STATE OF VERMONT
PUBLIC UTILITY COMMISSION

Case No. 18-0974-TF

Tariff filing of Green Mountain Power Corporation requesting a 5.45% increase in its base rates effective with bills rendered January 1, 2019, to be fully offset by bill credits through September 30, 2019	Hearings at Montpelier, Vermont October 25, 2018

Order entered: 12/21/2018

PRESENT:

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I. INTRODUCTION

This case concerns the Vermont Public Utility Commission's ("Commission") investigation into Green Mountain Power Corporation's ("GMP") request for a rate increase in the amount of 5.45%, to take effect with bills rendered on or after January 1, 2019. GMP also seeks approval to offset the rate increase for a limited time by returning certain tax savings to customers on an accelerated basis. GMP proposes that customers will receive bill credits equal to an approximate 6% reduction in the new rates for 9 months, ending September 30, 2019.

After three public hearings, a workshop, and several rounds of discovery and testimony, GMP, the Department of Public Service ("Department"), and GlobalFoundries U.S. 2 LLC ("GlobalFoundries") have each presented us with evidence to consider in our investigation. Through this process, the Department has recommended that several million dollars of GMP's investments not be allowed into rate base. GMP has agreed with some of the Department's recommendations and reduced its rate request to 5.43%. However, GMP disagrees with the Department's recommendation to exclude from rate base approximately $13 million of investments related to the Tesla PowerWall 2.0 Program, the heat pump water heater program, certain transmission and distribution system upgrades, and GMP's use of transmission and

distribution blanket work orders. The Department's proposed exclusions would reduce GMP's cost-of-service for the rate period by $576,000 and thus result in a 5.30% rate increase.

The Commission's obligation under Vermont law is to establish just and reasonable rates necessary for Vermont utilities to provide adequate and efficient service to their customers. Such rates are usually established through a case such as this, where the justness and reasonableness of a utility's rate request are tested by the parties and the Commission through discovery, testimony, and cross-examination. After conducting a seven-month investigation into GMP's request and considering the parties' positions and the comments of the public, we conclude that GMP's proposed cost of service, as revised by GMP in response to the Department's review, and subject to additional modifications discussed in this Order, will result in just and reasonable rates.

These modifications include removing GMP's investments in heat pump water heaters from rate base because GMP has not adequately demonstrated that these investments provide sufficient benefits to all ratepayers. In addition, while the Commission has not accepted the Department's recommendation to exclude certain distribution system investments, GMP will be required to explain its plans for a modern and reliable grid in the context of several proceedings, including the Commission's review of GMP's multi-year regulation plan, which proposes a fixed level of capital investment for the next three years, and GMP's Integrated Resource Plan, which contains GMP's strategy for transmission and distribution ("T&D") investments.

Therefore, we approve an increase of approximately 5.43% in GMP's existing rates, to take effect with bills rendered on or after January 1, 2019.[1] This increase will be offset for a nine-month period ending September 30, 2019, by a bill credit.

II. PROCEDURAL HISTORY

On April 13, 2018, GMP filed a petition with supporting testimony and exhibits (the "Petition") requesting a 5.45% rate increase.

[1] As discussed in this order, the Commission's adjustments to GMP's cost-of-service will affect GMP's revenues, which in turn affects the percent increase in rates necessary for the Company to meet its revenue requirement. We will require GMP to calculate the precise rate change based upon the rulings in this Order and submit a compliance filing showing the results.

On May 2, 2018, the Department recommended that the Commission investigate GMP's rate request.

On May 4, 2018, GlobalFoundries filed a motion to intervene. The motion was granted in an Order dated May 24, 2018.

On May 10, 2018, the Commission ordered an investigation into GMP's rate request.

On May 24, 2018, the Commission held a prehearing conference.

On June 1, 2018, the Department served its first set of discovery questions on GMP.

On June 19, 21, and 25, 2018, respectively, the Commission conducted public hearings in Rutland, St. Albans, and Brattleboro.

On June 27, 2018, the Department served its second set of discovery questions on GMP.

On June 27, 2018, Renewable Energy Vermont ("REV") filed a motion to intervene. The motion was granted in an Order dated July 19, 2018.

On June 29, 2018, GMP responded to the Department's first round of discovery questions.

On July 13, 2018, the Commission held a workshop to review GMP's rate request.

On July 17, 2018, GMP responded to the Department's second round of discovery questions.

On July 26, GMP filed responses to questions asked by the Commission's staff at the July 13 workshop.

On August 10, 2018, the Department filed its direct testimony.

On August 17, 2018, GMP served its first set of discovery questions on the Department.

On August 30, 2018, the Commission issued additional information requests to GMP.

On August 31, 2018, the Department responded to GMP's discovery questions.

On September 9, 2018, GMP filed its rebuttal testimony. The testimony included responses to the Commission's August 30 information requests.

On September 19, 2018, the Department served its third set of discovery questions on GMP.

On September 28, 2018, GMP responded to the Department's third set of discovery questions.

On October 12, 2018, GMP and REV served discovery questions on the Department.

On October 18, 2018, the Department responded to GMP's and REV's October 12 discovery questions.

On November 2, 2018, an evidentiary hearing was held in the Susan M. Hudson Hearing Room at the Commission's offices in Montpelier, Vermont. The parties stipulated to the admission of the prefiled testimony and exhibits identified in a document labeled GMP exhibit-1.

On November 9, 2018, the Department filed its brief.

On November 16, 2018, GMP and GlobalFoundries filed their briefs.

On November 19, 2018, the Commission received a public comment addressing the Department's advocacy in this proceeding. The Commission received six additional public comments responding to the public comment. The Department and GMP also responded to some of these comments.

III. FINDINGS

A. Cost of Service and Rate Base

1. GMP's initial case as filed on April 14, 2018, requested a base rate increase of 5.45% and a bill credit for the 2019 rate period of $27.4 million, or approximately 6% of current base rates. Edmund Ryan, GMP ("Ryan") pf. at 2.

2. GMP's filing is based on a nine-month test period (January 1, 2017, through September 30, 2017), an interim period (October 1, 2017, through December 31, 2018) for rate base additions, and nine-month rate period (January 1, 2019, through September 30, 2019). Ryan pf. at 3.

3. The $27.4 million bill credit represents taxes collected from customers in prior years, as required under federal tax rates then in effect, that fall outside the class of taxes on items that federal regulations mandate must be returned to ratepayers on a straight-line basis over the depreciable life of the asset. Because of the reduction in the federal income tax rate, GMP will now not have to pay to the IRS the $27.4 million that has been collected from customers and deferred. Ryan pf. at 12-13.

4. Other than the request to return non-recurring federal income tax savings as a bill credit, the rate filing affects base rates only. Power-supply and storm adjustors that are governed

by GMP's alternative regulation plan are subject to a separate schedule for filings and approvals, and their periods of adjustment vary. They are not covered by this rate filing but will be addressed in the multi-year regulation plan proceeding that is currently taking place in front of the Commission (Case No. 18-1633-PET). Ryan pf. at 7.

5. In developing its cost of service, GMP utilized forecasts developed by Itron for load and revenue and did not exclude capital costs associated with growth. This methodology provides greater accuracy in this time of declining load and retail sales than the traditional methodology of adjusting a test period for certain known and measurable changes. Ryan pf. at 8.

6. The difference between the forecasted sales and test period sales is small, and is largely attributable to factors that would be captured in normalizing adjustments (e.g., adjustment of sales volumes to reflect normal weather conditions) or known and measurable adjustments to the test period sales to reflect discrete influences (e.g., increases in net-metering volumes, increases in end-use efficiency, additional load from electrification activities, discrete/spot customer load increases) that are expected to increase or decrease sales volumes. Douglas Smith, GMP ("Smith") pf. at 13.

7. Energy efficiency and net-metering are causing year-over-year reductions in loads, resulting in test-year sales that are likely to be higher than forecasted sales. Using higher test-year sales and adjusting for lower actual sales would result in a subsequent rate increase for customers. By using forecasted sales, customers should expect to see a slightly larger rate increase up-front but less rate volatility due to declining sales over the course of the rate period. Ed McNamara, Department ("McNamara") pf. at 5-6.

8. It is appropriate to include costs related to customer growth in the 2019 rate period. It would be impractical to exclude customer growth-related costs if GMP is operating under a multi-year regulation plan, as GMP anticipates. Not including growth in this filing would subsequently require GMP to incur multiple years of regulatory lag related to the recovery of the growth related costs, or require an annual adjustment mechanism to true-up the actual growth related costs that are incurred. Brian Winn, Department ("Winn") pf. at 27.

9. GMP's initial filing included an inventory of renewable energy credits ("RECs") in rate base. McNamara pf. at 7.

10. The Department recommended that 95% of the REC inventory be removed from rate base because these RECs will be sold and not used for compliance with Vermont's Renewable Energy Standard. GMP agreed to this change. McNamara pf. at 7; GMP-ER-17 (Rev.); Ryan reb. at 9.

11. The impact of the removal of the REC inventory from rate base is a downward adjustment of 0.05% to GMP's rate request, which GMP incorporated into its revised cost-of-service. Exhs. GMP-ER-1 (rev.); GMP-ER-17 (rev.).

B. Capital Projects

Tesla Powerwall 2.0 Program

12. GMP's proposed rate base additions include the Tesla Powerwall 2.0 pilot program. GMP's original filing requested approximately $15,228,859. However, due to expected delays in the project completion date, GMP seeks rate base treatment of slightly less than that amount. Josh Castonguay, GMP ("Castonguay") pf. at 8; exhibit GMP-JC-1; Ryan rebuttal pf. at 4; exh. GMP-ER-17.

13. The Tesla Powerwall 2.0 Program is part of GMP's innovative energy transformation efforts, which focus on new, low-carbon, distributed energy technology and support Vermont's energy policy, reduce power costs, introduce new revenue streams to benefit customers, and provide customers with options to transition off traditional fossil-fuel systems for heating, transportation, and backup power. Castonguay pf. at 2-4, 8.

14. GMP anticipates challenges posed by the current energy landscape, which sees declining sales of traditional bulk delivery of energy along with increasing demands on GMP's system due to thousands of customers now acting as generators. Castonguay pf. at 3, 5.

15. GMP has lower kWh sales today than at the end of 2003. Castonguay pf. at 3.

16. Regional grid and transmission costs, which are out of GMP's control, are increasing and pointing to a future that could entail double-digit rate increases. ISO-New England and the transmission companies in New England project that they will spend more than $2 billion on new transmission infrastructure over the next four years, all of which is paid for by New England

customers. These uncontrollable cost pressures will continue to mount, while sales will more likely continue to decline further. Castonguay pf. at 5.

17. Distributed solar is reducing what used to be a daytime peak, causing a new, lower peak later in the day, typically after daylight hours. As a result, as additional solar is added, it contributes much less to reducing the peak. Energy storage is rising as an important tool to further reduce the costs of peaks. Castonguay pf. at 5-6.

18. The Tesla Powerwall 2.0 Program allows GMP to manage its load for the benefit of all customers, while continuing to reduce reliance on traditional electricity sales to keep costs low. Castonguay pf. at 6.

19. GMP has four goals for its energy transformation projects:

- Deliver increased resiliency in new ways to all customers, including through grid management and balancing;
- Create new value streams, including revenues from new non-traditional sources, that flow back to all customers and reduce rates;
- Deliver services and a platform that enable customers to reduce their carbon footprints while increasing their comfort and saving money on total energy consumption; and
- Strategically partner with customers and third parties to deliver more innovative program offerings in order to achieve GMP's and Vermont's energy goals.

Castonguay pf. at 6-7.

20. The Tesla Powerwall 2.0 Program helps achieve these goals. The program allows GMP customers to install a lithium-ion Tesla battery with a 13.5 kWh capacity in their home. The battery is controlled by GMP and can be used to reduce regional capacity and transmission costs for all GMP customers by discharging during peak load events. The Powerwalls will also be used by host customers for backup power in the case of an outage. Castonguay pf. at 8; Castonguay rebuttal pf. at 5-6.

21. The program offers customers new ways to create home resilience without a fossil-fuel-based backup generator, while allowing for load control and balancing for the benefit of all GMP customers. Castonguay pf. at 8.

22. In exchange for sharing access to the battery with GMP, the cost of the battery unit for host customers is reduced to either a monthly charge of $15 for ten years or a one-time charge of $1,500, making it affordable for customers to participate while also creating a stored energy resource that can be strategically discharged to lower costs for all customers. Castonguay pf. at 8.

23. The program has been popular with GMP customers, and GMP has more customers interested in Powerwall units. Castonguay rebuttal pf. at 4.

24. A total of 694 units were installed as of August 2018, with an additional 930 units under contract, and more customers are in various stages of the sign-up process than can be accommodated within the 2,000-unit cap on the pilot program. Castonguay rebuttal pf. at 4.

25. GMP is on track to complete installation of the full 2,000 units by summer 2019. Castonguay rebuttal pf. at 4.

26. The program's benefits – including revenues from participating customers and avoided power supply and transmission costs – are projected to exceed the cost of the program. Castonguay pf. at 9; Castonguay rebuttal pf. at 6.

27. Once fully installed, the program will create nearly 10 MW of storage capacity and is anticipated to save non-participating customers approximately $2 million over the life of the program. Castonguay pf. at 9; exh. GMP-BO-8.

28. The financial benefits for all customers are derived from a combination of GMP utilizing the batteries for power supply cost reductions and from collecting a payment from participating customers. Castonguay rebuttal pf. at 5.

29. Power supply costs are reduced by discharging the batteries during peak power usage times, which ultimately lowers GMP's Regional Network Service and Forward Capacity Market costs. Castonguay rebuttal pf. at 5.

30. In addition to the Forward Capacity Market and Regional Network Service cost reductions, GMP is also able to create some value through energy arbitrage – or discharging the batteries when market prices are high, such as during peak times, and recharging them when the energy market prices are lower. Castonguay rebuttal pf. at 5.

31. The batteries also provide GMP with a tool to manage voltage and reactive power or "VARS" on the distribution system. GMP has not yet tried to monetize this value for customers,

but having this capability distributed across the entire system provides GMP with flexibility to manage and keep a stable and reliable grid despite changing loads, intermittent distributed generation, and strategic electrification. Castonguay rebuttal pf. at 5-6.

32. The main benefit to the host customer is improved reliability using a clean energy system. In cases where the host is forgoing the use of a fossil-fuel generator there is the added benefit of lower carbon emissions. Unlike a fossil-fuel generator, the battery system has no exhaust emissions or noise, requires no refueling, requires no regular maintenance, and is in general more responsive in an outage event than a traditional generator. This host benefit is important because it is the aspect of the program that encourages so many people to participate, thereby allowing GMP to generate the broader net benefits for all of its other customers. Castonguay rebuttal pf. at 6.

33. GMP utilizes Tesla's software control platform, called GridLogic, to continuously monitor and dispatch the fleet of Powerwall batteries across the entire system. A team at GMP regularly watches and predicts when peak loads will occur, using a set of analytical tools to help narrow the hours in which peak loads will occur. Castonguay rebuttal pf. at 7.

34. GMP can schedule the battery resources through a grid control software platform in anticipation of the peak event. As the peak period approaches, GMP has real-time control to adjust as necessary to maximize the peak benefit. GMP also notifies host customers automatically via e-mail in advance of each peak event. Castonguay rebuttal pf. at 7.

35. GMP will use an automated dispatch algorithm to monitor loads and control and discharge the batteries to hit peaks. Tr. of 10/25/18 at 81 (Castonguay).

36. Forward Capacity Market savings for GMP customers are generated by discharging the battery during the single ISO New England peak hour each year. Because Forward Capacity Market obligations are calculated to include a reserve margin, every 1 MW of load reduction GMP achieves by discharging the batteries actually reduces GMP's Forward Capacity Market obligations by up to 1.5 MW. Castonguay rebuttal pf. at 8-9.

37. Although GMP's capacity obligations are set based on the single highest peak hour during the year, to ensure that it is able to hit the Forward Capacity Market peak, GMP constantly monitors forecast loads for New England and dispatches its load management tools whenever the forecasts project a potential ISO New England peak. Castonguay rebuttal pf. at 9.

38. Regional Network Service rates are calculated based on each month's peak Network Load. As with the Forward Capacity Market, GMP discharges batteries during predicted monthly peak periods to lower these monthly peaks and thereby lower the amount GMP customers must pay for Regional Network Service. Castonguay rebuttal pf. at 9-10.

39. Powerwalls provide value back to customers as soon as they go into service. The Powerwall program is already providing benefits to GMP customers. Castonguay rebuttal pf. at 10.

40. During the summer of 2018, the units were successfully deployed for all potential summer Forward Capacity Market peaks. GMP has successfully hit seven potential predicted ISO peak hours this summer, including the year-to-date ISO Forward Capacity Market peak that occurred on August 29, 2018. Castonguay rebuttal pf. at 10.

41. During the August 29, 2018, event the Powerwalls alone were able to reduce GMP's peak load by 3 MW. This is a much greater reduction than the earlier Forward Capacity Market potential peaks in the summer of 2018 because Powerwalls continue to be deployed and added to the software platform. Castonguay rebuttal pf. at 11.

42. If August 29, 2018, remains as the New England peak day, the Powerwalls will provide almost $370,000 in peak cost savings in the next capacity year, which starts in June of 2019. Castonguay rebuttal pf. at 12.

43. In addition to the Forward Capacity Market peak, the batteries already in service have been used to lower GMP's share of monthly Regional Network Service peaks. Specifically, the Powerwalls have reduced Regional Network Service costs by approximately $45,000 since January of 2018. In contrast to the Forward Capacity Market benefit, these Regional Network Service savings benefit customers in the month the load reduction occurs. As the rollout of Powerwalls continues, the value from Regional Network Service peak shaving will increase. Castonguay rebuttal pf. at 12.

44. Although the Powerwall program is already producing benefits for customers, the capital costs associated with the program have not yet been included in rate base. The program started in 2017, but GMP did not seek rate recovery in the first year to ensure that the units were deployed as expected and were providing the anticipated value. Castonguay rebuttal pf. at 12.

45. The data from the first year of the program demonstrate that the Powerwalls can be effectively controlled to produce the anticipated benefits for all non-participating customers. Castonguay rebuttal pf. at 10-13, 18.

46. The Powerwalls are already providing benefits to GMP customers in 2018 and will provide those benefits to customers in 2019 if the program remains in rates. Tr. of 10/25/18 at 212 (Winn).

47. The modeling for the Powerwall program includes assumptions regarding battery degradation. GMP's analysis of the ability to provide the anticipated peak load reduction benefits takes this information into account. Castonguay rebuttal pf. at 14.

48. To consider the impact of degradation, GMP and Tesla collaborated on an hourly dispatch model, relying on data from three years of actual ISO-NE peak information, and simulated the dispatch of batteries against this historical data, assuming a 3% annual degradation factor over 15 years. This detailed modeling exercise determined that even taking degradation into account, the automated battery dispatch algorithm that will be used to control the batteries could still hit 100% of the Forward Capacity Market peaks and 99-98% of the Regional Network Service peaks, with a slight reduction in the ability to hit Regional Network Service peaks over time. Tr. of 10/25/18 at 81-82 (Castonguay).

49. This analysis was used to develop the "peak effectiveness" factor in the GMP/Tesla model. That factor was then further de-rated by two other performance factors – the ability to forecast peaks accurately, and the communication availability of the batteries. Tr. of 10/25/18 at 81-86 (Castonguay).

50. These three factors together produce a levelized effectiveness factor of 72% for Forward Capacity Market peaks and 62% for Regional Network Service peaks over the program life, which is conservative. Actual performance of the ability to hit Forward Capacity Market peaks in the first year has been significantly higher than the model. Castonguay rebuttal pf. at 15; tr. of 10/25/18 at 85-86 (Castonguay).

51. Even if degradation were to occur at a rate faster than the rate assumed by the model, GMP has executed a performance guarantee with Tesla that guarantees peak load reduction performance for the batteries over ten years. Tr. of 10/25/18 at 71 (Castonguay); exh. GMP-Cross-CCD-25.

52. Underperformance on the anticipated peak load reduction will be compensated by Tesla under the guarantee, up to $3 million over the life of the project. Exh. GMP-Cross-CCD-25.

53. Tesla guarantees that the Powerwalls will have 70 % of their capacity remaining after ten years, based on an assumption that the batteries are used 300 times per year. GMP anticipates only needing to cycle the batteries 50 or 60 times per year. The rate of degradation depends on how many times the batteries are cycled. Tr. of 10/25/18 at 92 (Castonguay), 159 (Dawson).

54. GMP's market outlooks were developed using the same approach that has been used for evaluating other potential generation projects and PPAs in the past several years. GMP also presented detail on its market outlooks in the context of Docket No. 8684 (relating to PURPA avoided costs), and the same methods supported GMP's December 2016 Rule 4.100 avoided-cost filing. Smith rebuttal pf. at 13.

55. GMP's avoided-cost forecasts are based on an internally developed market outlook that is built on a review of regional wholesale market conditions and anticipated market price drivers for each of the key products (i.e., energy, capacity, and renewable energy certificates or RECs). Smith rebuttal pf. at 13.

56. GMP's outlooks are informed by market price forecasts and related publications from consultants who focus on the New England markets for energy, capacity, and RECs. GMP obtains additional insights by interviewing the experts who developed these forecasts, with respect to the market drivers and key assumptions that are used to develop their outlooks. Smith rebuttal pf. at 13-14.

57. Analysis is also performed with respect to transmission expenses (Regional Network Service) and, in the context of battery storage, frequency regulation service. The trends in GMP's market outlooks for these products (or expenses) over time are intended to reflect the influences of appropriate market drivers (e.g., trends in regional supply/demand, cost of entry/exit, general inflation) that affect those products. Smith rebuttal pf. at 14.

58. The Department did not present a detailed critique of each value stream or an alternative set of recommended market views. Smith rebuttal pf. at 15.

59. The Department did not offer specific counter evidence to demonstrate what Forward Capacity Market or Regional Network Service rates were likely to be over the life of the

program, but rather opined that actual rates may turn out to be different from GMP's forecasts. Tr. of 10/25/18 at 163 (Dawson); Dawson pf. at 26-27, 28-29.

60. Forward Capacity Market rates are already largely set for the next three years (through 2021). Tr. of 10/25/18 at 166 (Dawson).

61. GMP's base case reflects a recent ISO-NE projection of Regional Network Service rates for the first five years, followed by an escalation rate of 3.25% per year. Smith rebuttal pf. at 22.

62. The 3.25% per year trend line used by GMP is slower than the historical growth trend for Regional Network Service rates since 2000 (more than 10% compound annual growth rate) and also slower than the growth rate over the past five years. Smith rebuttal pf. at 22.

63. Regional Network Service rates are likely to increase over the ten-year term of the Powerwall program. Tr. of 10/25/18 at 166 (Dawson).

64. GMP did not conduct a detailed sensitivity analysis in this case. Regional Network Service rates are not particularly volatile and capacity rates are largely established for the first several years of the Powerwall program. Tr. of 10/25/18 at 116-117 (Smith).

65. From the perspective of a power supply investment, the Powerwall program offers a set of benefits that is estimated to be greater than the cost of the resource. That is not common in the power market – with an alternative hedging tool like a PPA, a break-even equation is more common. Tr. of 10/25/18 at 122 (Smith).

66. GMP considered the cost of alternatives to the Tesla Powerwall program, including three other potential residential battery options. Exh. GMP-BO-8.

67. If the Powerwall program is not included in rates there is a risk that customers could be paying higher capacity and transmission costs in the future and would miss out on the power supply and revenue benefits associated with the peak shaving benefits of the program. Tr. of 10/25/18 at 209 (Winn).

Discussion

The Department recommends that the Commission defer rate base treatment of the Tesla Powerwall 2.0 Program until after GMP receives approval from the Commission to offer the program as a tariffed service. The Department states that while GMP's Temporary Limited Regulation Plan authorizes GMP to pursue innovative pilots on a non-tariffed basis for up to 18

months, the Plan does not guarantee rate recovery for any innovative services. The Department maintains that the alternative regulation paradigm under which the innovative services are enabled requires the provision of least-cost services as well as a reasonably balanced system of risks and rewards. The Department states that it is not opposed to the Powerwall program as a general matter, but it is concerned about the overall scale of the program and questions the financial modeling that purports to support the program. The Department maintains that ratepayers may end up with a disproportionate share of risk associated with the program. Therefore, the Department recommends that the Commission defer rate-base recovery until GMP completes the 18-month pilot period and presents data and information to justify offering the program as a tariffed service. The Department argues that the completed-pilot data and information regarding the Powerwall program will enable regulators to determine whether the program's risks are appropriately balanced between GMP's shareholders and ratepayers. If GMP does not pursue a tariff for the Powerwall program, or if the tariff is not approved by the Commission, then the Department recommends that the Powerwall program be treated as a below-the-line expense.

The Department acknowledges the primary benefit of the Powerwall program – the ability for GMP to reduce load during peak events and thus reduce GMP's Forward Capacity Market and Regional Network Service costs. However, the Department states that the financial modeling completed by GMP indicates that the Powerwall program is not expected to yield a positive net present value for non-participating ratepayers for ten years. The Department is concerned that GMP's modeling did not adequately account for battery degradation and how it would affect GMP's ability to successfully hit peaks. The Department contends that GMP's modeling did not consider potential changes to the rules governing Forward Capacity Market and Regional Network Service charges over the life of the program. While the Department does not challenge the validity of GMP's Forward Capacity Market and Regional Network Service cost projections, the Department is concerned that GMP did not perform a sensitivity analysis with respect to Forward Capacity Market and Regional Network Service projections. The Department suggests that providing this information should be a necessity for an innovative service that is justified primarily on yielding financial benefits to ratepayers. The Department maintains that the Powerwall program modeling indicates that the program is marginally beneficial under ideal

circumstances, and that a sensitivity analysis would provide the Commission with a better understanding of the magnitude of risk that will be placed on ratepayers if the program is put into rate base. The Department notes that deferring rate recovery of the Powerwall program is not a punitive measure because GMP would still be able to recover its costs if it can demonstrate with more certainty the benefits of the program. The Department maintains that this approach yields an appropriate balancing of risk that is consistent with the Temporary Limited Regulation Plan and Section 218d.

GMP argues that the concerns raised by the Department do not justify delaying inclusion of the Powerwall program in rates. GMP claims that the Department's recommendation would discourage additional investments in similar innovative efforts. GMP states that it is pursuing the Powerwall program because it advances the state's energy goals and because these types of projects are critical to controlling the trajectory of customer rates over the long term – especially in an environment of flat or declining loads. GMP argues that the Powerwall program introduces a new source of revenue that benefits all customers in the form of payments from host customers and provides reductions in regional costs that are otherwise outside of GMP's control.

GMP suggests that the Powerwall program meets all the regulatory requirements that would typically apply to a decision to include utility investments in rate base. First, GMP states that the Department does not dispute that the program's costs are known and measurable. GMP has already incurred costs associated with the program, and the full 2,000 units will be installed before the end of the 2019 rate period. Second, GMP states that the Powerwalls have been successfully dispatched during the past year during peak events, thus demonstrating that the program can provide the anticipated customer benefits. GMP notes that the Powerwall program has reduced GMP's RNS costs in 2018 and will reduce customer capacity costs during the 2019 rate period.

GMP does not agree with the Department's position that the program modeling did not accurately account for battery degradation. GMP's witness explained that the program model assumed 3% battery degradation each year over 15 years. GMP explains that the degradation assumption was conservative compared to the likely use case because the batteries will require far fewer cycles than was accounted for in Tesla's modeling. GMP argues that the model includes an appropriate de-rating factor that was levelized over the life of the batteries.

Therefore, GMP asserts that the model conservatively evaluates the program's benefits. GMP represents that the batteries' actual performance to date shows performance above the model's assumptions.

GMP maintains that the Department's generic concern about the uncertainty of forecast Regional Network Service and Forward Capacity Market costs does not provide a compelling basis to delay the Powerwall program's costs and benefits in rates because there is no evidence that GMP's estimates are fundamentally wrong, unreasonable, or inappropriate. GMP states that the avoided-cost forecasts are based on the same internally developed information as used in other situations and contends that the Powerwall program should not be held to a higher standard than other GMP resource decisions.

GMP maintains that Regional Network Service costs are not likely to be volatile over the program life, and that the Forward Capacity Market costs for the first several years of the program are already essentially locked. Accordingly, GMP suggests that it is unclear how additional delay will meaningfully inform the analysis that has already been performed.

GMP argues that the Powerwall program is part of a portfolio of demand response resources that will help manage capacity and transmission costs for customers. GMP suggests that the Powerwall program is unique in that it provides a flexible, year-round resource at a scale that other demand resources cannot consistently provide. According to GMP, the Powerwall program offers benefits to host customers in the form of improved reliability during grid outages. Therefore, GMP requests that the Powerwall program costs and benefits be allowed into rates.

We have reviewed the relevant evidence and briefing and conclude that the Tesla Powerwall 2.0 Program should be allowed into GMP's rates. The proposed plant addition meets the "known and measurable" standard because GMP's costs are known and meets the "used and useful" standard because there is a high probability that the entire 2,000 units will be placed into service before the end of the 2019 rate period.

What is less certain, as the Department highlights, is the magnitude of ratepayer benefits over the course of the program. The Department's concerns relate to two factors of GMP's financial modeling: battery degradation and Regional Network Service /Forward Capacity Market avoided-cost uncertainty. We find that GMP's modeling has reasonably accounted for battery degradation by assuming a 3% annual degradation factor over 15 years. No party has

submitted evidence to challenge this assumption. In addition, GMP has executed a performance agreement with Tesla that guarantees peak load reduction performance for the batteries over ten years. The Tesla guarantee assumes that the batteries will be used 300 times per year, whereas GMP anticipates needing the batteries only 50 to 60 times per year.

We find that GMP has made reasonable assumptions in its modeling with respect to future Regional Network Service and Forward Capacity Market costs that will be avoided through deployment of the Powerwall batteries. First, Forward Capacity Market costs for the first several years of the program are already known. Second, the Regional Network Service costs were based on a recent ISO New England projection for the first five years and were escalated by 3.25% each year thereafter. GMP states that this escalation rate is slower than the historical growth trend for Regional Network Service rates since 2000. No party submitted its own estimate of what Forward Capacity Market or Regional Network Service rates would be during the time period. Accordingly, we conclude that these assumptions were reasonable. The modeling suggests that, over time, the Powerwall program will provide a net-positive benefit for GMP ratepayers. One important consideration in our decision to allow inclusion of the Powerwall program in rate base prior to the time when its benefit to ratepayers is unequivocally demonstrable is our belief that utilities should be encouraged to be innovative when it comes to seeking solutions to climate change. We conclude that it is appropriate for GMP to add to its rate base the cost of innovate measures that are sufficiently mature and are shown to be sufficiently effective at addressing climate change.

While we have not adopted the Department's recommendation to defer recovery of the Powerwall program, we find that the Department has raised important issues with respect to innovative pilots generally. First, the Department is concerned about the overall scale of the Powerwall program, which represents an approximately $15 million investment. GMP's current Temporary Limited Regulation Plan does not contain a monetary limit on the size of an innovative pilot. Second, the Department raised a concern with respect to appropriately balancing risks among GMP shareholders and ratepayers. Third, the Department suggested that innovative pilots such as the Powerwall program should include a sensitivity analysis along with the financial modeling. The Commission intends to address these issues within the context of

Case No. 18-1633-PET, which concerns the review of GMP's proposed multi-year regulation plan.

Heat Pump Water Heater Program

68. GMP's rate base proposal includes $255,656 in the 2019 rate period and $278,350 in the interim period for the heat pump water heater ("HPWH") program. Castonguay pf. at 4; exh. GMP-JC-1.

69. The cost/benefit analysis of the HPWH program contains an assumption that HPWHs are replacing fossil-fuel-fired water heaters. However, GMP has not always tracked the type of water heater that the installed HPWHs were replacing. GMP now tracks this information. Tr. of 10/25/18 at 101 (Castonguay).

70. If a HPWH replaces an electric resistance water heater, the kilowatt-hour margin is lower than if the HPWH replaces a fossil-fuel-fired water heater. Tr. of 10/25/18 at 102 (Castonguay).

71. GMP's witness did not know whether a HPWH that replaces an electric resistance water heater is still cost beneficial. Tr. of 10/25/18 at 102 (Castonguay).

72. GMP has spent time over the past year testing equipment to control HPWHs. As of the summer of 2018, GMP has two control options for HPWHs – the stand-alone Rheem water heater, which includes its own control feature, and the Aquanta control unit, which can be used to retrofit or add controls to other HPWHs. GMP has successfully tested the control functionality for these systems and is using its Virtual Peaker distributed energy resource platform to control the test units. Castonguay rebuttal pf. at 19.

73. GMP plans to offer the HPWH as a tariffed service, and through the tariff process will provide all the details regarding control of these systems. Castonguay rebuttal pf. at 19.

74. GMP agrees to require load control as part of the anticipated HPWH tariff during the 2019 rate period. Tr. of 10/25/18 at 58 (Castonguay).

Discussion

The Department argues that it is necessary to establish regulatory safeguards that protect both ratepayers and competitive service providers to prevent a regulated monopoly public utility

such as GMP from gaining an unfair competitive advantage within commercial marketplaces for products like HPWHs. The Department proposes a list of factors for the Commission to consider when evaluating whether to allow rate-base treatment of products and services that are generally available in the commercial marketplace, including:

- Whether the utility can demonstrate the ability to load-control the use of the product or service in a manner that benefits all ratepayers and not just the program participants;
- Whether the financial benefits of the program exceed the costs to non-participating ratepayers; and
- Whether any non-monetary benefits achieved by the program to satisfy a legislative or regulatory mandate justify any net financial loss to ratepayers.

In addition, the Department recommends that any bad debt associated with a program should be borne either by the program participants or by the utility's shareholders. The Department further recommends that the utility should be required to open its billing system to third-party entities that offer similar competing products.

The Department maintains that there is no basis to differentiate GMP's HPWH service from other third-party entities that provide the same service because GMP does not have the ability to load-control the HPWHs installed during the pilot phase. The Department argues that there is no discernible non-participant benefit that would justify allowing GMP to put the costs and revenues from the HPWH program in rates. Therefore, the Department recommends that the HPWH pilot costs and revenues receive below-the-line treatment and be removed from GMP's cost of service. The Department states that it would not object to including the costs and revenues in future rates for a HPWH tariffed service if load control is a requirement of the tariff.

GMP states that it shares the goal of controlling HPWHs to provide peak shaving benefits for the benefit of all customers. GMP agrees to include a control requirement in its proposed HPWH tariffed service. Therefore, GMP contends that the HPWH program should be allowed in 2019 rates conditioned on the requirement that installations under the new tariff program be controllable devices.

We conclude that the HPWH program should not be added to rate base. Unlike its presentation in support of the inclusion of the Powerwall program in rate base, the presentation

regarding HPWHs lacked a thorough analysis of the program. Missing was critical information on either the type of water heater that had been replaced – an electric water heater or one using a carbon fuel source – or the extent to which the new water heater was able to be load-controlled. Without this information, GMP cannot demonstrate that these units will provide peak-shaving benefits to all ratepayers. We find no basis to differentiate GMP's offering of non-controllable HPWHs from other third-party entities providing the same service because GMP has not demonstrated discernible benefits to non-participating ratepayers. To the extent that GMP intends to recover its HPWH investments in the future, it is directed to collect information on what type of water heater is being replaced and whether the new unit is load-controllable, so that it may ensure that the HPWH program is achieving its intended purpose.

In conclusion, the removal of HPWHs from rate base may affect GMP's anticipated revenues and thus GMP's revenue requirement. Therefore, we direct GMP to file a revised cost of service that reflects our conclusion as soon as possible, but no later than within 2 business days of this order.

Motor-Operated Air Break Switches

75. GMP proposes to invest approximately $33.6 million during the 2019 rate period in transmission and distribution ("T&D") projects. John Fiske, GMP ("Fiske") pf. at 11.

76. The Department recommends disallowance of capital investments related to the installation of motor-operated air break ("MOAB") switches at a two GMP substations – Newbury (Project #159729) and Castleton (Project #159730). These projects total $767,055 of proposed capital spending. Kevin J. Mara, Department ("Mara") pf. at 17; exh. PSD-KJM-4.

77. The MOABs would replace gang-operated air break switches, which must be operated manually by field crews. GMP has been proactively upgrading all of its manual gang-operated air brake switches with MOAB switches to improve "worker safety and efficiency and decrease outage times." Fiske reb. at 3.

78. The MOAB switches can be remotely controlled by GMP's SCADA network and provide a greater measure of reliability for GMP's customers. The ability to control a MOAB remotely also provides greater safety measures for GMP's line crews. Fiske reb. at 3, 6; Tr. 10/25/18 at 139-140 (Fiske).

79. Outages that occur at substations can affect large numbers of customer, sometimes entire towns can be without power. The proposed installation of MOAB switches would reduce outage durations when these types of faults occur. Tr. 10/25/18 at 141 (Fiske).

Discussion

The Department argues that GMP has not sufficiently demonstrated a need to replace the existing gang-operated air break switches with MOAB switches and that GMP has not provided any evidence that the existing gang-operated air break switches have physically degraded to the extent that replacement is necessary.[2] The Department's witness alleges that GMP's analysis for the installation of the MOABs "lacks justification" based on the potential frequency of the operation of the switches and does not find GMP's rationale to justify the addition of the MOABs to be compelling.[3] The Department recommends that the Commission disallow costs associated with the MOAB switches that GMP proposes to install during the rate year.

GMP responds that the proposed MOAB switches are "part of a programmatic effort to upgrade and modernize its grid" and that they will improve reliability benefits for customers and safety benefits for workers.[4] GMP's witness states that these SCADA-controlled MOAB switches are "essential upgrades for the existing T&D infrastructure."[5]

We are persuaded that the cost to install MOAB switches should be allowed in rates. Although the Department's witness disagrees with GMP's judgments on the need for the MOAB switches, we conclude that the two contested installations of MOAB switches are a logical step in GMP's efforts to modernize its grid. The Department does not provide a strong rationale for denying the costs associated with these investments. GMP has provided adequate justifications for these investments and, accordingly, GMP is permitted to recover these costs in rates.

Distribution Line Project #153588

80. The Department also recommends a disallowance of a portion of the cost of distribution line project #153588. The proposed disallowed cost is associated with the use of 336

[2] Department brief at 18.
[3] Mara pf. surreb. at 3-4.
[4] GMP brief at 18.
[5] Fiske reb. at 7.

tree-wire (covered wire) on the single-phase section of Line 74 rather than 1/0 tree-wire, which would result in a savings of approximately $13,871. Mara pf. at 26.

81. The rebuild of this section of Line 74 is intended to provide greater reliability to customers on that line. Jacob Thomas, Department ("Thomas") supp. pf. at 5.

82. Line 74 is in a rural area that is prone to major weather events, where in the past four years there have been nine outages causing 68,131 customer-hours out. Thomas supp. pf. at 5.

83. Installing 336 tree-wire and bringing poles to the road would significantly improve the reliability of this line. The use of 336 rather than 1/0 wire is necessary to storm-harden the line. Exh. GMP-JRF-3.

Discussion

The Department recommended that the Commission disallow $13,871 in costs associated with the use of 336 wire rather than 1/0 wire because the additional cost of 336 wire will provide "no benefit to the ratepayers."[6] According to the Department, single-phase line should carry no more than 70 amps, and 1/0 line is rated for over 200 amps. GMP responded that its "choice of covered tree wire is justified and appropriate" because the 336 wire is "necessary to accomplish the intended storm-hardening on this line."[7]

We find that GMP's decision to use 336 rather than 1/0 wire to "storm-harden" the distribution line is reasonable. GMP represented that the distribution line is in a rural area that is prone to major weather events, wherein the past four years there have been nine outages, causing 68,131 customer-hours out. The Department has not disputed these assertions or provided evidence that 336 wire would not help storm-harden the line. Therefore, we are persuaded by GMP's assertion that 336 wire is necessary to storm harden the distribution line and we will allow GMP to recover this cost in rates.

T&D Blankets

84. GMP proposes spending covered under four functional blanket work-order categories for T&D projects: 1) Distribution Equipment Purchases, 2) Distribution Lines, 3) Distribution Substations, and 4) Transmission Lines and Substations. Blankets are used to cover costs for

[6] Mara pf. at 26.
[7] GMP brief. at 20.

smaller T&D projects where the anticipated level and need for the spending are determined based on historical experience, but the exact location of work or the specific work required for the projects is not necessarily known in advance. Fiske pf. at 19-20.

85. The proposed amount of capital investment under each of the four functional blanket work-order categories is as follows: $11,092,246 for Distribution Equipment Purchases, $12,762,451 for Distribution Lines, $1,752,964 for Distribution Substations, and $2,770,787 for Transmission Lines and Substations. Fiske pf. at 19-20; exh. PSD-KJM-10 (Rev. 11/09/18).

86. The Distribution Equipment Purchases blanket includes three equipment purchase blanket work orders: $7,320,969 for distribution transformers, $1,696,412 for meters, and $2,074,865 for regulators and capacitors. Fiske pf. at 20; exh. PSD-KJM-10 (Revised).

87. As a result of the Memorandum of Understanding between the Department and GMP in Case No. 17-3112-TF, only T&D projects that are estimated to cost under $250,000 are included in the T&D blanket work orders. Projects that do not fall under this category are covered as individual T&D projects. Fiske pf. at 10-11.

88. Cost estimates for T&D blankets are established by reviewing historical spending in each of the functional blanket work-order categories. Fiske pf. at 20-21.

89. The Department recommends reducing GMP's blanket spending for Distribution Equipment Purchases by $253,954 under the regulator and capacitor work order and by $665,495 under the transformer work order. Tr. 10/25/18 at 179 (Mara); exh. DPS-KJM-10 (Rev. 11/09/18).

90. The Department recommends a reduction of $8,199,387 to the Distribution Line blanket spending. The Department's adjustments would reduce the Distribution Line blanket amount for the rate period from approximately $12.8 million to approximately $4.6 million, a 63% reduction. Exh. GMP-JRF-2; exh. DPS-KJM-10 (Rev. 11/09/18).

91. Regulators and capacitors provide necessary voltage support to ensure proper system operation, feeder backup, circuit reconfigurations, power quality, and asset maintenance. The dollars proposed under this blanket are necessary to cost-effectively ensure adequate system voltages and system operation. Fiske rebuttal pf. at 28.

92. The interim and rate-year transformer blanket dollars requested in this filing are less than the five-year average of actual dollars spent and also less than the 2015, 2016, and 2017

actual historical dollars spent. GMP's proposed transformer blanket interim and rate year dollars represent a reasonable spending level with a high probability of occurring. Fiske reb. at 29.

93. The Department proposes that certain categories of projects be removed from the Distribution Line blanket regardless of whether the spending for the individual capital project exceeds $250,000. These categories include reliability upgrades, relocation of lines along roads, and preparation of structures for distribution automation. Mara pf. at 46.

94. Historical averages are used to develop estimated blanket budgets because spending can fluctuate from year to year based on varying system needs, equipment failures, lead times, and customer requests. Use of a five-year average addresses these spending fluctuations and smooths out the impact in any given year. If the estimated blanket budget is less than the five-year average, GMP includes that amount rather than the five-year average. Fiske reb. at 26.

Discussion

The Department states that GMP should be allowed "significant flexibility in its T&D spending to ensure safe and reliable service."[8] At the same time, the Department raises concerns regarding the growth of spending under the blankets and that GMP is relying too heavily on blankets for its capital expenditures.[9] The Department acknowledges that the Commission has traditionally allowed the use of blanket spending in rate cases and that it does not seek to have the Commission modify the standards agreed to by the Department and GMP in Case No. 17-3112-TF. The Department proposed the following criteria for determining whether blanket spending should be allowed into rates:

- Forecasted blanket spending attributable to new customers should be allowed because GMP based its rate period on forecasted loads, which include revenues associated with new customers.
- Replacement of failed equipment, including poles in need of replacement should be allowed.
- Costs associated with work required to "do upgrades and relocate joint facilities in order to accommodate joint-use parties on GMP's pole" as part of its pole attachment tariff (i.e make-ready work) should be allowed.

[8] Department brief at 17.
[9] Department brief at 16.

- Reliability upgrades, relocation of lines to road, preparing structures for distribution automation should be disallowed.

The Department contends that these criteria would "achieve a fair balance of allowing GMP to prospectively include necessary portions of blanket spending in rates, but would defer recovery of portions of the blanket spending over which GMP retains a fair degree of discretionary control."[10]

GMP argues that the Department's proposed criteria would dramatically alter the approach to blanket spending because it would "abandon the use of historical five-year averages altogether for these discrete blankets, and instead rely on the judgement of [the Department's] independent expert to set a new blanket budget, based on his opinion regarding the appropriate items to include in the rate period."[11] GMP asserts that certain "discretionary" expenditures identified by the Department's witness are not, in fact, "discretionary" spending. GMP argues that "these expenditures are necessary to ensure adequate system voltages and system operation for GMP's customers."[12] GMP explains that the Department's approach would require GMP to absorb the necessary spending and seek to recover in some future rate case.[13]

GMP has adhered to its agreement with the Department in Case No. 17-3112-TF requiring that distribution line projects above $250,000 be removed from blankets and presented as individual projects with the appropriate level of supporting detail and documentation. The Department requests that the Commission require an additional restriction on GMP's budgeting for blanket spending that would remove capital expenditures considered to be "discretionary." Unlike the $250,000 threshold, the "discretionary" spending restriction is subjective. GMP argues that expenditures identified by the Department as discretionary are in fact required to provide reliable service to its customers.

We agree with the Department that "it is imperative that regulators take a more detailed review of cost-drivers of each blanket, particularly if T&D investments are no longer solely

[10] Department brief at 17.
[11] GMP brief at 16.
[12] Fiske reb. at 28.
[13] GMP brief at 17.

driven by large projects such as substation construction and new distribution lines.[14] The modernization of the distribution grid may require many smaller upgrades that in aggregate could be significant. In addition to the traditional regulatory principles that utility investments must be prudent, useful, and measurable, GMP's reliability and automation investments must be the product of sound planning principles that are consistent with Vermont's energy policies.[15] GMP will be required to explain its plans for a modern and reliable grid in the context of several proceedings, including the Commission's review of GMP's multi-year regulation plan, which proposes a fixed level of capital investment for the next three years, and GMP's Integrated Resource Plan, which contains GMP's strategy for T&D investments.

However, based on the record in this case, we do not find it appropriate to disallow recovery of the portion of GMP's blanket spending that the Department has identified as "discretionary." The Department has not demonstrated that any of the disputed T&D investments are the product of improper planning principles, or will not be used and useful, or are not known and measurable. Although the Department states that the proposed criteria should allow the Department and the Commission to better understand and review the cost-drivers for GMP's T&D capital investments in the future, we do not agree that the Department's recommendation to exclude items that it considers to be "discretionary" expenditures in blankets achieves this objective. Our decision does not mean that GMP is entitled to use blankets to recover any investment that is less than $250,000. The Commission may adopt additional restrictions on the use of blankets in the future if necessary. The Commission will investigate approaches for overseeing GMP's T&D-related capital expenditures and for understanding the cost-drivers in the context of its review of both GMP's proposed multi-year rate plan and its Integrated Resource Plan.

C. Capital Structure and Return on Equity

95. As part of the memorandum of understanding between the Department and GMP in the previous rate case (Case 17-3112-INV), the parties agreed to an annualized rate of return of 9.3% for 2019. Coyne pf. at 3.

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[14] *See* Department brief at 17 (stating that blankets represent a "substantial amount of GMP's overall proposed capital spending).

[15] 30 V.S.A. §§ 202a, 218c.

96. GMP's witness, Mr. Coyne, provided analysis supporting a return on equity in the range of 9.9% to 10.4%, with a cost of capital to equity ratio of 49.8% in the rate period. Mr. Coyne's recommendation for an appropriate return on equity for GMP for the 2019 rate period is 10%. Coyne pf. at 3, 70; exh. GMP-JMC-2.

97. The current market analysis and the increase in utility risk stemming from the Tax Cuts and Jobs Act of 2017 support a return on equity well above 9.3%; however, the agreed-upon return on equity was an important part of the agreement reached with the Department in the prior rate case. Accordingly, GMP has chosen to uphold its agreement with an annualized return on equity of 9.3% for the rate period January 1, 2019, to September 30, 2019. Coyne pf. at 3.

98. The Department's witness testified that a reasonable return on equity would be in the range of 8.7% to 9.25%. The 9.3% return on equity for 2019 agreed to by GMP and the Department falls near the range recommended by the Department's witness. Baudino pf. at 2-3, 34-35.

99. GMP and the Department agree that GMP's requested cost of short-term debt of 1.83% is reasonable. Exh. GMP-ER-1 (rev.); Baudino pf. at 35.

100. GMP's requested capital structure and cost of debt included several forecasted bond issuances for September 2018 (at a 4.50% yield), December 2018 (at a 5.05% yield), May 2019 (at a 5.25% yield), and June 2019 (at a 5.255% yield). Ryan pf. at 39; Baudino pf. at 35.

101. Mr. Baudino recommended that the interest rate on the September 2018 long-term debt issuance be updated to reflect the actual interest rate of the 2018 issuances, and that the interest rate on the remaining two other projected long-term debt issuances be reduced to 4.50%. Baudino pf. at 35-36.

102. In rebuttal, GMP accepted Mr. Baudino's recommendation and updated its cost of service to reflect the actual interest rates on the September and December 2018 long-term debt issuances, which GMP locked in on August 21, 2018, and a 4.50% interest rate on the remaining two other projected long-term debt issuances. This adjustment reduced GMP's rate request by 0.10%. Ryan rebuttal pf. at 4-5; Exh. GMP-ER-17 (Rev.).

103. GMP's final proposed capital structure is 50.15% debt and 49.85% equity. Exh. GMP-ER-1 (Rev.)

Discussion

There are three essential steps in setting the weighted-average cost of capital in a utility rate case. First, we determine an appropriate capital structure. Second, we determine the cost of each capital component, debt and equity. Third, we determine the cost of each component according to its proportion of the total capital structure. The sum of these weighted capital components is the weighted-average cost of capital.

The Department and GMP witnesses agree on the appropriate capital structure for this rate filing. We therefore find that GMP's final proposed debt to equity ratio of 50.15% to 49.85% is appropriate and approve this capital structure.

With respect to the cost of both short-term and long-term debt (as adjusted in GMP's rebuttal filing), witnesses from both parties have testified that the rates proposed in GMP's revised cost of service are both reasonable and appropriate.

With respect to the rate of return on equity, it is well established that "[n]either the law nor regulatory precepts prescribe a specific methodology for setting the appropriate return on equity,"[16] and the Commission therefore has substantial discretion in determining an appropriate rate level.[17] The Commission has repeatedly emphasized that the critical element is the "reasonableness of the result" and not the methodology employed to reach it.[18] The basic standard for an appropriate rate of ROE is as follows:

> A public utility is entitled to such rates as will permit it to earn a return on the value of the property which it employs for the convenience of the public equal to that generally being made at the same time and in the same general part of the country on investments in other business undertakings which are attended by corresponding risks and uncertainties; but it has no constitutional right to profits such as are realized or anticipated in highly profitable enterprises or speculative ventures. The return should be reasonably sufficient to assure confidence in the financial soundness of the utility and should be adequate, under efficient and economical management, to maintain and support its credit and enable it to raise the money necessary for the proper discharge of its public duties.[19]

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[16] *In re Green Mountain Power Corporation*, Case No. 7175, Final Order at 7 (Dec. 22, 2006).

[17] *Investigation into Green Mountain Power Corporation's Tariff Filing*, Case No. 8190, Final Order at 21 (Aug. 25, 2014).

[18] *Id.; FPC v. Hope Natural Case Co.*, 320 U.S. 591, 602 (1944).

[19] *Bluefield Water Works & Improvement Co. v. Public Serv. Comm'n*, 262 U.S. 679, 692-93 (1923).

These principles have been incorporated into Vermont statute and have been endorsed repeatedly by the Vermont Supreme Court.[20]

GMP and the Department are the only parties to provide testimony regarding a specific recommended rate of return in this proceeding. Although the range and reasons for the appropriate ROE provided by both experts differ, both parties agree that an annualized ROE of 9.3% is appropriate for GMP in the 2019 rate year and recommend that it be adopted by the Commission. Given these facts, our substantial discretion in setting ROE rates, and the testimony submitted by parties on this issue, we find that an annualized ROE rate of 9.3% for 2019 is reasonable and should be adopted.

D. Power Supply

104. GMP's cost of service reflects an increase in projected total rate-period power-supply-related costs from $288.5 million in 2017 to $322.6 million in 2019, an increase of about $34.1 million. Smith pf. at 14; exh. GMP-ER-1 (rev.).

105. The Department raised the following issues with GMP's proposed power supply costs: (1) the Regional Network Service rates included in the filing, (2) GMP's transparency with respect to GMP's hedging activities and power supply purchasing decisions, and (3) consideration of Demand Resource alternatives. McNamara pf. at 7-9; Dawson pf. at 4-20, 45-46.

106. GMP's initial filing included estimated Regional Network Service costs. The Department recommended, and GMP agreed to, a $397,682 downward adjustment in GMP's power costs based on the actual Regional Network Service rate for January 2019 to May 2019, which was established after GMP's filing. McNamara pf. at 7.

107. Based on the Department's concerns about the Regional Network Service rate, GMP incorporated a downward adjustment of 0.09% into its revised cost of service. Smith rebuttal pf. at 2; exhs. GMP-ER-1 rev. and GMP-ER-17 rev.

108. GMP and the Department agree on the process and documentation that GMP will use for procuring energy, capacity, and RECs. GMP will provide an overview of its procurement strategies in the Integrated Resource Plan to be filed at the end of 2018, followed by

[20] *Investigation into Green Mountain Power Corporation's Tariff Filing, supra* note 16.

more detailed documents that discuss procurement strategies associated with particular products that GMP typically purchases and that describe the timing, sequencing, price points, and process of these purchases. McNamara pf. at 2.

109. The Department recommends that as a condition of approving GMP's rate request, the Commission require GMP to make a regulatory filing within six months of the date of this Order detailing the documentation GMP and the Department have agreed on for specifying GMP's energy and capacity hedging strategies. McNamara surrebuttal pf. at 3.

110. Department witness Mr. Dawson recommended certain action items to improve transparency into GMP's power supply procurement process. The Department's recommended CPG condition satisfies the concerns raised by Mr. Dawson. Dawson surrebuttal pf. at 2; tr. of 10/25/18 at 152 (Dawson).

Discussion

The Department initially raised a number of issues and proposed adjustments with respect to GMP's incorporation of power supply expenses in this filing, but those concerns have been fully resolved by the parties. In doing so, the parties agreed that there should be more transparency regarding GMP's power supply procurement decision-making process. Per the Department's recommendation, within six months of the date of this order, GMP shall file documentation of the process agreed to by GMP and the Department with respect to GMP's energy and capacity procurement, or if no agreement has been reached, a summary of the parties' progress to date.

IV. PUBLIC COMMENTS

On August 19, 21, and 25, respectively, public hearings were held in Rutland, St. Albans, and Brattleboro, Vermont. No members of the public attended the Rutland hearing. One member of the public spoke at the each of the hearings in Brattleboro and St. Albans. In addition, the Commission received 11 written public comments. The PUC considered the comments that it received prior to the evidentiary hearing in developing questions to ask GMP at the evidentiary hearing. The Commission considered the comments that were filed after the

evidentiary hearing while it reviewed the record of this case to make its final decision. One comment, which was filed anonymously, raised specific issues about the Department's advocacy in this proceeding. The Commission provided the parties an opportunity to respond to the comment.

What follows is a summary of the issues raised by the public, as well as a brief response from the Commission. Where applicable, the Commission has indicated that certain issues are not within the scope of this rate proceeding.

Concerns About GMP's Proposal to Return Tax Savings as a Bill Credit

Several comments raised concerns about GMP's proposal to accelerate the return of savings resulting from changes to the federal tax code. The commenters observed that the proposed bill credit would last for only nine months and that customers would see a substantial increase in electric bills after the bill credit ended. The commenters proposed that "GMP should retain tax benefits and use them to offset their own operating expenses and not be permitted to increase rates."

The recent reduction in the federal corporate tax rate means that GMP needs to carry less "accumulated deferred income tax" or "ADIT" on its books. ADIT is money that GMP collected from ratepayers in anticipation of having to pay future income taxes. GMP now has excess ADIT that must be returned to ratepayers because the Company's future tax liability has decreased. The Commission and the Department investigated whether it would be better for customers to receive excess ADIT during this rate period or if the savings should be spread out over a longer time period. The argument for returning excess ADIT to customers as soon as possible is that excess ADIT represents taxes collected from customers that are no longer owed. Customers give GMP an interest-free loan if the return of ADIT is delayed.

The argument for delaying the return of ADIT is that customers may experience rate shock when the return of ADIT is complete. The bill credits authorized in today's order will cause many ratepayers' bills to *decrease* after January 1, 2019, despite the approval of GMP's higher cost of service. The Commission recognizes that this decrease will be temporary, and after September 30, 2019, the increased rates approved in today's order will cause ratepayers' bills to increase. The Commission has considered the potential for rate shock but is persuaded

that the downside of any rate shock is outweighed by the benefits of returning ADIT to customers sooner.

The Joint-Venture Battery Storage Projects

Some commenters criticized the inclusion of joint-venture battery storage projects (the "JV projects") in rates. One commenter argued that the joint-venture battery storage projects were "not needed from a system standpoint" and that GMP had failed to consider alternatives in developing the projects or to consider competing battery suppliers. The commenter further contended that GMP's rates will increase in the future because GMP has accelerated the return of certain financial benefits during the 2019 rate year instead of over the life of the projects.

GMP has proposed these projects because it believes that using battery storage will allow the company to shave its system peaks and avoid expensive market power purchase and transmission charges. GMP has estimated that these savings will, over the life of the JV projects, be greater than the costs. The Department's position has been that there is a risk that ratepayers could be harmed if the JV projects do not perform as expected or if market conditions deviate from the forecast assumptions in GMP's financial analysis of the projects. Thus, the Department has argued that the projects should not be allowed into rates unless there was a mechanism to share the risk associated with the projects' performance. GMP and the Department have agreed on a method to share risk that involves tracking the performance of the battery projects and allocating any shortfalls or exceedances in the savings generated by the projects between ratepayers and GMP's shareholders.

The Commission has reviewed the public comments carefully and has not found any new information that would change the Commission's determination that the JV projects should be allowed into rates. Battery storage projects have the potential to serve all Vermont customers by allowing the Company to manage its load, reduce system peaks, and potentially facilitate the use of more renewable energy in Vermont. GMP's agreement with the Department to share the risk of the projects' performance was an important factor in the Commission's decision to approve GMP's recovery of the JV projects.

The Department of Public Service's Advocacy in This Proceeding

According to 30 V.S.A. § 2, the Department is charged with the "review of proposed changes in rate schedules and petitions to the Public Utility Commission, and representation of the interests of the consuming public in proceedings to change rate schedules of public service companies under chapter 5 of this title." The Commission has received public comments contending that the Department has not zealously fulfilled its role as the public advocate in this proceeding. Commenters alleged that the Department "serves the interests of [GMP]" and fought this case "with one arm tied behind its back" because the Department did not pursue the exclusion of certain costs from GMP's rate request, such as the JV projects and GMP's executive incentives.

The Commission provided an opportunity for the parties to respond to these comments and the Department and GMP both contended that the comments mischaracterized the Department's participation in this case. The Department also responded by releasing confidential documents related to its review of GMP's rate request and posting them on its website for public inspection.

The comments reflect significant disagreements about regulatory policy and the best strategy for protecting the interests of Vermonters in this proceeding. The comments did not provide a basis for the Commission to conclude that the record in this case was inadequate to determine just and reasonable rates, and none of the comments recommended that the Commission reopen the record in this proceeding.

The Magnitude of GMP's Rate Request

The Commission has received several comments generally stating that GMP's rate request is too high. The Commission recognizes that any increase in the cost of utility service has an adverse effect on Vermonters. However, the Commission is not empowered to deny a rate request on that basis alone. Under traditional ratemaking principles, "utilities are entitled to recover legitimate, verifiable, and otherwise recoverable and prudently incurred costs."[21] Likewise, the Commission is required by statute to ensure that GMP's rates are just and reasonable. For these reasons, the Commission must base its decisions in rate cases upon the

[21] *In re Restructuring of Electric Utility Industry in Vermont*, Docket 5854, Order of December 31, 1996, at 58.

evidence and through the application of accepted regulatory principles. The Commission does so with care to ensure that. any resulting economic impact on ratepayers is justified.

Reducing the efficiency charge to offset rate increases

One comment recommended reducing the efficiency charge to offset GMP's proposed rate increase. Setting the amount of the efficiency charge is outside the scope of this proceeding, which is focused solely on determining GMP's rates. The amount of the annual Efficiency Vermont budget, and in turn, the amount of the efficiency charge are determined according to statutory criteria in separate proceedings.[22] The Commission recently reduced the residential energy efficiency charge for GMP residential customers by 3%, effective January 1, 2019.[23]

V. CONCLUSION

Based on the evidence of record, the Commission concludes that, subject to the removal of heat pump water heaters from rate base, GMP's proposed cost of service will result in just and reasonable rates. Removing these heat pump water heaters from rate base will also affect GMP's estimated costs and revenues for the rate year. Therefore, the Commission directs GMP to file a revised cost of service and tariffs reflecting the precise rate increase that will result from the cost of service approved in this order.

VI. ORDER

IT IS HEREBY ORDERED, ADJUDGED, AND DECREED by the Vermont Public Utility Commission ("Commission") that:

1. GMP may implement a rate increase of approximately 5.43% on a bills-rendered basis on or after January 3, 2019. GMP shall offset this rate increase with bill credits until September 30, 2019.

2. Within two business days of this Order, GMP shall submit a compliance filing, including a revised cost of service, calculating the precise increase authorized by this decision. GMP shall provide copies of the compliance filing to the parties in this proceeding.

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[22] 30 V.S.A. § 209(d)(3).

[23] *Determination of 2019 Energy Efficiency Charge Rates*, Case No. 18-2907-INV, Order of 11/06/2018.

3. Within two business days of this Order, GMP shall submit revised tariffs that are consistent with this Order.

4. Within 6 months of this Order, GMP shall file documentation of the process agreed to by GMP and the Vermont Department of Public Service with respect to GMP's energy and capacity procurement, or if no agreement has been reached, a summary of the parties' progress to date.

Dated at Montpelier, Vermont this 21st day of December, 2018.

Anthony Z. Roisman	)	PUBLIC UTILITY
Margaret Cheney	)	COMMISSION
Sarah Hofmann	)	OF VERMONT

OFFICE OF THE CLERK

Filed: December 21, 2018

Attest: Judith C. Whitney
Clerk of the Commission

Notice to Readers: This decision is subject to revision of technical errors. Readers are requested to notify the Clerk of the Commission (by e-mail, telephone, or in writing) of any apparent errors, in order that any necessary corrections may be made. (E-mail address: puc.clerk@vermont.gov)

Appeal of this decision to the Supreme Court of Vermont must be filed with the Clerk of the Commission within 30 days. Appeal will not stay the effect of this Order, absent further order by this Commission or appropriate action by the Supreme Court of Vermont. Motions for reconsideration or stay, if any, must be filed with the Clerk of the Commission within 28 days of the date of this decision and Order.

PUC Case No. 18-0974-TF - SERVICE LIST

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