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Judith Whitney, Clerk
Vermont Public Utility Commission
112 State Street, Floor 4
Montpelier, Vermont 05620

Re: Case No. 19A-1242
PSD Comments and Recommendation for Investigation

Dear Ms. Whitney:

This letter responds to the filing submitted by the Department of Public Service (the "DPS" or "Department") providing comment and recommending that the Public Utility Commission (the "PUC" or "Commission") open an investigation with respect to Green Mountain Power's ("GMP") Resilient Home Innovative Pilot.

GMP has reviewed the Department's comments on the proposed Resilient Home pilot program. We appreciate the Department's perspective on the program and believe there are reasonable approaches to address the issues identified by DPS without delaying the meaningful benefits the proposed program will provide our customers.

In this era of climate change and the need to act quickly, GMP is intensely focused on delivering solutions to customers that provide multiple value streams including resiliency, carbon reduction, and new resources to manage our increasingly distributed grid, all while producing financial benefits for all customers. The proposed Resilient Home pilot is a small, but important extension of our previous successful Tesla Powerwall pilot program. This innovative pilot program will include only 250 customers, plus up to 250 additional customers through third party offerings, and provides all of the same benefits as the previous pilot program, but offers an additional unique opportunity to test the ability for batteries to provide GMP with the metering data necessary to eliminate the traditional home metering system, thereby potentially saving customers more money. It will also test an innovative flat pricing model for electricity usage, which is an emerging approach in many industries that could be very attractive and provide benefits for our customers. Both of these aspects go beyond prior pilots to explore and test important new opportunities for customers, while building on and extending the benefits of prior pilots. Between our Tesla 2.0 Powerwall pilot and this pilot, we will reduce approximately 20,000 lbs. of CO2 over the life of the batteries by reducing peak demand, which is the most carbon intensive generation on the system. These batteries will provide customers with over 100,000 hours of emergency backup over their life which in the face of a changing climate with

more severe weather, is critical for our customers. And like prior pilots, the program over its life will produce a net positive benefit for non-participating customers.

Below we provide a detailed response to each concern raised by the DPS, many of which we have already started to address with DPS and other parties. But we strongly disagree with the Department's suggestion that the program be put on hold. That would delay these additional benefits for our customers, delay the learning opportunity the pilot provides, and ultimately delay our ability to roll out similar offerings at a greater scale through a tariffed program with greater savings and benefits for customers. Now is the time to accelerate our learning and implementation, not press pause. The purpose of the pilot program is to advance exactly this type of iterative innovative work and we think it is important to continue developing the range of benefits these innovative solutions can provide our customers through this appropriate, small scale offering.

The Innovative Pilot feature of our regulation plan was added as a tool to allow just that - encouraging new programs designed to test, at small scale, ideas that advance Vermont's energy goals in ways and at speeds that would not typically occur under traditional rate regulation. It is an effective tool, with significant reporting and guardrails. In fact, GMP will be required to justify through traditional capital expenditure documentation any funds spent in this program prior to rate basing those investments, and launches this program at our risk. The key to this tool's effectiveness is the speed and responsiveness it permits. The Department's call for an investigation to stop the launch of this Pilot - after engaging in significant pre-filing and notice period review with GMP - threatens to undermine the benefits of this innovative tool.

1. Powerwall as a Necessary Component of the RH Pilot

The focus of the Resilient Home pilot is on replacing the traditional house meter with the metering capabilities of a battery storage system. The installation of new Powerwalls is necessary to accomplish the purpose of this pilot so that we can ensure all installations are done in a way that provides accurate metering data for all participating customers, and is configured in a manner that, once confirmed by the pilot, can be replicated for future installs (and potentially used to retrofit prior systems). The prior pilot was invaluable in that it highlighted the potential for batteries to provide metering level information, but data from prior Powerwall installations does not uniformly provide this level of information or a method for systematic testing of metering services. There were two factors in the original pilot that limit their use for this advanced testing of metering as a replacement for traditional utility metering. First, about half of the customers only installed a partial home backup system (one Tesla battery), which means the battery system is not metering the entire home load. It therefore cannot replace the meter for the home. Second for those whole home systems that were installed, the need for revenue quality metering data did not exist and was not contemplated during this first pilot, and the systems therefore were not installed and wired with the goal of ensuring metering level data output. This new pilot is an iterative and important improvement over prior pilots that will assure the installation and configuration of the system to provide the highest accuracy of metering data for purposes of providing data to the billing system.

With respect to a tariffed offering, GMP is in the process of developing a tariff for the Powerwall offering. The tariff will include a directly offered system as well as third party provided systems that can be easily rolled into GMP's DER program. GMP is committed to filing a permanent, tariffed Powerwall offer within 60 days pending review with stakeholders. One of the reasons we believe it is in customers' best interest to move forward with this proposed pilot now, without delay, is that the information collected from early installs under the small-scale Resilient Home pilot program could help inform and refine the design and overall costs and benefits of a future tariff program, particularly if meterless installations are viable.

Regarding GMP-direct installations versus BYOD installs, the financial model included with the Resilient Home pilot assumed a split of 250 GMP direct customers, and 250 BYOD customers. There was no explicit language stating that this mix of customers was a requirement, however it was and is GMP's intention to ensure that this 50/50 division is maintained. GMP will commit to capping the GMP direct customers to 250, while the additional 250 customers will come from the BYOD or new third-party option described above and in the "Third Party Participation" section below.

2. Level of Participation

GMP agrees that it is appropriate to cap the total number of participants at 500. As noted above, this will be a combination of 250 direct GMP customers and another 250 customers that will participate through the BYOD program or as part of the newly proposed third-party method described in the "Third Party Participation" section below. The expected net benefit to non-participating customers was modeled based on these amounts. GMP is providing the largest utility incentive for battery storage in the country, however, we anticipate further amendments to the third-party battery deployment option that will provide a mechanism for third parties to roll their systems directly into GMP ownership, which will allow these systems to benefit from investment tax credit in a manner similar to the GMP-direct systems. We believe this will improve third party offering.

3. Consumer Protection & Notice

With respect to the Department's points about data requirements, DPS is correct that the data requirements of the Powerwall System's communication are indeed minimal. The approximate data consumption is 1GB per month. GMP will include this in the Customer Acknowledgements section of the customer agreement. GMP has already included a Customer Acknowledgement about the possibility of meter data inaccuracy coming from the Powerwall System. Further, consistent with GMP's actual meter accuracy standards, we have built in protections against data inaccuracy by ensuring that if the data from the Powerwall system falls outside of a 4% margin of error, we will utilize the data from the AMI meter (in retrofit situations) to provide the customer's bill. In the case of new builds, GMP will test the Powerwall's metrology components directly with the use of our power quality metering equipment; in the event a new home's billing through the Powerwall falls outside +/-4%, we will install a traditional socket and meter at the customers' home.

4. Notice Period and GMP's Publication of the Pilot

GMP's notification of the potential new pilot followed the company's standard process for announcing the anticipated availability of a new offering, and was designed to gauge interest, and help establish mechanisms for referral to third party providers. GMP has not enrolled any customers in the Resilient Home pilot. Due to the overwhelming demand for the offering, we allowed customers to "save their spot" in a queue. This advanced reservation allowed GMP to also firm up the process of redirecting interested customers to third party installers under the BYOD offering.

5. Additional Issues

A. Third Party Participation

GMP continues to engage and collaborate with third-parties in order to provide opportunity to deploy energy storage in GMP territory. In that spirit, GMP is already working with interested parties to provide an additional third-party option beyond the BYOD third-party participation originally filed in the Resilient Home Pilot. Our existing pilot offers the highest incentive for battery storage from any utility in the country. GMP worked extensively with third parties through Renewable Energy Vermont ("REV") to develop the BYOD offering. We also note, that with this pilot and current BYOD program, GMP employees are actively referring customers to third party private companies and REV. But as noted above, there are other mechanisms that can improve participation in the third-party option. After discussion with other parties, GMP expects to further propose, through an amendment, an option that allows third party installers to sell the installed battery system to GMP, which in turn allows GMP to utilize the Investment Tax Credit and provide that value back to all customers. Our conversations with third parties about this path forward have been positive and productive. GMP expects to include this proposal in a forthcoming amendment, and is working on the financials to fulfill the Department's request regarding similar NPV benefit to customers despite differences in cost. We also note that while GMP will continue to work through options that provide other parties opportunities to participate in energy storage deployment, battery storage systems can be viewed as grid assets, which is different than some other commercially-supplied products, given their load control flexibility. Our goal is to deliver battery storage that provides grid flexibility at the lowest cost possible to participating customers while still delivering positive value to all customers.

B. System Reliability and Cybersecurity

These battery systems are delivered with a full 10-year warranty and have already been proven to be highly reliable for customers. Each Powerwall communicates via the customer's internet connection; however, should the internet fail, or password change, each Powerwall will fail over to its onboard cellular connection and maintain communication to Tesla's backend.

Tesla, like other battery manufacturers and suppliers of similar electric system components, has internal cybersecurity protocols in place for the Powerwall systems. As provided to the Department through their informal discovery questions, all Powerwall

communications takes place through the Tesla Energy Gateway, for which all upstream communications use PKI (public key infrastructure) to encrypt, authenticate, and authorize communications to Tesla's central telemetry and control servers. In order to protect both the Powerwall and Tesla central data collection, all communications take place using mutual TLS (transport layer security). Tesla employs over-the-air updates to the Tesla Energy Gateway in order to update it with both new features as well as security updates.

C. Path to Transition Metering Technologies

The purpose of this pilot is to help GMP and Tesla ensure a controlled and uniform installation method specifically for the purpose of testing batteries as a replacement for metering to benefit customers. In the event that the pilot proves successful in providing this added benefit, GMP fully anticipates exploring options to roll this out through broader tariff programs, and potentially through retrofitting existing systems.

GMP is also open to considering other battery resources that could provide this level of data. GMP has developed a document (also attached), that includes the current GMP requirements for evaluation of other potential metering technologies. This includes the data points that GMP needs from each piece of technology in order to create a bill successfully. When a technology provider is able to present GMP with these requirements, as well as share their API, GMP will be able to determine if the data points are available, and further begin testing the ability to use the data similar to the way we are currently using the Powerwall data. This process has already started with one additional technology provider that has expressed interest in using their battery solution as a point of metering.

D. Value and Durability of Benefits to Participants and Non-Participants

As detailed in the final report for the Grid Transformation Pilot, the Powerwalls have shown to be a tremendous value to participating customers in terms of reliable backup power. A prime example of this was during a major storm in November 2018. Vermont experienced a major storm that caused widespread outages across GMP's territory. However, 217 of GMP's customers had a Powerwall, so they did not experience an outage. In aggregate, the Powerwalls provided a total of 2,901 hours of backup power with an average backup duration of 13.4 hours per customer. Backup duration ranged from one hour to 89 hours.

As described above, these systems should be viewed as grid assets. Their primary monetary value is through the peak reduction, and under today's market projections they produce significant value for non-participating customers. However, our strong view is that even if these systems simply 'broke even' on an NPV basis, they would still be an excellent investment for customers because of the many other benefits. For example, a side benefit of the Investment Tax Credit with the batteries is that they need to charge from the solar, and when the batteries charge from the solar they reduce the constraints on the distribution system due to the significant amount of solar deployed which can lead to local distribution or sub-transmission system issues. If a specific area has a voltage or renewables ramping concern, these systems can be deployed in a way to mitigate that.

Tesla also conducted an analysis that showed an additional 5MW of dispatchable generation (which the RH pilot would provide if fully subscribed) produces near-identical peak shaving value as the original 10 MW in the Grid Transformation pilot using the Auto Dispatch algorithm.

E. Advisability of Not Installing AMI In New Homes

GMP appreciates the Department's perspective on this issue but believes it is important to use this pilot to evaluate the functioning of battery metering systems, including in environments without a backup meter. While the initial Tesla Powerwall Pilot has provided a high-degree of confidence that this system will fulfill the necessary technical requirements for in-home metering, it is important to have a range of installation methods and designs to determine the best ultimate configuration. As a result, we do not believe meters need to be installed up front in the new home build option under this Pilot. In the case of new builds, as noted above, GMP will test the Powerwall's metrology components directly with the use of our power quality metering equipment; in the event a new home's billing through the Powerwall falls outside +/-4%, we will install a traditional socket and meter at the customers' home.

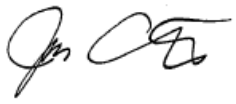
F. Similar Experience/Pilot Data

GMP did not come across any similar pilots or other programs that could provide us with data. In fact, as part of the Patent process there is a detailed review to determine whether an equivalent claim already exist. That review did not turn up anything comparable.

6. Proposed Process

GMP worked proactively with DPS a month before filing, providing a draft, and having multiple discussions with DPS along with response to informal discovery. In addition, GMP is working collaboratively with the Department to tackle many of the new questions outlined in their comments, and we remain ready to address the remaining issues discussed in their comments, by amendment to the Pilot; accordingly, for the reasons outlined above, GMP respectfully requests that PUC not delay implementation of this pilot and the important benefits it will provide customers.

Sincerely,



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