicle fleet, such as our bucket and digger derrick trucks, are designed for high-voltage electric work and provide a layer of non-conductivity protection to our field crews during their daily work and restoration events. Safety is an area we do not compromise on, and as vehicles age, the safety aspect can be another critical factor that takes them permanently out of service.

The recent practice of extended replacement cycles is not sustainable, efficient, or economical. Currently, we are experiencing lead times of up to 18 months for the replacement of large vehicles due to equipment scarcity during the pandemic, which makes it difficult to resupply our exhausted supply of spare vehicles. Shorter life cycles also allow for value to be recovered, such as through resale, from fleet assets at an economical point in their lifecycle, before they begin to accumulate increasing costs at the end of their service life. Therefore, going forward, we are proactively planning to

[5] Engine hours are the total number of hours the engine was running, including while the vehicle is stationary to provide PTO/hydraulic power to components such as aerial devices. Adjusting the odometer miles to include engine hour equivalent miles provides an accurate measure of the actual truck usage. One engine hour is assumed to equal 30 miles of travel. Odometer miles are deducted from the engine hour miles so as not to double-count.

replace vehicles on an 8-year cycle for medium and large vehicles, and a 7-year cycle for light vehicles that accumulate miles more frequently. This will help transition to a younger and more efficient fleet—including by incorporating EVs, where technically and economically feasible—and improve safety for our crews and reliability of the vehicles that support GMP's response work in all weather.

Q21. How does electrification factor into your GMP's fleet transformation?

A21. Another important way we want to improve the fleet lifecycle and reduce the average vehicle age while controlling costs is to accelerate the adoption of EVs into the fleet. EVs have a lower lifecycle cost and lower maintenance intensity than traditional internal combustion engine vehicles. Customers will benefit by avoiding the variability and high cost of fossil fuels and enjoy the lower cost of electricity from GMP's clean, low-cost portfolio of electricity resources. As we look ahead to the conversion of our fleet to electric, we see the need for a phased approach given the availability of various vehicles today. Our strategic fleet plan will convert 100% of our small cars and SUVs to fully electric and electrify 25% of our light-duty trucks by 2025.[6] This multi-year transition reflects the well-developed small car and SUV market while allowing new makes and models of light trucks to roll out and begin adoption into our fleet. The fleet plan does not increase the fleet size.

For medium- and heavy-duty electric vehicles, the market is far less developed. In anticipation of more widespread availability of these models, transitioning our larger

[6] GMP currently has 47 passenger cars/SUVs and 103 light trucks.

trucks onto a more appropriate 8-year cycle better prepares the fleet to transition over to electric when the product pipeline develops for larger vehicles at a cost that is feasible for our customers. To help develop this large vehicle market, we are excited to test two heavy-duty electric vehicles: a Class 8 bucket truck and a Class 6 stake body truck, thanks to a grant received from the State of Vermont as part of the VW Settlement program. These two vehicles will provide much-needed information and understanding of how these vehicles will perform for—and how they will be perceived and adopted by—our field crews in harsh environments during challenging operations such as major storm events. This information will inform our transition plan as the cost of these vehicles comes down.

Q22. How will GMP's fleet electrification plans be reviewed and how are they incorporated into the New Plan?

A22. As with all GMP's proposed capital projects, GMP's initial fleet electrification capital investments for the FY23 rate period will be reviewed during the FY23 rate case, which will allow for a detailed consideration of the costs and benefits of this approach for customers. Going forward, GMP will include proposed plant additions in our FY24–FY26 capital forecasts, also filed during the FY23 rate case. The Plan itself notes that GMP will advance fleet electrification through the purchase of replacement vehicles for both individual passenger cars and light-duty trucks, and for heavy-duty vehicles, and we have proposed a new Innovation and Performance Metric on Fleet Electrification to track and report on our progress in this important area.

V. Innovation and Performance Metrics

Q23. What innovation and performance metrics is GMP currently tracking?

A23. Under the Current Plan, GMP has been tracking two sets of performance metrics. The first set tracks compliance with traditional utility reliability standards under the Commission-approved SQRP. The second set was introduced in our Current Plan and includes 26 innovation and performance metrics that capture GMP's performance in several areas related to innovation and proactive transformation of utility operations and services for customers. These measurement areas are: capital expenses, exogeneous storm costs, power portfolio, distributed generation, other distributed energy resources, electric vehicles, and customer relationship automation. These metrics were agreed upon by the parties to the Current Plan proceeding and designed to establish a performance baseline for future analysis of GMP's progress in these areas. As such, this second set of metrics are informational only and not tied to incentives or penalties.

Q24. What has been GMP's experience with these metrics and are any adjustments needed in the New Plan?

A24. Our experience with these metrics has been positive, and we have found them to be a helpful indicator of the transformation in progress. We are not proposing any significant changes to the tracked metrics agreed upon in the prior proceeding, except for four new metrics that have been incorporated into the reporting plan under Attachment 7 in the New Plan. These are: a new Fleet Electrification metric, a DER metric capturing combined hours of battery back-up during outages, and a pair of performance metrics that track access to renewable or innovative energy services in low-income communities. As

of this filing, we have only had one reporting cycle—the 2020 MYRP Evaluation Filing last January—and do not believe we have enough experience with these metrics to evaluate and propose broad changes to the framework at this time. As additional reports are produced, we look forward to working with the Department and the Commission over the period of this next regulation plan to evaluate whether changes to either individual metrics or the structure of the program and its incentives are appropriate.

Q25. Does that conclude your testimony?

A25. Yes, it does.