STATE OF VERMONT
PUBLIC UTILITY COMMISSION

Case No. 22-0334-INV

In re: biennial update of the net-metering program	

Order entered: 06/17/2022

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I. INTRODUCTION

Every two years, the Vermont Public Utility Commission ("Commission") is required to assess the incentives offered to new net-metering systems and whether they should be adjusted upward or downward. The purpose of this assessment is to ensure that the pace of net-metering deployment is consistent with Vermont's policy objectives and to ensure that the net-metering program is not having an undue adverse impact on ratepayers. Considerations for this assessment include the changing cost of installing net-metering systems, the pace of past net-metering deployment, and the impact of net-metering on ratepayers.

In today's order, the Commission accepts the recommendation of the Vermont Department of Public Service ("Department") to adjust the incentives available to future net-metering systems. Based on our review of the information presented in this proceeding, we have determined to make the following adjustments: (1) the statewide blended residential rate, which

is the value of the bill credit offered to all applicable net-metering systems, both existing and proposed, is increased to $0.17141/kWh (an increase of $0.00728); (2) the renewable energy credit ("REC") adjustor for all categories of net-metering systems is maintained at the current rate; and (3) the siting adjustor for all categories of new net-metering systems is reduced by $0.01 per kWh. As a result, the net effect of today's decision is that overall net-metering compensation (lower incentives plus the higher blended residential rate) for new systems whose applications are received on and after September 1, 2022, will decrease by $0.00272 per kWh – less than three-tenths of a cent – compared to systems applied for today. Most existing systems will see their compensation increase slightly because of the rise in the statewide blended residential rate. Without the decreases to incentives for new systems announced in this order, the cost of new net-metered power would have increased, shifting additional costs to ratepayers who do not net-meter and further increasing statewide electric rates.

The Commission's goal in this proceeding is to continue to facilitate the rapid transition of Vermont's electricity supply to renewable energy and to support Vermont's greenhouse gas emission reduction goals and requirements. Our review is directed by the net-metering program's enabling legislation, which expressly requires that the Commission establish and maintain a net-metering program that advances Vermont's legislative goals and total targets for renewable energy and greenhouse gas reductions.[1] The analysis underlying this order is also informed by related policy directives, rules, and legislative mandates – including Vermont's recently enacted Global Warming Solutions Act ("GWSA") and the Vermont Climate Action Plan, which call for Vermont to ultimately "achieve net zero emissions by 2050 across all sectors."[2] We have also given careful consideration to the broader policy objectives included in the 2022 Vermont Comprehensive Energy Plan ("CEP") and the firm renewable energy targets established through Vermont's Renewable Energy Standard ("RES"), which creates an explicit framework for distributed energy to contribute to Vermont's power supply.

The RES sets baseline, compulsory renewable energy targets for Vermont's electric distribution utilities. To date, robust participation in the net-metering program has directly benefitted thousands of participating Vermonters and played a key role in ensuring that

[1] 30 V.S.A. § 8010(c)(1)(A).
[2] 10 V.S.A. § 592(b)(4).

Vermont's electric distribution utilities achieve their RES targets. However, with respect to achieving those RES targets and Vermont's broader greenhouse gas reduction requirements, the Commission is mindful of the deliberate policy guidance included in the recently adopted CEP, which encourages "a decision-making process that can set benchmarks for understanding when a policy is no longer cost-effective and other options can more affordably achieve the desired outcome" and that "[p]olicy must be nimble in the face of change."[3] Likewise, the Commission remains focused on the General Assembly's legislative mandate that we both "ensure that all customers who want to participate in net-metering have the opportunity to do so" and "balance[], over time, the pace of deployment and cost of the program with the program's impact on rates."[4] These statutory directives make clear that the net-metering program and its associated incentives are not intended to be static, and that the program's benefits must be carefully considered in conjunction with its net costs over time. Accordingly, our analysis and decision-making reflect the inherently dynamic costs and benefits of the net-metering program, which continue to evolve as the program matures.

As the Commission emphasized in its most recent biennial update proceeding, the net-metering program is just one of several ways to develop solar and other types of local renewable energy to meet the RES requirements.[5] However, net-metering has played the most prominent role in the expansion of Vermont's in-state renewable energy portfolio despite being the highest-cost source of new renewable capacity in Vermont.[6] As was the case two years ago, Vermont's electric distribution utilities currently have an adequate supply of Tier II resources to meet Vermont's RES for the next several years.[7] These resources include more cost-effective sources of solar and other types of local renewable power available to meet the RES requirements.

The data and information filed by the commenters in this proceeding demonstrate that there continues to be steady participation in the net-metering program even after the Commission

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[3] CEP at 12. A copy of the CEP is available at: https://publicservice.vermont.gov/content/2022-plan.

[4] 10 V.S.A. §§ 8010(c)(1)(E) and (F).

[5] *See In re: biennial update of the net-metering program*, Case No. 20-0097-INV, Order of 11/12/2020 at 2-3.

[6] According to the CEP, in 2020 the total name-plate capacity of installed net-metering systems was about 31% of Vermont's peak load. CEP at 248. However, as discussed in more detail in Section V below, Vermont's daily peak has shifted to a period later in the day when solar generation is limited or no longer producing, which in turn reduces solar generation's contribution to capacity needed to meet daily peak events.

[7] Tier II is a requirement that each utility acquire a certain portion of its power supply from small, in-state renewable energy sources.

reduced net-metering compensation rates in both previous biennial review proceedings. The commenters' filings also show that net-metering continues to be the largest and one of the highest-cost sources of new renewable capacity in Vermont.[8] Net-metering has been instrumental in the robust expansion and development of in-state renewable energy generation in Vermont, which is a distinct policy achievement. The Commission, however, remains focused on its statutory mandate to balance net-metering deployment with the cost of the program, and the Commission remains concerned about the overall cost of the net-metering program and its corresponding impact on non-participating Vermonters, particularly those Vermonters who are highly energy-burdened. The filings and comments in this proceeding make clear that the amount of distributed renewable energy in Vermont has grown significantly over the past several years while the cost of installing solar generation has also decreased. This trend has been a recurring, continual theme that has been borne out in both of the Commission's previous biennial update orders. Indeed, in its first biennial review of the net-metering program in 2018, the Commission found that:

> Financial incentives for net-metered solar, however, have remained high, making it the most expensive of Vermont's renewable energy programs. Solar net-metering systems receive up to 18.9 cents per kilowatt-hour (kWh) compared to solar prices under the State's standard-offer program of 10-13 cents and roughly similar prices for power purchase agreements and utility-built systems.[9]

It is worth emphasizing that the most recent standard-offer auction included proposed solar project bids as low as $0.0818 per kWh.[10] In contrast, the current statewide blended residential rate applicable to net-metering systems is slightly more than twice as high at $0.16413 per kWh.

Additionally, as RES compliance obligations increase and GWSA mandates begin to take effect in the near-term future, electric rates will have a fundamental effect on the relative success of policies and programs directed at greenhouse gas emission reductions through beneficial electrification in the transportation and heating sectors. Although net-metering should and will continue to play an important role in promoting in-state renewable generation, the Commission is

[8] *See* Department's April 8, 2022, Comments at 13-14 ("Historically, net-metering has been Vermont's highest-cost source of renewable energy generation and – despite decreases to the adjustors in the last two biennial reviews – it continues to be so.").

[9] *In re: biennial update of the net-metering program*, 18-0086-INV, Order of 5/01/2018 at 2.

[10] *Investigation to review the 2022 implementation of the standard-offer program*, Case No. 21-2048-INV, VEPPI Recommendation filed May 13, 2022.

concerned that over-reliance on net-metered systems for renewable generation could have the unintended, counterproductive effect of reducing investment in more cost-effective means of reducing Vermont's greenhouse gas emissions, such as electric vehicles and cold-climate heat pumps. Vermont's energy policy should continue to support a healthy net-metering program, but that support should not be paramount to or otherwise detrimental to the efficacy of other programs that promote similar policy outcomes at a lower cost.

The Commission recognizes that the COVID-19 pandemic, supply-chain disruptions, tax credit reductions, and other factors have imposed unanticipated cost-pressures on net-metering project developers. However, as noted above, when netted against the statewide blended residential rate, the changes to net-metering compensation that we adopt today will have only a minimal impact on the compensation stream for the vast majority of new net-metering systems in Vermont. We also note that the cost of standard-offer projects has continued to decrease this year despite similar cost pressures and constraints across the entire solar industry. Considering these factors in tandem with the continued, robust participation in the net-metering program, we conclude that it is appropriate to implement further adjustments to the compensation rate for net-metering systems, but that only a modest decrease in compensation for new net-metering systems is appropriate at this time.

For these reasons, and based on our detailed review of the information presented in this proceeding, the Commission has determined that the changes to net-metering compensation announced in today's order are justified.

II. PROCEDURAL HISTORY

On or before February 5, 2022, the Vermont electric distribution utilities (collectively the "distribution utilities") filed the information and data on the net-metering program required by Commission Rule 5.128(D).

On April 8, 2022, the Department and the Vermont Agency of Natural Resources ("ANR") separately filed proposed updates to the items specified in Rule 5.128(A)(1)-(4) and reasons for their proposals.

Comments on the Department's and ANR's recommendations were required to be filed by no later than April 25, 2022. The Commission received approximately 250 comments from

individual members of the public, including a number of solar installation company employees and customers. The Commission also received comments from several distribution utilities, including Vermont Electric Cooperative, Inc. ("VEC"); Town of Stowe Electric Department ("Stowe Electric"); the Vermont Public Power Supply Authority ("VPPSA"); and Green Mountain Power Corporation ("GMP"). Several solar installation businesses, trade groups, and individuals also filed comments, including Norwich Technologies; All Earth Renewables; Solaflect Energy; and Renewable Energy Vermont ("REV").

On May 10, 2022, the Department filed reply comments.[11]

III. BACKGROUND AND LEGAL FRAMEWORK

Net-metering "means measuring the difference between the electricity supplied to a customer and the electricity fed back by the customer's net-metering system during the customer's billing period."[12] In 1998, the Vermont General Assembly enacted a net-metering law requiring electric utilities to permit customers to generate their own power using a small-scale renewable energy system with a capacity of up to 15 kW. Larger systems of up to 100 kW were allowed on farms. Any power generated by a net-metering system could be fed back to the utility, running the customer's electric meter backwards if generation exceeded load at any given time. The cumulative capacity of the program was limited to 1% of a utility's peak capacity.

Amendments to the statute in 1999, 2002, and 2008 increased the allowed cumulative capacity of net-metering systems in a utility's service territory and increased the allowable size of systems. Beginning in 2002, the Legislature authorized "group net-metering," in which the excess generation from a net-metering system could be shared among multiple customers or accounts, but this service was restricted to farmers. By 2008, all customers could participate in group net-metering, the maximum plant capacity was 250 kW, and the ceiling on the total installed capacity was 2% of peak load.

In 2011, the General Assembly increased the allowed capacity of net-metering systems to 500 kW, created a registration process for small solar systems, increased the allowed cumulative

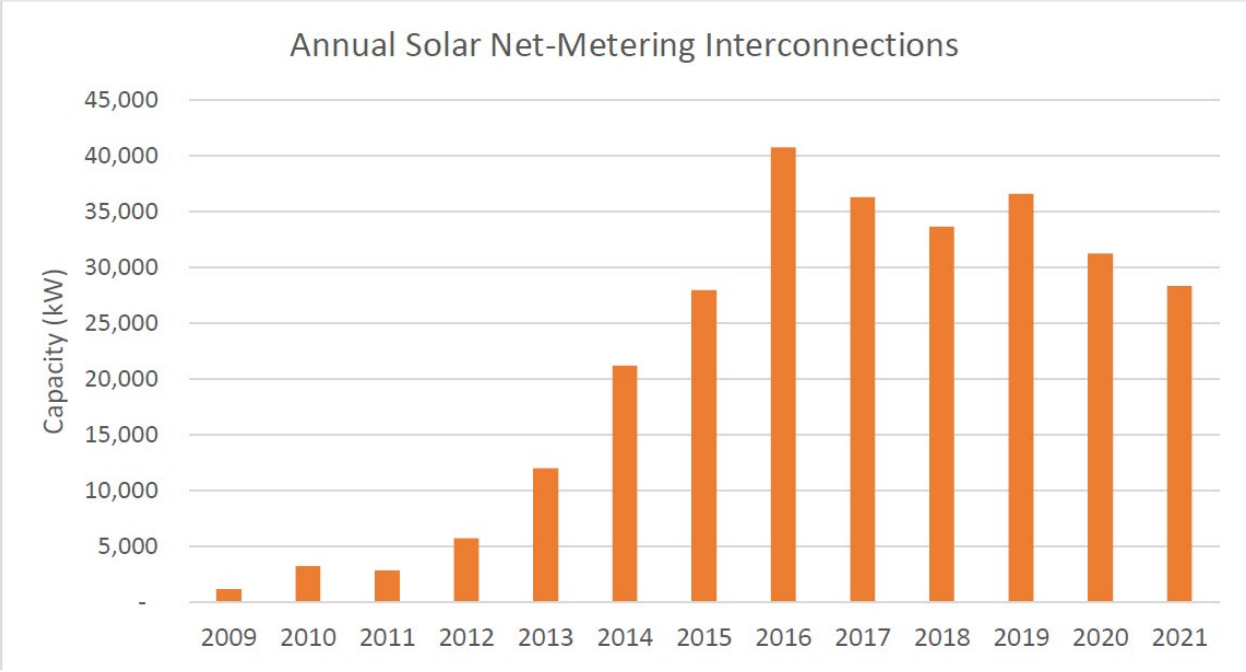
[11] Although the Department's reply comments were filed outside of the schedule for this proceeding, no party objected to these comments and we accept the Department's reply comments. However, we remind the Department that comments filed outside of the established schedule for a proceeding should be accompanied by an appropriate motion.

[12] 30 V.S.A. § 8002(15).

net-metering capacity in a utility service territory to 4% of that utility's peak capacity, and created an incentive payment for customers using solar systems. Customers receiving this incentive payment are credited up to 20 cents per kWh for power generated by their solar system for ten years after their system began operating.

Since the inception of the net-metering program, the cost of installing solar systems decreased dramatically. The confluence of declining costs, the expansion of the net-metering program, and increased incentives resulted in the rapid growth of the amount of net-metering installed in Vermont. Figure 1 shows that the annual amount of capacity of interconnected net-metering systems has increased substantially since 2009.

Figure 1.[13] Annual Solar Net-Metering Interconnections[14]



In 2014, the General Assembly enacted Act 99, which increased the program's cumulative capacity cap to 15% of each utility's peak capacity. The trends described in the

[13] Department's April 8, 2022, Comments at 32.

[14] There is a lag between when an application is filed and when a system is interconnected, so systems that apply in one year may not be interconnected for a year or longer in some cases. Also, some systems that apply are never installed because the applicant decides to withdraw the application due to interconnection or other issues. The number and capacity of applications that are denied a certificate of public good by the Commission is small.

preceding paragraph accelerated, and this capacity was rapidly subscribed. After reaching its own 15% capacity cap in 2015, GMP continued to accept small net-metering systems and sought approval to accept a limited number of additional large projects up to 150 kW in capacity, which was granted.[15] VEC closed its net-metering program to projects over 15 kW.[16]

Act 99 also repealed the solar incentive payment and directed the Commission to establish a successor net-metering program to go into effect in 2017. Pursuant to State law, the Commission was required to create a net-metering program that:

> (A) advances the goals and total renewables targets of this chapter and the goals of 10 V.S.A. § 578 (greenhouse gas reduction) and is consistent with the criteria of subsection 248(b) of this title;
>
> (B) achieves a level of deployment that is consistent with the recommendations of the Electrical Energy and Comprehensive Energy Plans under sections 202 and 202b of this title, unless the Commission determines that this level is inconsistent with the goals and targets identified in subdivision (1)(A) of this subsection (c). Under this subdivision (B), the Commission shall consider the Plans most recently issued at the time the Commission adopts or amends the rules;
>
> (C) to the extent feasible, ensures that net-metering does not shift costs included in each retail electricity provider's revenue requirement between net-metering customers and other customers;
>
> (D) accounts for all costs and benefits of net-metering, including the potential for net-metering to contribute toward relieving supply constraints in the transmission and distribution systems and to reduce consumption of fossil fuels for heating and transportation;
>
> (E) ensures that all customers who want to participate in net-metering have the opportunity to do so;
>
> (F) balances, over time, the pace of deployment and cost of the program with the program's impact on rates;
>
> (G) accounts for changes over time in the cost of technology; and
>
> (H) allows a customer to retain ownership of the environmental attributes of energy generated by the customer's net-metering system and of any

[15] *Petition of Green Mountain Power Corp. for Approval to Offer Customers Net-Metering Above the Statutory Cap Pursuant to 30 V.S.A. § 219a(h)(1)(a)*, Docket 8652, Order of June 24, 2016.

[16] *Application of Fish Hatchery Solar, LLC*, 16-0004-NMP, Order of May 5, 2016, at 1.

> associated tradeable renewable energy credits or to transfer those attributes and credits to the interconnecting retail provider, and:
>
> > (i) if the customer retains the attributes, reduces the value of the credit provided under this section for electricity generated by the customer's net-metering system by an appropriate amount; and
> >
> > (ii) if the customer transfers the attributes to the interconnecting provider, requires the provider to retain them for application toward compliance with sections 8004 and 8005 of this title.

On July 1, 2017, the Commission's revised net-metering rule took effect. In adopting the rule, the Commission found that net-metered power was more expensive than comparable alternative sources of renewable energy.[17] The Commission also found that the previous net-metering program was not necessarily effective at supporting Vermont's renewable energy goals because net-metered generators were electing to keep the renewable energy credits ("RECs") generated by their systems. A portion of these RECs were sold out of state, which meant that Vermont could not count the energy generated by those systems toward its renewable energy or greenhouse gas reduction goals.[18]

Accordingly, the new rule was intended to calibrate the incentive payments in a manner that balanced the interests of ratepayers, net-metering customers, and the businesses that install net-metering systems. Despite the dramatic reduction in the cost of installing solar net-metering systems since the program began, the rule made only modest adjustments to net-metering compensation. The Commission created an incentive for new net-metering customers to transfer their RECs to their utility to be retired in furtherance of Vermont's renewable energy goals. In addition, the Commission designed the rule to create incentives for net-metering systems to be installed on previously disturbed terrain, on rooftops, and on sites preferred by municipalities.

The primary mechanism for achieving this balance was the use of "REC adjustors" and "siting adjustors." There are two REC adjustor values: (1) a "positive" REC adjustor for customers who transfer RECs to their utility, and (2) a "negative" adjustor for customers who retain RECs.[19] This feature of the rule implements 30 V.S.A. § 8010(c)(1)(H)(i), which requires

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[17] Vermont Public Utility Commission, *Report to the Vermont General Assembly on the Net-Metering Program Pursuant to Act 99 of 2014* ("Act 99 Report") January 20, 2017, at 5.

[18] *Id*. at 10.

[19] Commission Rule 5.127(B)(1)-(3).

the Commission to reduce the value of a net-metering credit by an "appropriate amount" when a customer elects to retain ownership of RECs. In adopting the initial REC adjustor values, the Commission chose a 10-year positive adjustor of $0.03/kWh for customers who transfer RECs to their utility and a negative adjustor of -$0.03/kWh for customers who retain ownership of RECs. The difference between these two values ($0.06) was based on the statutory alternative compliance price for Tier II RECs under the RES. The Commission chose to have positive and negative adjustors (instead of, for example, only a positive adjustor of $0.06) to ensure that the overall incentive available to net-metering customers was appropriate.[20] That difference was subsequently reduced to $0.04 to better align with the value of RECs that can be used for RES Tier II compliance.[21]

The REC adjustors serve purposes beyond reflecting the appropriate value of a REC. First, the REC adjustors allow the Commission to appropriately balance the costs and benefits of net-metering. Second, the Commission can also use the REC adjustors to moderate the pace of development to ensure that rate impacts from the net-metering program are not unreasonable. Therefore, in this proceeding the Commission must consider whether the difference between the positive and negative REC adjustor values remains appropriate. Additionally, the Commission reviews how any changes to the REC adjustors will affect overall net-metering customer incentives, considering the costs and benefits of net-metering and the pace of net-metering development.

Turning to siting adjustors, the Commission's rules define four "categories" of net-metering systems. Category I net-metering systems are residential systems with capacities of 15 kW or less. Category II is comprised of medium-sized facilities (>15 kW to 150 kW) that are located on "preferred sites." Category III is for large net-metering systems (>150 kW to 500 kW) located on preferred sites. Finally, Category IV includes medium-sized facilities that are not located on preferred sites. Each of these categories is subject to a siting adjustor that is intended to reflect whether the project is on a preferred site and the lower cost of development enjoyed by larger projects due to economies of scale.

[20] Act 99 Report at 36.
[21] *In re: biennial update of the net-metering program,* 18-0086-INV, Order of 5/01/2018 at 47.

Accordingly, under the initial siting adjustor values, small and medium-sized projects located on preferred sites (Categories I and II) received the most favorable treatment, each being eligible to receive an additional $0.01/kWh as an incentive to encourage these types of systems. Large systems over 150 kW (Category III) must be located on preferred sites to be eligible to participate in the net-metering program. These systems can be built at an economy of scale more like that of commercial generation systems. Therefore, while they are located on preferred sites, they were subject to a negative adjustor of -$0.01/kWh. The Commission selected this adjustor value so that the overall compensation received by large net-metering systems was closer to alternative pricing for renewable energy, such as the standard-offer program.[22] Finally, medium-sized systems that are not located on a preferred site (Category IV) may net-meter, but were subject to a negative adjustor of -$0.03. This lower credit reflected the fact that these projects have some economy of scale and are located on non-preferred sites, such as greenfields, often far from the load they serve.

The overall purpose of the adjustors is to encourage the beneficial siting of net-metering systems and to provide a mechanism for the Commission to better tailor net-metering compensation to reflect the cost of technology.[23] An ancillary benefit of the siting adjustor is that it provides another tool for the Commission to ensure that the overall compensation of net-metering systems is appropriate.

The 2017 incentives resulted in net-metering compensation that still exceeded the cost of other sources of renewable energy, and therefore had the potential to cause additional upward rate pressure.[24] At the same time, however, the Commission received substantial public input that suggested that abrupt decreases in the amount of incentives could harm businesses that install and market net-metering systems. The Commission "recognize[d] that the net-metering program provides benefits to the state through increased economic development and jobs, but these benefits must be balanced against the costs of offering the program."[25] These costs include the potential for higher electric rates for all Vermont businesses. Accordingly, the Commission

[22] *See Investigation into programmatic adjustments to the standard-offer program*, Docket No. 8817, Order of 6/20/17 (summarizing solar proposals submitted in 2017 RFP process with prices ranging from $0.089/kWh to $0.125/kWh); *see also* Act 99 Report at 36-37.
[23] *Id*.
[24] Act 99 Report at 37.
[25] *Id.* at 39.

created a mechanism to reevaluate the initial REC and siting incentive amounts to achieve the goals of Section 8010(c)(1)(A)-(H) as conditions changed.

Commission Rule 5.128 requires the Commission to conduct a biennial update in 2018 and every two years thereafter to update the following: (1) REC adjustors, (2) siting adjustors, (3) the statewide blended residential rate, and (4) the eligibility criteria applicable to Categories I, II, III, and IV net-metering systems. The Commission must consider the following factors when updating the REC adjustors:

> (1) the pace of renewable energy deployment necessary to be consistent with the Renewable Energy Standard program, the Comprehensive Energy Plan, and any other relevant State program;
>
> (2) the total amount of renewable energy capacity commissioned in Vermont in the most recent two years;
>
> (3) the disposition of RECs generated by net-metering systems commissioned in the past two years; and
>
> (4) any other information deemed appropriate by the Commission.[26]

The Commission must consider the following factors when updating the siting adjustors:

> (1) the number and capacity of net-metering systems receiving CPGs in the most recent two years;
>
> (2) the extent to which the current siting adjustors are affecting siting decisions;
>
> (3) whether changes to the qualifying criteria of the categories are necessary;
>
> (4) the overall pace of net-metering deployment; and
>
> (5) any other information deemed appropriate by the Commission.[27]

The Commission must consider the above-listed factors and set any revised adjustor values "to ensure that net-metering deployment occurs at a reasonable pace and in furtherance of State energy goals."[28]

In 2018, the Commission conducted its first biennial update proceeding. After considering the substantial input of commenters, including net-metering customers, solar installation companies, electric utilities, and State agencies, the Commission decided to gradually

[26] Commission Rule 5.128(B)(1)-(4).
[27] Commission Rule 5.128(C)(1)-(5).
[28] Commission Rule 5.128(G).

scale back net-metering compensation. The positive REC adjustor was reduced by one cent in 2018 and again in 2019. The siting adjustor for Category 3 systems was also reduced by one cent. These reductions were partly offset by an increase in the blended residential rate. The cumulative effect of the first biennial update proceeding was that the compensation available to new net-metering customers was only modestly less in the first year and then dropped an additional cent the next year. The following table summarizes the historical progression of net-metering compensation, assuming customers transferred their RECs to their utility and that the utility uses the blended residential rate. [29]

Table 1. Summary of past and current net-metering compensation ($0.00/kWh)

		Category of Net-Metering System			
Program	CPG Application Date	I 15 kW or less	II >15 kW up to 150 kW on a preferred site	III >150 kW up to 500 kW on a preferred site	IV >15 kW up to 150 kW not on a preferred site
NM 1.0	before 1/1/2017	Customers received overall compensation of $0.19/kWh or $0.20/kWh and retained ownership of RECs.			
NM 2.0	1/1/2017 - 6/30/2018	$0.189	$0.189	$0.169	$0.149
NM 2.1	7/1/2018 - 6/30/2019	$0.184	$0.184	$0.154	$0.144
NM 2.2	7/1/2019 -	$0.174	$0.174	$0.144	$0.134
NM 2.3	2/1/2021 - 8/31/2021	$0.164	$0.164	$0.134	$0.124
NM 2.4	9/1/2021 - present	$0.154	$0.154	$0.124	$0.114

In 2020, the Commission conducted its second biennial update proceeding. As a result of the emergence of the COVID-19 pandemic in early 2020, and at the request of affected parties, the Commission temporarily stayed the biennial review and did not issue its final order until November 12, 2020.[30] As with the first biennial review, the Commission considered recommendations from the Department, ANR, distribution utilities, project developers, other

[29] NM 2.0 refers to the revised net-metering program. It was implemented by Commission order from January 1, 2017, through June 30, 2017, and by an approved final rule starting on July 1, 2017. NM 2.1 and NM 2.2 refer to the updates made to the NM 2.0 adjustors in the 2018 biennial update (Case No. 18-0086-INV). NM 2.3 and NM 2.4 refer to the updates made to the NM 2.2 adjustors in the 2020 biennial update (Case No. 20-0097-INV).

[30] *In re: biennial update of the net-metering program*, Case No. 20-0097-INV, Order of 11/12/2020.

interested parties, and members of the public and ultimately determined to make additional reductions to the net-metering compensation rates in a two-step process. The Commission reduced the siting adjustors for all categories of net-metering systems by one cent per kWh for new systems that filed applications on and after February 2, 2021, which was followed by another one-cent per kWh decrease for systems that apply on or after September 1, 2021. The Commission also decreased the REC adjustor for all systems by one cent. As was the case with the 2018 update proceeding, the Commission approved an increase of approximately one cent to the blended residential rate. The changes that resulted from the 2020 biennial update proceeding are included in Table 1 above.

In the following sections of this order, the Commission reviews the comments submitted in this proceeding (Section IV) and then considers the factors specified in Rule 5.128 and responds to the issues raised by commenters (Section V).

IV. SUMMARY OF COMMENTS

State Agencies

On April 8, 2022, the Department recommended a reduction to the positive and negative REC adjustors by $0.01/kWh. The Department did not recommend any adjustment to the siting adjustors. This proposed adjustment would be partially offset by the Department's recommended increase of approximately $0.00728/kWh in the blended residential rate, resulting in relatively little change to net-metering compensation from existing rates for the period covered by this biennial update.

The Department's comments state that "[n]et-metering has been, and remains, the most expensive pathway for Vermont to meet its renewable energy goals" and that "there has been enough new net-metering, alone, for Vermont to comfortably remain on track for its renewable energy goals despite there being other, cheaper, renewable energy programs."[31] The Department further states that "Vermonters can greatly reduce the State's greenhouse gas emissions by switching to electric vehicles, electric heating, and the like. However, the more expensive electricity is, the less attractive this switch will be for consumers."[32] The Department's

[31] Department's April 8, 2022, Comments at 2.
[32] *Id.* at 2.

comments also note that the 2020 biennial update was delayed by the COVID-19 pandemic and that the current net-metering rates have been in place for "a shorter period of time than usual," which "impacted the data from which the Department could draw conclusions to inform its recommendations."[33] The Department further states that "solar panels currently have added costs from import tariffs, the federal investment tax credit is expected to step-down, the COVID-19 pandemic has created ongoing supply chain disruptions and constraints, there have been broader inflation pressures, and workforce shortages and availability issues persist."[34]

With respect to applicable renewable energy policies and objectives, the Department argues that the pace of net-metering should be consistent with the RES, CEP, and other relevant state programs.[35] The Department estimates that approximately 25-30 MW of generation will need to be interconnected annually in Vermont for the foreseeable future to meet the Tier II renewable energy targets set out in the RES and CEP.[36] The Department states that this requirement will largely be satisfied through a combination of utility-owned resources, bilateral energy contracts, standard-offer projects, and the net-metering program, but the "standard-offer program will comprise an increasingly larger portion at least until the annual solicitations for new projects cease."[37] The Department presented data showing that the contract price for standard-offer contracts has continued to decrease in recent years and remains significantly below the compensation rate for net-metering. The Department also presented data showing that net-metering applications and interconnections have exceeded 25 MW each year since 2014. According to the Department, the overall trend of net-metering applications has remained relatively stable and above the level necessary for Tier II compliance in recent years despite the reductions in compensation from the previous biennial review proceedings.

The Department also contends that the market value of new net-metering installations has been decreasing in recent years. The Department states that "Vermont has significantly more distributed solar as a percentage of total load than the rest of New England, hosting 9.8% of the region's distributed solar while representing less than 4% of the peak load."[38] According to the

[33] *Id.* at 3.
[34] *Id.* at 3.
[35] *Id.* at 13.
[36] *Id.* at 26.
[37] *Id.* at 26.
[38] *Id.* at 17.

Department, as a result of this discrepancy "[t]he timing of the regional annual system peak has not shifted as quickly as the timing of Vermont's peak load." The Department also notes that recent clearing prices for the ISO-New England Forward Capacity Market auction have been decreasing and remain substantially below their historic high. The Department argues that the shifting peak likewise affects potential Regional Network Service savings from new solar installations because "[f]rom 2016 to 2021, Vermont's peak hour occurred before sunset only 20% of the time, and even in those instances the peak was near sunset when the sun is nearing the horizon and solar production is tailing off."[39]

The Department also considered the cost of solar installations in developing its recommendations. The Department states that steep declines in the installed cost of solar development have been flattening out since 2014. The Department also states that reduced tax credits and solar import tariffs have placed upward cost pressures on solar development, but "based on publicly available data, overall costs have continued to decrease."[40]

With respect to the GWSA, in its reply comments the Department states that "[p]rogress toward our GWSA requirements – and thus progress toward reducing Vermont's greenhouse gas emissions – is measured in Vermont by the Greenhouse Gas Inventory, which identifies the electric sector in Vermont as largely carbon free."[41] The Department also referred to the recently adopted Climate Action Plan for its assertion that "Vermont's electric sector is already largely carbon free, as tracked and measured toward progress toward the GWSA. Therefore, the deployment of net-metering – relative to other clean energy – has little impact on progress toward meeting Vermont's GWSA requirements."[42]

The Department's reply comments also address equity in participation in the net-metering program. The Department relies on publicly accessible data from the Lawrence Berkeley National Lab to assert that "data for 2020 shows that Vermont's top 20% of income earners accounted for 36% of solar adoption, while the bottom 40% account for just 10% of solar adoption. This trend has fluctuated very minimally over time and continues to show that

[39] *Id.* at 20.
[40] *Id.* at 35. The Department relied on publicly accessible data from the Lawrence Berkeley National Laboratory to evaluate the net-installed cost of solar.
[41] Department's May 10, 2022, Comments at 3.
[42] *Id.* at 4.

adoption of residential solar in Vermont skews heavily towards the high end of income distribution."[43]

The Department also calculated an increase of $0.00728 to the statewide blended residential rate, as required by Commission Rule 5.128. The Department supplied calculations supporting its determination.

The Department concludes that the primary reasons for its recommended reduction for the total net-metering compensation rate "are that the deployment of net-metering systems in 2020 and 2021 continued to exceed the requirements of the [RES] at a cost greater than other Tier II alternatives, and that the statewide blended residential rate used as a basis for compensation has increased."[44] The Department also states that only a moderate, limited downward adjustment is warranted at this time because of the broader context of inflationary pressures, supply-chain shortages, pandemic uncertainty, anticipated tax credit step-downs, and the short track record with NM 2.4 compensation. The Department also highlights the need to continue to keep electric rates affordable to encourage adoption of beneficial electrification technologies, which would reduce greenhouse gas emissions, in service of Vermont's broader climate objectives.

The Agency of Natural Resources ("ANR") deferred to the Department about whether to change the REC adjustor value and the statewide blended residential rate. ANR did not recommend any changes to the siting adjustor values or eligibility criteria for participation in the net-metering program.

The Distribution Utilities

VEC does not object to the Department's proposed one-cent reduction to the REC adjustor. VEC states that installed net-metering capacity in its service territory in 2020 and 2021 was close to levels from previous years despite the decreased compensation rate and labor issues caused by the COVID-19 pandemic. VEC agrees with the Department's conclusion that net-metering is the costliest way to develop renewable resources in Vermont and that "the same project developed through a [power purchase agreement] or standard-offer would cost three to

[43] *Id.* at 7.
[44] *Id.* at 9.

four cents less per kilowatt-hour than the rates required under the net-metering program."[45] VEC argues that net-metering projects should be co-located and sized appropriately with the load the projects will serve. VEC also states that net-metering compensation should eventually transition to an avoided-cost rate. VEC further agrees with the Department that increased electric rates caused by net-metering could discourage Vermonters from adopting beneficial electric technologies such as electric vehicles and heat pumps.

Stowe Electric supports the Department's recommended one-cent reduction to the REC adjustor. Like VEC and the Department, Stowe Electric raises concerns that increased electric rates will discourage beneficial electrification. Stowe Electric also notes that it has experienced increased demand on its billing, administrative, regulatory, and operations staff as a result of managing the net-metering program and its associated regulatory obligations. Stowe Electric also raises equity concerns about the net-metering program because ratepayers with the highest energy burdens are the least likely to take advantage of net-metering incentives.

The Vermont Public Power Supply Authority ("VPPSA") also supports the Department's recommended REC adjustor reduction. VPPSA states that it is concerned that net-metering projects continue to displace lower-cost alternatives for in-state renewable generation, requiring electric ratepayers in Vermont to incur costs that are higher than necessary for meeting the State's climate and energy goals. VPPSA contends that the financial cost of net-metering generation currently exceeds the value of the generation to the host utility and creates a cross-subsidy from non-participating customers to those that net-meter. VPPSA also states that increased rate pressure ultimately undermines the State's overall climate, energy, and electrification goals across major fossil fuel sectors and that higher electric costs discourage progress toward Vermont's greenhouse gas reduction requirements.

GMP filed comments stating that it generally agrees with the Department's recommendations.

[45] VEC's April 25, 2022, Comments at 2.

Renewable Energy Developers and Affiliated Entities

Renewable Energy Vermont ("REV") contends that the "Department's recommendation to reduce compensation rates for net-metering systems rests on two assertions that [REV] believes are faulty and poorly supported: that net-metering imposes a net cost rather than a net benefit for Vermont ratepayers and that [the] rate of renewable deployment is sufficient to ensure that the state reaches its climate and energy goals."[46] REV supports the Department's statewide blended residential rate calculation, but opposes the Department's proposed one-cent REC adjustor decrease. Instead, REV recommends that the Commission "increase the REC adjustor by $0.015/kWh - $0.03 kWh to offset the adverse impacts of the decline in the Federal [investment tax credit]."[47]

With respect to the statutory considerations under 30 V.S.A. § 8010(c)(1)(E), REV argues that the requirement that the Commission consider cost-shifts associated with the net-metering program is qualified by the language "to the extent feasible" and "is subject to the broader mandate that all Vermonters have the opportunity to participate in the net-metering program."[48] REV also asserts that "[n]et-metering rates that make self-generation financially inaccessible deprive Vermonters, and especially low- and moderate-income Vermonters, of a meaningful opportunity to participate in the net-metering program."[49]

REV's comments address the GWSA, which REV contends will result in increased demand that will produce "massive" electrification that "will need to be met with equally massive new renewable energy generation."[50] REV argues that promoting in-state renewable generation will be necessary to achieve the greenhouse gas reduction obligations set out in the GWSA and the Climate Action Plan, that the RES mandates should be understood as a floor for renewable energy generation, and that more rapid deployment of renewable resources will be needed to meet Vermont's climate objectives. REV further argues that inadequate net-metering rates will result in a failure to achieve the RES targets, undermine trust in Vermont's climate mitigation efforts, and expose Vermont to legal jeopardy.[51]

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[46] REV's April 25, 2022, Comments at 1.
[47] *Id.*
[48] *Id.* at 2.
[49] *Id.*
[50] *Id.*
[51] *Id.*

REV challenges as too low the Department's assertion that 25-30 MW of new in-state renewable generation will be necessary to satisfy the RES Tier II compliance targets. REV states that the Department's projections are based on a VELCO load forecast that REV argues does not adequately account for load that will be required to comply with the GWSA.

REV also contends that the Department's reliance on the trendline for net-metering interconnections is misplaced, and that recent net-metering applications provide a better data point for assessing the rate of new net-metering development. REV, however, also asserts that the annual rate of interconnections for net-metering systems has been decreasing since 2016. REV argues that the most appropriate metric to assess the solar market is the number of CPG applications received. REV states that the number of large net-metering systems has decreased substantially since the most recent reduction in net-metering compensation, though like the Department, REV recognizes a relative lack of data for applications as little time has passed since the most recent adjustor changes.

REV also challenges the Department's comparison of the cost of the net-metering program with the standard-offer program by asserting that comparing the costs of net-metering installations with standard-offer contracts "elides the different purposes and benefits of these programs. The primary purpose of the Net-Metering Program is to provide Vermonter ratepayers with the opportunity to self-generate power. This purpose is not served by the Standard Offer Program."[52] REV further asserts that at "a macro-level, there is little evidence that the [net-metering] program is causing significant upward rate pressure."[53] In support of this assertion, REV notes that the average price for electricity in Vermont is two to three cents lower than in other New England states and that rate increases in Vermont over the past ten years have been lower than increases in other "surrounding areas."[54] REV also argues that the Department's recommendation does not adequately consider ancillary societal benefits and values of the net-metering program, such as the value of avoided carbon emissions. Relying on data provided by GMP in a previous biennial update, REV argues that 20 MW of new net-metered capacity results

[52] *Id.* at 5.
[53] *Id.* at 7.
[54] *Id.*

in a cost to the average ratepayer of $0.26 per month, which REV argues should be reduced to $0.14 per month if a social cost of carbon of $0.04/kWh were also factored.[55]

REV's comments also address participation of low- and moderate-income participants in the net-metering program. REV asserts that net-metering has become more accessible to these participants as the overall cost of solar installation has decreased. REV argues that decreasing the compensation rate for net-metering will make it more challenging for low- and moderate-income individuals to obtain financing for a net-metering installation.

Finally, REV contends that many costs associated with solar development are increasing, which is lengthening the expected "payback" timeframe for a new net-metering system. REV states that supply-chain issues, inflation, rising interest rates, upcoming changes to the federal investment tax credit, and a federal Department of Commerce anti-circumvention investigation are affecting development costs for new net-metered systems. REV contends that if the Department's proposed credit adjustment is adopted, then the "payback" period for Category I net-metering systems will have essentially doubled from the payback period that was expected in 2018. REV provides supporting models for this calculation and ten other scenarios evaluating payback timeframes with varying underlying financial assumptions and inputs to demonstrate the effects of adjusted net-metering credit levels.

AllEarth Renewables recommends that the Commission restore the "adjustors to their 2019 levels of a positive $0.02 REC Adjustor and positive $0.01 Preferred Site Adjustor."[56] Like REV, AllEarth Renewables argues that inflation, supply-chain issues, reduced tax credits, and labor issues are putting upward cost-pressure on new solar developments. AllEarth also notes that the standard-offer program is set to wind-down in the near future and that the GWSA mandates will start to take effect, which will increase the demand for in-state renewable energy generation in the near-term future.

Norwich Solar states that decreasing compensation and inflationary costs are making it more difficult for Vermonters to participate in the net-metering program. Norwich Solar also argues that decreasing compensation rates for net-metered systems will cause systems to become unfinanceable and limit low- and moderate-income Vermonters and non-profits from

[55] *Id.*
[56] AllEarth Renewables' April 25, 2022, Comments at 5.

participating in the net-metering program. Norwich Solar further states that reducing net-metering compensation will affect jobs in the solar development community. Norwich Solar also argues that the REC pricing adjustor creates a competitive disadvantage for businesses that "want to differentiate themselves by saying that they are 'renewable powered.'"[57] With respect to the adjustors, Norwich Solar recommends "changes to the REC adjustor over the biennium that maintain the current payback period for Category I systems and to paybacks equivalent to NM 2.3 (9 years) for Category III systems."

General Public Comments

The Commission acknowledges the approximately 250 public comments filed in this proceeding. Most of these comments were general in nature and addressed similar issues. Given the number of these comments, the Commission cannot respond individually to each of them. The general sentiment expressed by most of these comments was that the Commission should either maintain or increase compensation for net-metering systems. Many of these comments were submitted by customers who have net-metering systems. The comments cited factors like the step-down of the federal investment tax credit and the COVID-19 pandemic as reasons that the Commission should continue to provide support for the solar industry in Vermont. Most of the public comments also focused on the importance of addressing climate change, reducing Vermont's greenhouse gas emissions, and preserving jobs in the solar industry.

Other Issues Addressed by Commenters

We note that many commenters raised issues that go beyond the scope of this proceeding. For example, some commenters recommended wholesale adjustments to the compensation structure of net-metering programs, such as eliminating group net-metering projects and basing compensation on avoided costs or specific system values. Other commenters requested changes to the notice requirements for the utilities' tariff filings that implement the net-metering credit changes. Other comments suggested changes to various sections of Rule 5.100 and other broader policy and statutory issues.

[57] Norwich Solar's April 25, 2022, Comments at 3.

We remind the commenters that under Commission Rule 5.128(A), the scope of our review in this biennial update proceeding is limited to: (1) the REC adjustors; (2) siting adjustors; (3) the statewide blended rate; and (4) the eligibility criteria applicable to Categories I, II, III, and IV net-metering systems. Comments regarding the overall structure of the net-metering program, the associated tariffing process, and amendments to Rule 5.100 are more appropriate for the Commission's ongoing net-metering rulemaking in Case No. 19-0855-RULE or through amendments to applicable legislation.

V. REC ADJUSTOR FACTORS

In this section, the Commission discusses each of the factors that the Commission must consider in determining the appropriate value of the REC adjustors. Additionally, the Commission responds to the comments and filings that are relevant to the Commission's consideration of these factors.

(1) The pace of renewable energy deployment necessary to be consistent with the Renewable Energy Standard, the Comprehensive Energy Plan, and any other relevant State program:

Under this factor, the Commission must consider what pace of renewable deployment is necessary to be consistent with the CEP and the RES. In considering this question, it is important to emphasize that net-metering is only one of several ways to deploy renewable energy. What follows is a brief overview of the CEP and the RES, followed by a discussion of the pace of renewable energy deployment that will be necessary to be consistent with them. We also address the GWSA and its interplay with the CEP and RES. Finally, we discuss what role net-metering should play in meeting the applicable goals and requirements of these interrelated programs.

The Department is required by statute to adopt a CEP at least every six years. The CEP is a 20-year plan that must contain an analysis of "the use, cost, supply, and environmental effects of all forms of energy resources used within Vermont."[58] The CEP must include recommendations for how the plan can be implemented by the State and local governments and private actors. More fundamentally, the purpose of the CEP is to implement Vermont's general

[58] 30 V.S.A. § 202b(a)(1).

policy to "meet its energy service needs in a manner that is adequate, reliable, secure, and sustainable; that [en]sures affordability and encourages the State's economic vitality, the efficient use of energy resources, and cost-effective demand-side management; and that is environmentally sound."[59] Accordingly, the CEP is meant to guide how to best "identify and evaluate . . . resources that will meet Vermont's energy service needs in accordance with the principles of least-cost integrated planning, including efficiency, conservation, and load management alternatives, wise use of renewable resources, and environmentally sound energy supply."[60]

The most recent CEP was adopted in January 2022.[61] The CEP establishes an ambitious goal of sourcing 90% of Vermont's energy from renewable resources by 2050.[62] It also explores various high-level strategies for satisfying the statewide greenhouse gas reduction requirements included in the GWSA, which calls for a 26% reduction from 2005 levels by 2025; a 40% reduction from 1990 levels by 2030; and an 80% reduction from 1990 levels by 2050.[63] The CEP also includes a series of sector-specific energy goals, including: (1) for the transportation sector, meeting 10% of energy needs from renewable energy by 2025, and 45% by 2040; (2) for the thermal sector, meeting 30% of energy needs from renewable energy by 2025, and 70% by 2042; and (3) in the electric sector, meeting 100% of energy needs from carbon-free resources by 2032, with at least 75% from renewable energy.[64] The CEP examines a wide range of energy topics, including electric supply, heating, energy efficiency, and transportation. It also makes recommendations about specific steps that can be taken in each of these sectors to ultimately achieve Vermont's renewable energy and greenhouse gas emissions goals, though the CEP acknowledges that "[t]hese targets will not be easy to reach, particularly in the transportation and thermal sectors."[65] The CEP also recognizes that "the burdens and benefits of energy policy in Vermont have not been equitably distributed across the state or its citizens" and includes a series

[59] 30 V.S.A. § 202a(1).
[60] 30 V.S.A. § 202a(2); *id.* § 202b(a).
[61] The CEP, along with documents related to its development and previous iterations, can be viewed online at: https://publicservice.vermont.gov/publications-resources/publications/energy_plan.
[62] CEP at 10.
[63] *Id.* at 11.
[64] *Id.* at 11.
[65] *Id.* at 11.

of strategies to "consider both the historical distribution of impacts and those impacts that will occur with energy policy action."[66]

With respect to electric supply, the CEP recognizes that the consideration of future supply acquisitions will be directed by the compulsory obligations of the RES.[67] Under the RES, a utility "shall not sell or otherwise provide or offer to sell or provide electricity in the State of Vermont without ownership of sufficient energy produced by renewable energy plants or sufficient tradeable renewable energy credits from plants whose energy is capable of delivery in New England."[68] The RES establishes three categories of compliance requirements, which are commonly referred to as "Tiers." Tier I is a total renewable energy requirement. Starting in 2017, each utility must obtain a quantity of renewable energy credits ("RECs") that equals at least 55% of the utility's portfolio, climbing 4% every three years to 75% in 2032.[69] Tier II is a carve-out of Tier I that requires utilities to obtain a quantity of RECs from new distributed renewable generators equal to 1% of retail electric sales in 2017, rising 0.6% each year to 10% in 2032.[70] Net-metering systems qualify as Tier II resources, and under State law, utilities must retire RECs received from net-metering systems toward compliance with the RES. Finally, Tier III of the RES relates to what are known as "energy transformation projects." The CEP describes the RES as a policy that "provide[s] general guidance by requiring that utilities procure resources of a certain type, while leaving utilities to determine the best way to procure these resources."[71]

The CEP recognizes that although the RES sets immediate, compulsory renewable energy targets, electric power supply decisions must now also be viewed in the context of the broader greenhouse gas emission reduction requirements set out in the GWSA. For greenhouse gas emissions from the electric sector, the CEP highlights that Vermont's electric mix was 69.5% renewable and 94% carbon-free, with three Vermont utilities providing 100% renewable energy

[66] *Id.* at 11.
[67] *Id.* at 239-42
[68] 30 V.S.A. § 8004(a).
[69] 30 V.S.A. § 8005(a)(1)(B).
[70] 30 V.S.A. § 8005(a)(2)(C). Tier II includes renewable energy systems that are 5 MW or smaller and are directly connected to the sub-transmission or distribution system of a Vermont retail electricity provider.
[71] CEP at 246.

in 2020.[72] In 2017, the electric sector contributed less than 6% of Vermont's greenhouse gas emissions.[73] The CEP, however, recognizes that the GWSA's greenhouse gas reduction requirements will increase electric demand and require utilities to continue acquiring additional renewable resources in the future. The CEP states that the thermal and transportation sectors "will rely heavily on electrification opportunities to shift away from GHG-emitting fossil fuels" and "it will prove critical to ensure that Vermont utilities are supplying low-carbon and renewable electricity resources for maximum emissions reductions."[74] However, the CEP stresses that modifying State energy policy to address the GWSA requirements and increased demand for low-carbon and renewable electricity must be done "in a cost-effective and equitable manner."[75] The CEP further emphasizes that "it is essential to keep electricity affordable to make progress in decarbonizing the emissions-heavy thermal and transportation sectors."[76]

The CEP also discusses distributed generation and net-metering extensively, within the context of both RES and GWSA obligations. With respect to the RES, the Department estimates that 25 to 30 MW of new distributed generation will be needed annually to comply with Tier II of the RES. The CEP notes that as a result of rapid growth in recent years, the net-metering program alone has consistently exceeded this 25 to 30 MW annual need.[77] However, the CEP further notes that the rapid expansion of the net-metering program has also resulted in a reduction in the overall value of new systems. The CEP states that:

> The fact that solar output no longer coincides with the most expensive hours for utilities to purchase energy, capacity, and transmission to serve customers, combined with alternative mechanisms through which utilities can purchase distributed solar at significantly lower costs than the current net-metering rates, means there is now a cost shift; non-net-metered customers are subsidizing those customers who have the means to net-meter.[78]

The CEP states that as of 2019, "Vermonters paid more than $40 million more for net-metering than if this solar generation had been procured through bilateral contracts between solar

[72] *Id.* at 255.
[73] *Id.* at 255
[74] *Id.* at 255.
[75] *Id.* at 256.
[76] *Id.* at 258.
[77] *Id.* at 261.
[78] *Id.* at 247.

developers and utilities."[79] The CEP also states that current compensation for net-metering programs "continues to significantly exceed the wholesale price and market-based Class I REC prices combined."[80] The CEP's recommendations with respect to the RES and complementary renewable energy programs include "modification of the net-metering program to bring program costs into better alignment with benefits to allow for more well-sited, cost-effective, and equitable distributed generation to be added to Vermont's portfolio."[81]

The Commission has been tasked with moving toward a carbon-free energy future, as outlined in the CEP, RES, and GWSA – all of which expressly mandate that we consider the cost impact on ratepayers in developing energy policy. In 1999, net-metering was the first in-state program to be made available for small, new renewable resources, and it now accounts for the largest portion of solar power in Vermont.[82] However, other renewable resource programs, such as the standard-offer program (which has not yet reached its statutory capacity cap), now provide renewable resources at a materially lower cost than net-metering, as do utility-built systems and merchant generators that enter into power purchase agreements. Thus, the question presented in this proceeding is not what economic incentives the Commission should set to promote the maximum amount of net-metering, but rather what incentives are necessary to meet the CEP and RES renewable goals, with consideration given to the GWSA's overall emission-reduction requirements, while protecting the interests of ratepayers.

We conclude that to balance the costs and benefits of net-metering, it is appropriate to reduce the difference between the cost of new net-metered power and other Tier II renewable resources. This small adjustment may have the effect of slowing the pace of new net-metering systems while utilities pursue less costly sources of renewable generation (such as bilateral contracts or utility-sponsored projects). The utilities must procure a set amount of renewable energy, and the record in this proceeding shows that the utilities meet this requirement with the

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[79] *Id.* at 247. The overall cost of net-metering and its impact on electric rates was also discussed by the Commission at length in a previous GMP rate case. *Investigation into Green Mountain Power Corporation's tariff filing requesting an overall rate increase in the amount of 4.98% to take effect January 1, 2018*, Case No. 17-3112-INV, Order of 12/21/17, at 8-10.

[80] CEP at 247.

[81] *Id.* at 270.

[82] According to the CEP, as of November 2021, there was approximately 285 MW of solar capacity installed through the net-metering program, with slightly less than 450 MW of total installed solar capacity in Vermont. *Id.* at 244-47.

current pace of net-metering deployment, but that they can procure those resources at a lower cost than current net-metering rates. Therefore, a slight reduction in compensation for new net-metering systems is consistent with the CEP's instruction that utilities must design their Tier II portfolios in a cost-effective manner.

(2) Total renewable energy capacity commissioned in Vermont in the most recent two years:

The amount of renewable energy capacity commissioned in Vermont in 2020 and 2021 is summarized in the following table.

Table 2. Amount of renewable energy capacity commissioned in 2020 and 2021 (MW)[83]

	2020	**2021**
Net-Metering	31.0 MW	28.3 MW
Standard Offer	0 MW	6.5 MW
Utility Owned and PPAs	0 MW	3.7 MW
Total	**31 MW**	**38.5 MW**

These figures show the amount of renewable energy resources commissioned in Vermont in the past two years. It is worth noting that the amount of net-metering capacity commissioned in the past two years exceeded the capacity and pace of all other sources combined.[84] The past pace of net-metering development alone has been consistent with the pace necessary to meet the utilities' Tier II obligations (25 to 30 MW per year) from a ratepayer perspective. This portfolio mix is not optimal given the fact that net-metering is the most expensive of the resources shown above.[85]

[83] Department's April 8, 2022, Comments at 15.

[84] Pursuant to 30 V.S.A. § 8002, "commissioned" means "the first time a plant is put into operation following initial construction or modernization if the costs of modernization are at least 50 percent of the costs that would be required to build a new plant including all buildings and structures technically required for the new plant's operation."

[85] For example, the most recent standard offer request for proposals resulted in bids for solar developers in the "price competitive block" ranging between $0.0818/kWh and $0.1195/kWh, with VEPPI recommending contracts for two 2.2 MW facilities that bid at $0.0818/kWh and $0.0819 kWh. *Investigation to review the 2022 implementation of the standard-offer program*, Case No. 21-2048-INV, VEPPI Recommendation filed May 13, 2022.

In addition to the amount of renewable energy capacity commissioned, there are several other potentially relevant data sources for evaluating the net-metering program, which are depicted in the following charts and graphs. These include the number and capacity of net-metering CPG applications filed, interconnection applications filed, and systems interconnected.[86]

Figure 2. Annual Solar Net-Metering CPG Applications[87]

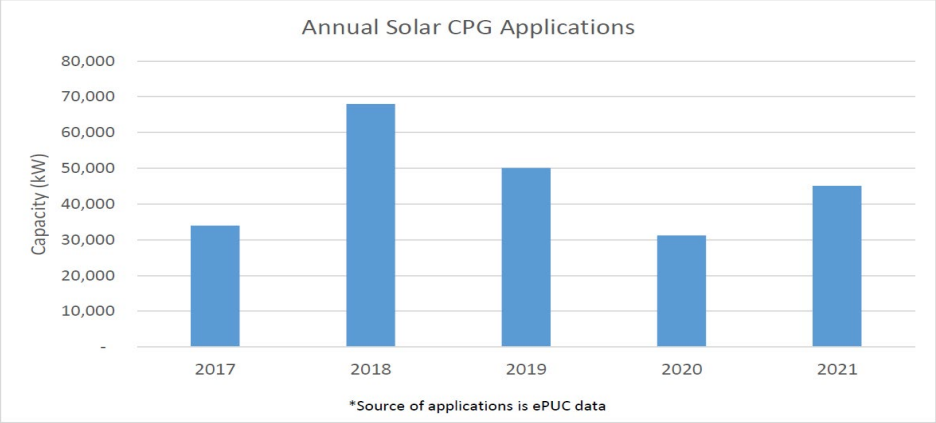
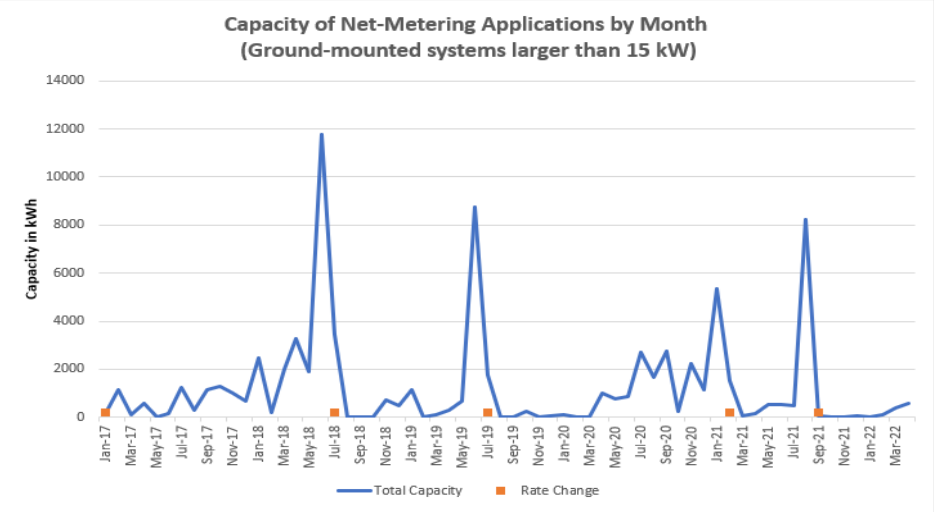


Figure 3. Capacity of Net-Metering Applications by Month (systems larger than 15 kW)[88]



[86] The annual capacity of CPG systems interconnected can be seen in Figure 1 on page 7 above.
[87] Department's April 8, 2022, Comments at 33.
[88] All data concerning net-metering applications included in this figure were retrieved from ePUC.

Figure 4. Number of Net-Metering Applications by Month (systems larger than 15 kW)[89]

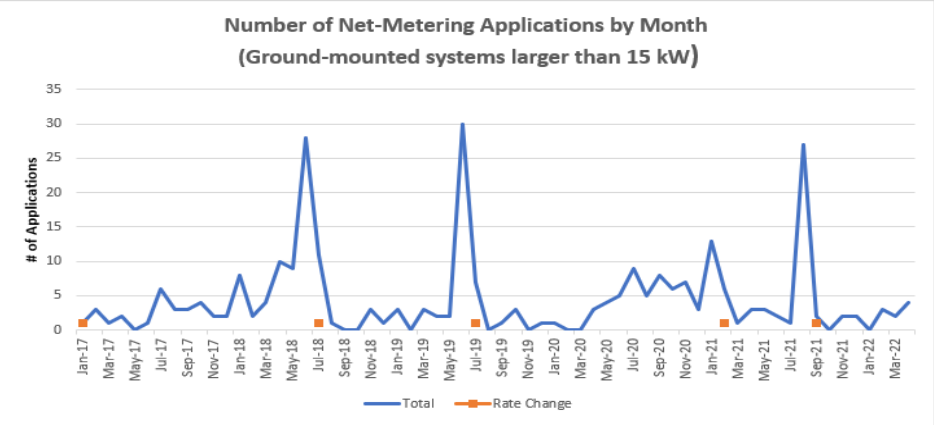


Figure 2 above, which aggregates the capacity of all CPG applications filed with the Commission by calendar years 2017-2021, shows a moderate decrease during 2020 that was followed by a rebound in 2021 to a level that was largely consistent with pre-pandemic levels. Figures 3 and 4, which are limited to ground-mounted systems with a capacity greater than 15 kW, depict application data by month with the dates of adjustor changes noted. These figures show a general trend of applications spiking significantly in advance of a reduction to the net-metering adjustors, which is followed by a gradual increase of applications leading up to the next credit adjustment. This pattern was not as pronounced over 2020 and leading up to the adjustor change in February 2021, presumably because of the impacts of the COVID-19 pandemic. However, the lead-up to the adjustor reduction in September 2021 largely mirrors the increase that occurred in advance of the July 2019 adjustor change. Figure 2 likewise shows a relatively consistent rate of CPG applications filed with the Commission in excess of the 25 MW to 30 MW threshold noted by the Department and the CEP as the required level for Tier II compliance. Overall, these data indicate that the net-metering program continues to have strong participation even in light of the challenges presented by the pandemic and previous reductions in the overall compensation for net-metering systems.

As we have previously stated, "the incentive system for net-metering is not failing if net-metering applications, CPGs, or total capacity commissioned do not increase as rapidly in the next year as it did in previous years."[90] One purpose of these biennial update proceedings is to

[89] All data concerning net-metering applications included in this figure were retrieved from ePUC.
[90] *In re: biennial update of the net-metering program*, Case No. 18-0086-INV, Order of May 1, 2018, at 39.

find the proper balance between the pace of net-metering and the cost to ratepayers. The current pace of applications, even considering the effect of the pandemic, remains robust and still exceeds the pace necessary to meet the utilities' needs for Tier II resources.

(3) The disposition of RECs generated by net-metering systems commissioned in the past two years:

The disposition of RECs generated by net-metering systems is summarized below. The results are sorted by the successive iterations of incentive levels. Net-metering 1.0 did not differentiate compensation based on REC disposition. As a result, most net-metering systems retained ownership of their RECs, with many sold out of state instead of being transferred to their utility to be retired – and thus could not be counted towards State renewable energy requirements.

Table 3. Net-Metering Deployment (kW) REC Dispositions.[91]

	REC Disposition	NM 2.0	NM 2.1	NM2.2	NM 2.3	NM 2.4	Total
2020	Retain	0	14	329	0	0	343
	Transfer	2,773	8,634	18,178	0	0	29,585
2021	Retain	0	0	171	62	17	250
	Transfer	13	1,196	16,642	8,815	1,409	28,076
Total	Retain	0	14	500	62	17	593
	Transfer	2,786	9,330	34,820	9,315	1,409	57,660

This table shows that the current REC adjustor differential of $0.04 has remained effective at encouraging net-metering customers to transfer their RECs to their utility to be retired, in furtherance of State renewable energy requirements.

[91] Department's April 8, 2020, Comments at 36.

(4) Any other information deemed appropriate by the Commission:

The Commission received substantial comments raising issues relevant to the Commission's determination of the appropriate REC adjustor and net-metering compensation generally, including: (1) the importance of addressing climate change, (2) the value of new solar generation resources, (3) the cost of installing solar, and (4) equity considerations related to the net-metering program. We address each of these issues in turn.

The Importance of Addressing Climate Change

Many commenters raise the urgency of addressing climate change and approaching mandates under the GWSA as a reason to not reduce incentives for new net-metering systems. They argue that the RES requirements should establish a floor for the pace of new net-metering development and the amount of renewable energy deployed in Vermont. They further argue that the GWSA will stimulate substantial new demand for electricity and that this demand will necessarily have to be satisfied with new renewable capacity. They also argue that reducing compensation for new net-metering systems will jeopardize Vermont's ability to satisfy its ambitious energy policy goals.

The Commission agrees that addressing climate change is an urgent issue. We have been tasked with overseeing and implementing many aspects of Vermont's overall climate policies, including the standard-offer program and the RES – which are discussed at length above. Although we are not directly charged with overseeing implementation of the GWSA, we are nonetheless mindful that our decisions and orders that relate to the cost and supply of energy in Vermont will affect the State's ability to satisfy the broader greenhouse gas emission reduction requirements set out in the GWSA. We also remain focused on the energy policy goals and objectives established through the CEP, which are tethered to the GWSA's ambitious targets and place heavy emphasis on reducing the carbon impact of Vermont's energy sector. Vermont has taken a number of positive steps over the past 20 years to reduce greenhouse gas emissions from the electric sector. One of the most important recent initiatives was the adoption of the RES. As

a result of Vermont's existing and historical policies, electric generation accounts for only about 6% of Vermont's greenhouse gas emissions.[92]

We also recognize that the success of Vermont's existing programs, including the RES, will be tested in future years. We anticipate that Vermont's policies will continue to evolve in promoting beneficial electrification as GWSA mandates take effect and ramp up. As these changes occur, it will be necessary to routinely evaluate the relative efficacy of all energy programs and policies, including the net-metering program. In particular, the transportation and thermal sectors, which account for the bulk of Vermont's greenhouse gas emissions, will require significant attention. Although the initial Climate Action Plan was released in December 2021, there remains uncertainty about which strategies to address Vermont's greenhouse gas emissions will ultimately be chosen and what rules will be adopted to implement them.

More importantly for this proceeding, as the Department notes in its reply comments, the initial Climate Action Plan finds that:

> On a statewide basis, the electric sector is already relatively low carbon and will be nearly carbon free and largely renewable by 2030 under current utility long-term power supply contracts. The state's Renewable Energy Standard (RES) is already based upon a percentage of total retail sales/load and therefore is designed to keep pace with electrification.[93]

The Department further argues that because Vermont's electric sector is already largely carbon free, "the deployment of net-metering – relative to other clean energy – has little impact on progress toward meeting Vermont's GWSA requirements."[94]

We conclude that a modest decrease to compensation rates for new net-metering systems will not have a negative impact on Vermont's broader greenhouse gas emission reduction requirements. We also stress that both the GWSA and State energy policy favor using the most cost-effective measures to reduce greenhouse gas emissions.[95] We further note that Vermont's

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[92] CEP at 255.

[93] Department's May 10, 2022, Reply Comments, at 3 (citing VERMONT CLIMATE COUNCIL, INITIAL VERMONT CLIMATE ACTION PLAN (Dec. 2021), at 102, available at https://climatechange.vermont.gov/sites/climatecouncilsandbox/files/2021-12/Initial%20Climate%20Action%20Plan%20-%20Final%20-%2012-1-21.pdf.

[94] Department's May 10, 2022, Reply Comments, at 4.

[95] *See* 10 V.S.A. § 592(d)(1) (requiring that the "specific initiatives, programs, and strategies contained" in the Climate Action Plan further the objective of "prioritiz[ing] the most cost-effective, technologically feasible, and equitable greenhouse gas emissions reduction pathways"); 30 V.S.A. § 202a(2) (stating that it is the general policy of Vermont "to identify and evaluate, on an ongoing basis, resources that will meet Vermont's energy service needs

electric distribution utilities are required by statute to develop least-cost integrated resource plans for meeting their electricity needs, including Vermont's renewable energy requirements.[96] These plans include a forecast of anticipated demand. For example, GMP's most recently approved integrated resource plan contains a 10-year load forecast that accounted for the adoption of energy efficiency measures; distributed energy resources; and beneficial electrification measures, including electric vehicles and cold-climate heat pumps.[97] The Commission will continue to use the integrated resource planning process to ensure that Vermont's utilities have adequate renewable-energy supplies to meet demand, including any new demand resulting from beneficial electrification or rules adopted by ANR to implement the GWSA. In doing so, the Commission expects that utilities will use least-cost planning principles for resource selection.

Rising costs may also make it more challenging for Vermonters to adopt beneficial technologies, such as electric vehicles and heat pumps, that will likely be necessary to achieve the GWSA's broader objectives. Therefore, our decision to reduce net-metering compensation for new net-metering systems is consistent with Vermont's greenhouse gas requirements and the CEP's and RES's focus on obtaining significant amounts of renewable energy in a cost-effective manner.

The Value of Solar

In the 2018 biennial update, the Commission found that "the value of new net-metering resources is not proportional to the current cost of obtaining such resources."[98] The Commission reached this conclusion in large part because the substantial amount of distributed generation that has been installed in Vermont in recent years has had a profound effect on the operation of the grid and on the shape of Vermont's load, and system peaks now frequently occur in the evening, when net-metered solar is not available.[99] As a result, the Commission found that new net-

in accordance with the principles of reducing greenhouse gas emissions and least-cost integrated planning, including efficiency, conservation, and load management alternatives, wise use of renewable resources, and environmentally sound energy supply").

[96] 30 V.S.A. § 218c(b).

[97] *Petition of Green Mountain Power Corporation for approval of its 2018 Integrated Resource Plan*, Case No. 18-4166-PET, Order of 9/26/2019 at 6.

[98] *In re: biennial update of the net-metering program*, 18-0086-INV, Order of 5/01/2018 at 44.

[99] *Id*.

metering projects were not likely to provide a benefit in the next two years through avoided transmission and distribution costs. In a lengthy discussion in the 2020 biennial update, we again addressed this issue in response to comments and studies presented by REV, and we largely reached the same conclusions.[100]

In this proceeding, the Department again presents commentary and data to support its argument that the market value of solar has decreased over time, in part, because of shifts to Vermont's daily peak, which now occurs later in the evening hours when solar is no longer producing. The Department presents data to address how this shift affects the distribution utilities' costs for the regional capacity and Regional Network Service charges.[101] The Department also calculates that the value of RECs that can be used for Tier II RES compliance averages approximately $0.025/kWh, which, on a comparative scale with the net-metering program, further exacerbates the overall cost of net-metering relative to other sources of energy.[102]

REV argues that there "are several reasons to believe that the Department's estimates of the rate impact attributable to net-metering are overstated" and that "at a macro-level, there is little evidence that the program is causing significant upward rate pressure."[103] REV does not directly challenge the Department's calculations or data. Instead, REV states that the "average price of electricity for Vermonters is 2 to 3 cents per kWh lower than most New England states" and that "rate increases in Vermont over the past ten years have averaged less than 3% and are lower than increases in surrounding areas" as evidence that any rate impacts from net-metering are "quite moderate."[104] REV also argues that the Department's analysis fails to account for other avoided costs attributable to net-metering systems, such as valuations for reducing line losses and distribution system upgrades that are paid for by net-metering developers. REV further argues that the Department does not consider the social cost of carbon when assessing the cost of net-metering.

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[100] *In re biennial update of the net-metering program*, Case No. 20-0097-INV, Order of 11/12/2020, at 30-35.
[101] Department's April 8, 2022, Comments at 16-21.
[102] *Id.* at 22.
[103] REV's April 24, 2022, Comments at 7.
[104] *Id.* at 7. REV did not provide any additional data to support the comparison of the cost of electricity in Vermont with other New England states and "surrounding areas."

However, at a more general level, REV asserts that the Department's analysis of the benefits of net-metering is flawed in that it is largely limited to costs, particularly in comparison to the standard-offer program. REV states that the Department's emphasis on cost-shifts overlooks the primary purpose of the net-metering program, which REV states is "to provide Vermont ratepayers with the opportunity to self-generate power."[105] REV further states that the Department's analysis is too narrowly focused on current load profiles and that the Department fails to account for load control and the expansion of storage and demand response that will result from Vermont's attempts to achieve the GWSA goals.

We recognize that new solar development, including net-metering, provides both tangible and intangible benefits for Vermont. However, none of the information provide by REV or any other commenters in this proceeding changes our determinations from the previous biennial updates that the value of new net-metering resources is not proportional to the current cost of obtaining such resources.

With respect to REV's argument about the relative cost of electricity in Vermont compared to neighboring jurisdictions, we note that REV did not provide any data or figures to support its assertion. Thus, we are left without a foundation that would allow for a meaningful analysis of this claim within the context of this proceeding. However, a straight comparison of retail rates to other utilities, including those operating in neighboring New England states, is not directly relevant to our overall assessment of the costs and benefits of net-metering in Vermont. Indeed, such a comparison can be misleading because the scope of utility regulation and underlying legal obligations, which directly impacts retail rates, varies significantly across jurisdictions. A direct comparison of per kWh charges for retail rates also may not account for variations in underlying monthly or daily access or capacity charges, the rate volatility risk that can be more present in jurisdictions that allow for retail choice, or unique financial, engineering, or geographical challenges that can affect a utility's overall cost-of-service.

Likewise, we do not share REV's concerns about the Department's reliance on a load forecast produced by VELCO for projecting future Tier II requirements. VELCO, like the distribution utilities, factors in regulatory obligations and corresponding demand growth when

[105] *Id.*

developing its load forecasts. As we note above, each distribution utility is also required to include updated demand forecasts as part of their integrated resource plans, which are filed with the Commission every three years. We are satisfied that the Department used a reliable load forecast as a foundation for evaluating some of the costs associated with net-metering, and we will have ample opportunity to reconsider those forecasts in the future through our routine regulatory processes. We further note that no other commenter presented a detailed, alternate load forecast for our consideration as part of this proceeding, other than general assertions about expected load-growth.

Finally, with respect to factoring the cost of carbon, we agree with the Department that net-metering has only a minor impact on greenhouse gas emissions, because, as we discuss above, Vermont's electric supply is already largely carbon-free and under the RES framework excess net-metering generation displaces the acquisition of other lower-cost, renewable sources. That cost increase can in turn negatively affect demand for beneficial electric measures in the transportation and thermal sectors, which account for the bulk of Vermont's greenhouse gas emissions.

We agree with REV that there are financial benefits from the net-metering program. Net-metering will also play a significant part in promoting the deployment of new demand-response and load-control technologies. However, we are statutorily obligated to consider these benefits in tandem with their relative costs when evaluating the net-metering program. The data we reviewed in this proceeding, particularly the data provided by the Department regarding impacts on capacity and Regional Network Service charges, show that the relative system value of new net-metering systems continues to gradually decline over time. It is therefore appropriate to implement a modest decrease in overall compensation for new net-metering systems to acknowledge this decrease and to better balance the net-metering program's benefits with its overall costs in comparison to other available resources.

The Cost of Installing Solar

The Department notes that solar installation costs continue to decrease, though at more modest rates than previously experienced. According to the Department, which relies upon data from the Lawrence Berkeley National Laboratory, "steep declines in the installed cost of solar

(since around 2008) are beginning to flatten out."[106] Looking forward, the Department expects solar installation costs to continue to decline modestly, following a trend from recent years. The Department argues that recent decreases in net-metering compensation adjustors have been more than offset by the decreasing installation costs and higher retail rates, allowing for net-metering to remain profitable for both participating customers and developers.[107] The Department, however, also recognizes that the COVID-19 pandemic has created ongoing supply chain disruptions and constraints, there have been broader inflation pressures, and workforce shortages and availability issues persist.

In contrast, REV and the solar developers assert that installation costs have increased because of interconnection costs, the reduction of the federal investment tax credit, and federal tariffs. REV also cites to ongoing supply chain issues, inflation, rising interest rates, expected changes to the federal investment tax credit, and a federal Department of Commerce anti-circumvention investigation as factors making solar projects more costly than in previous years. In support of its position, REV also presented a series of "payback" models with eleven different scenarios covering the 2018 to 2024 timeframe. These scenarios use varying inputs and assumptions to demonstrate the expected length of time necessary for a customer to recover an investment in a new net-metering system. REV argues that its modeling shows that for a Category I net-metering system, "changes to net-metering implemented in the 2020 biennial update increased the payback period by approximately 7.8% . . . and that Department's proposed changes in combination with the scheduled reduction in the [investment tax credit] would result in a 17% increase in the payback period relative to NM 2.2."[108] Norwich Solar also referenced these payback models in its comments and noted that longer payback periods make it more challenging to obtain third-party financing for new net-metering systems.

The cost of solar technology has fallen precipitously over the last decade, but the pace of this decline has slowed in recent years.[109] Commenters also recognize that inflation and the pandemic's impact on labor and supply markets will likely affect the cost of solar development. However, in assessing the cost of new solar installations, several discrete considerations weigh in

[106] Department's April 8, 2022, Comments at 35.
[107] *Id.* at 27.
[108] REV's April 24, 2022, Comments at 7.
[109] Department's April 8, 2022, Comments at 27-28.

favor of adopting a slight decrease to the compensation for new net-metering systems. First, we note that the cost of standard-offer solar projects has continued to decline, albeit modestly. As noted above, the most recently completed standard-offer request for proposals yielded bids as low as $0.0818/kWh for new solar, which is a decrease from the most recent auction.[110] Second, the Commission is not convinced that the tariffs and tax changes cited by REV and the financial uncertainties stemming from the pandemic are fundamentally challenging solar development. Net-metering and other solar developers have faced similar challenges in recent years without material impacts on new net-metering deployment.[111] Third, the rate of new net-metering applications and interconnections has remained relatively high over the past two years despite the overall impacts of the pandemic – which coincided with the implementation of the adjustor decreases ordered in the previous biennial update proceedings. Finally, with respect to the payback models, our objective in this proceeding is not to determine the overall profitability of new net-metering systems or assess the business practices of net-metering developers. Instead, we are focused on balancing the pace of new net-metering construction with overall system costs and benefits and corresponding ratepayer impacts.

The payback models presented by REV also highlight a salient point raised by the Department in its reply comments. The Department responds to REV's payback-model argument by noting that the Commission should also consider how increased costs from net-metering will affect the payback periods for other beneficial technologies, such as electric vehicles and heat pumps. As the Department notes, many of these newer technologies have substantially longer payback periods than net-metering systems. Yet the relative success of Vermont's broader energy policies will almost certainly be contingent on successful adoption of these technologies. Although we recognize that even a modest reduction in compensation for new net-metering systems may adversely affect the time it takes for the return of an initial

[110] *Investigation to review the 2022 implementation of the standard-offer program,* Case No. 21-2048-INV, VEPPI Recommendation filed May 13, 2022.

[111] REV has raised these same concerns in each of the previous biennial update proceedings. For example, four years ago during the 2018 biennial update, we noted that "REV described several factors that will increase the cost to install net-metering systems, including: changes to the federal tax code; increased permitting expenses; tariffs on solar panels, steel, and aluminum; and the sunsetting of the investment tax credit in 2020. REV asserted that net-metering credits [would] need to increase by $0.02 to $0.03/kWh to maintain a consistent stream of financing relative to pre tax-law changes. REV further contended that past trends of decreasing installation costs will not continue in the future." Case No. 18-0086-INV, Order of 5/1/18 at 22.

investment in a net-metering system, that consideration must be balanced with our broader energy objectives that aim to make beneficial technologies accessible and as affordable as possible for Vermonters. Adding upward pressure on electric rates creates a risk of undercutting the effectiveness of policies directed at promoting beneficial electrification, including those technologies that are far more cost-effective at addressing greenhouse gas emission reductions.

Equity Considerations

Many commenters in this proceeding raised issues regarding the equity of the net-metering program, with these commenters generally recognizing that the benefits of net-metering have not been evenly distributed among Vermonters. As Stowe Electric stated in its comments:

> The current net-metering framework does not adequately account for net-metering ratepayers paying their equitable share of the utility's cost of service, because the current framework favors ratepayers who can afford to install, lease, or finance expensive net-metering generation and co-located battery storage systems. This results in a cost-shifting from the ratepayers who can afford to, in effect, opt-out of utility rates to those ratepayers who cannot afford to opt-out. This means that ratepayers with the highest energy burdens (the percentage of gross household income spent on energy costs) are least likely to take advantage of net-metering installations and beneficial electrification projects. Therefore, low- and moderate-income ratepayers will continue to face increasing pressure to pay for a greater share of the distribution system's cost of service.[112]

The commenters, however, sharply disagree on potential solutions to these equity concerns. On the one hand, the Department and the utilities argue that the inequitable cost-shift can only be mitigated, if at all, by reducing the compensation rates for net-metered systems. On the other hand, the developers argue that decreasing compensation rates will only make it more challenging for low- and moderate-income Vermonters to participate in the net-metering program by making it harder to obtain financing on favorable terms.

The Department and REV both discussed demographic data produced by the Lawrence Berkeley National Laboratory ("Berkeley") that is helpful for contextualizing this issue. REV argues that the data from Berkely show increasing participation from low- and moderate-income populations in net-metering programs, with 41% of "solar adopters" nationally falling into this population. The Berkeley data show that approximately 13% of solar adopters in Vermont in

[112] Stowe Electric's April 25, 2022, Comments at 2.

2020 had incomes below $50,000.[113] In its reply comments, the Department states that the $50,000 threshold used by Berkeley to define low- and moderate-income is an "arbitrary line" and that the Berkeley data "show[] the adoption of solar to be essentially flat for this income bracket."[114] The Department further notes that the Berkeley data show that in Vermont the "top 20% of income earners accounted for 36% of solar adoption, while the bottom 40% account for just 10% of solar adoption" and that "[t]his trend has fluctuated very minimally over time."[115]

We value the thoughtful comments that address this complex issue. REV and the solar developers argue that increasing compensation rates for net-metering systems may improve access to financing, which in turn might make the program more accessible for low- and moderate-income Vermonters. However, an increase in compensation rates, without any other changes, would largely recreate the same incentive structure for the net-metering program that resulted in the existing inequities. We find no basis, based on the information provided in this proceeding, to conclude that increasing compensation, in the absence of any other substantial structural changes to the net-metering program, will significantly stimulate increased participation from Vermont's low- and moderate-income populations.

This is an issue that goes beyond the narrow purpose of this proceeding, though it is an important issue that will warrant more detailed consideration in the future when we revisit larger, structural changes to the net-metering program. However, based on the information that we reviewed in this proceeding, we conclude that lowering compensation for new net-metering systems will slightly reduce the cost impact that is most acutely felt by the most energy-burdened segments of Vermont's population as a result of the high cost of net-metering.

REC Adjustor Conclusion

The Commission agrees with the Department and with the utilities that a one-cent reduction in net-metering compensation for new net-metering systems, which will largely be offset by the increase to the statewide blended residential rate, is justified. The Department recommends that this reduction be achieved through a reduction to the REC adjustor. However,

[113] REV's April 25, 2022, Comments at 8.
[114] Department's May 10, 2022, Comments at 7.
[115] *Id.*

the Department also recommended that "[m]odifications could be made to the siting adjustors to modulate the pace of net-metering if the Commission desired more, or less, deployment . . . instead of using the REC adjustor for this purpose."[116]

The Commission agrees that a decrease in compensation for new net-metering systems is appropriate but determines that it is better to accomplish a reduction by changing the siting adjustors. The current negative REC adjustor represents the amount by which the Commission determines it is appropriate to reduce the net-metering credit for customers who retain their RECs.[117] As we noted in the 2020 biennial update, it is potentially confusing to have a negative value apply when customers transfer their RECs to their utilities. Accordingly, both current REC adjustors (positive and negative) will be maintained at $0.00/kWh and negative $0.04/kWh, respectively. The reduction to net-metering incentives will instead be accomplished using the siting adjustors, as discussed below.

VI. SITING ADJUSTOR FACTORS

(1) The number and capacity of net-metering systems receiving certificates of public good ("CPGs") in the most recent two years:

The following table summarizes the Commission's records with respect to the number and capacity of net-metering systems that received a CPG.[118]

Table 4. Annual Number and Capacity of Systems Receiving CPGs in 2020 and 2021[119]

	2020 CPGs	2020 Capacity (kW)	2021 CPGs	2021 Capacity (kW)
0-15 kW	2,095	24,693	2,864	30,700
>15 - 150 kW	17	473	15	481
>150 – 500 kW	31	11,124	35	13,203
Cumulative	2,143	36,290	2,914	44,383

[116] Department's April 8, 2022, Comments at 24.

[117] 30 V.S.A. § 8010(c)(1)(H)(i).

[118] The number of CPG applications received is different from the number of CPGs issued because a portion of CPG applications are withdrawn before a decision is made on whether to issue a CPG.

[119] All data concerning net-metering CPGs were retrieved from ePUC. The data included in this table are based on the year an application was initially filed. The table includes total capacity of all applications by size that were filed in 2020 or 2021 and ultimately received a CPG. Capacity for applications that were withdrawn, denied, or remain pending before the Commission was excluded.

When considering these data, it is also important to acknowledge that there is a lag between when an application is filed and when it is approved. For example, a significant number of CPG applications filed in 2021 were not approved until 2022. Therefore, these figures are more backward-looking. It is also important to remember that some number of these systems will not be constructed despite receiving a CPG. The capacity of systems receiving CPGs in 2020 and 2021 was over 25,000 kW, which is consistent with the total amount of Tier II resources needed.[120] The Commission also expects that some of the capacity approved in 2020 and 2021 will not be installed until later this year or in 2023 in light of our recent decision to extend the commissioning deadline for all net-metering systems that have commissioning deadlines during the 2022 calendar year.[121]

For the same reasons discussed above related to REC adjustors, the Commission finds that the current pace of net-metering deployment is more than adequate to meet the State's renewable energy requirements. It is not consistent with Vermont's energy policy to have net-metering systems displace more cost-effective Tier II resources. Accordingly, it is appropriate to reduce compensation for new net-metering systems to ensure that the program does not cause an undue cost-shift between customers who net-meter and those who do not. In the future, the Commission expects that net-metering compensation will become more competitive with other Tier II resources – for example, through future biennial updates or rulemakings.

(2) The extent to which the current siting adjustors are affecting siting decisions:

Based on our review of the Commission's records for CPG applications filed in 2020 and 2021, it appears that the siting adjustors continue to function as intended. There has been robust participation in the smaller-scale, residential-sized systems that generally must be collocated adjacent to their load. In contrast, the Commission has received very few applications for systems not located on preferred sites. Indeed, the Commission did not receive applications for any Category IV projects (which includes projects between 15 kW and 150 kW that are not on

[120] *See supra* at 7.

[121] *See Vermont Public Utility Commission orders and memoranda issued in response to COVID-19 pandemic*, Case No. 20-0789-INV, Order of 2/24/2022.

preferred sites) during 2020 or 2021. The siting adjustors are accomplishing the goal of steering development to better locations.

As we discussed in the 2020 biennial review proceeding, "siting adjustors should be designed to encourage well-sited projects and not be designed to make construction on a specific type of preferred site cost-effective for the developer."[122] The Commission concludes that the siting adjustors are successfully driving development towards less environmentally sensitive sites. The Commission will continue to examine possible improvements to the siting adjustor framework in our review of the net-metering rule.

(3) Whether changes to the qualifying criteria of the categories are necessary:

Pursuant to Commission Rule 5.128(A), the Commission may make changes to the eligibility criteria for Category I, II, III, and IV net-metering systems. For example, Category I systems must have a capacity of 15 kW or less. In its comments, the Department suggests that siting adjustors could be modified to account for a project's impacts on the grid. Specifically, the Department states that a project sited on a "saturated" distribution circuit or within an export-constrained area of the transmission system could receive a lower adjustor unless it is paired with storage or is otherwise able to time-shift its production output.[123] The Department raises a potentially legitimate concern, because new new-metered systems installed within highly constrained areas will provide less system value than new systems installed on relatively unsaturated circuits. Indeed, such systems may actually increase overall system costs. There may be merit to the Department's recommendation, but analyzing this recommendation and developing appropriately nuanced criteria require a detailed and granular level of review that exceeds the scope of this proceeding. We encourage the Department to raise these recommendations in the current net-metering rulemaking or other appropriate proceeding.

No other commenters recommended any changes to eligibility for Category I, II, III, and IV net-metering systems, and we therefore do not make any changes to the eligibility criteria.

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[122] *In re: biennial update of the net-metering program*, Case No. 20-0097-INV, Order of 11/12/20, at 39 (internal quotations omitted).

[123] Department's April 8, 2022, Comments at 42.

(4) The overall pace of net-metering deployment:

Since the early months of 2020, the pandemic has adversely affected supply chains and labor markets, which in turn slowed the pace of actual construction on net-metering systems. However, the data discussed above, including the number of CPG applications filed in 2020 and 2021, show that the pace of net-metering continues to be robust and in excess of what is necessary for utilities to meet their Tier II obligations under the RES. This continued healthy pace of net-metering development, coupled with the Commission's concern about the cost to ratepayers of net-metering relative to the cost of other available Tier II resources, such as standard-offer, bilateral contracts, and utility projects, supports our decision to continue to reduce net-metering compensation for new systems in an incremental manner despite the ongoing market disruptions caused by the pandemic.

(5) Any other information deemed appropriate by the Commission:

Our discussion of other relevant factors in Section V, above, applies equally here and supports our overall conclusion that net-metering compensation is creating a cost shift and driving levels of net-metering deployment that is far outpacing more cost-effective solar resources.

Siting Adjustor Conclusion

Having considered the factors discussed above, the Commission determines that it is appropriate to reduce the siting adjustor applicable to all categories of new net-metering systems. This will help better align the cost of net-metering and the value that new net-metering systems provide, while slightly narrowing the gap between the cost of new net-metering and the cost of other sources of distributed renewable energy. In addition, given that only 12 months will have passed since the most recent adjustor change went into effect, we conclude that the siting adjustor change will be implemented for the remainder of the two-year period covered by this proceeding. This change for new systems will largely be offset by the increase in the statewide blended residential rate and nets to less than three-tenths of a cent.

VII. DETERMINATION OF THE STATEWIDE BLENDED RESIDENTIAL RATE

The Department recommended that the statewide blended residential rate be recalculated because of rate increases by several utilities in the intervening years. Specifically, the Department recommended an increase of $0.00728/kWh, for a new statewide blended residential rate of $0.17141/kWh. No commenter has objected to the Department's recommendation, and we find the recommendation reasonable. Therefore, it is adopted. This change will offset some of the changes made to the siting adjustors for new net-metering systems. It will replace the existing blended residential rate for all – both existing and new – net-metering customers, increasing the overall cost of the net-metering program and increasing the compensation received by most existing net-metering participants.

Table 5, below, illustrates the cumulative effect of the changes described in this Order. The figures in this table illustrate the experience of a net-metering customer located in the service territory of a distribution utility that applies the statewide blended residential rate. Actual experiences may vary if the retail rates offered by a customer's utility are less than the blended residential rate. The figures are also based on the customer choosing to transfer RECs to the utility. The precise timing of these changes is discussed in more detail in the next section of this Order.

Table 5. Summary of Changes to Net-Metering Compensation[124]

Category	Current	September 1, 2022 - July 31, 2024
Category I (up to 15 kW)	$0.15413/kWh	$0.15141/kWh
Category II (>15 to 150 kW on preferred site)	$0.15413/kWh	$0.15141/kWh
Category III (>150 to 500 kW on preferred site)	$0.12413/kWh	$0.12141/kWh
Category IV (>15 to 150 kW on non-preferred site)	$0.11413/kWh	$0.11141/kWh

VIII. TIMING OF THE CHANGES ANNOUNCED IN THIS ORDER

Rule 5.128 specifies timeframes for the adoption of tariffs that would implement the changes announced in a biennial update. However, as a result of scheduling changes that we previously approved in this proceeding, this biennial update proceeding is running approximately seven weeks behind the calendar deadlines set out in Commission Rule 5.128. Therefore, we determine that it would be appropriate to correspondingly adjust the effective date of the modified siting adjustors and revised statewide blended residential rate to September 1, 2022. These adjustments will remain in effect for the remainder of the full biennium covered by this proceeding. The Commission directs the electric distribution utilities to file tariffs no later than July 15, 2022, to take effect on September 1, 2022. That means that complete CPG applications must be filed on or before August 31, 2022, to qualify for the incentives that are available today.

[124] This assumes that the customer's utility uses the statewide blended residential rate; some utilities' rates will differ if their residential rate is less than the statewide blended residential rate.

IX. ORDER

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

1. The statewide blended residential rate will be $0.17141/kWh, effective September 1, 2022.

2. The renewable energy credit ("REC") adjustor applicable to customers who elect to transfer RECs to their utility shall remain $0.00 kWh for the period beginning September 1, 2022, and ending June 30, 2024.

3. The REC adjustor applicable to customers who elect to retain RECs shall remain at negative $0.04 kWh for the period beginning September 1, 2022, and ending June 30, 2024.

4. The siting adjustor for Category I net-metering systems shall be negative $0.02/kWh for the period beginning September 1, 2022, and ending June 30, 2024.

5. The siting adjustor for Category II net-metering systems shall be negative $0.02/kWh for the period beginning September 1, 2022, and ending June 30, 2024.

6. The siting adjustor for Category III net-metering systems shall be negative $0.05/kWh for the period beginning September 1, 2022, and ending June 30, 2024.

7. The siting adjustor for Category IV net-metering systems shall be negative $0.06/kWh for the period beginning September 1, 2022, and ending June 30, 2024.

8. The REC and siting adjustors ordered in Paragraphs 2 through 7 above shall be applicable to all new net-metering systems for which a certificate of public good application is filed with the Commission for the period beginning September 1, 2022, and ending June 30, 2024, unless otherwise ordered by the Commission.

9. The Commission makes no changes to the eligibility criteria for Category I, II, III, and IV net-metering systems.

Dated at Montpelier, Vermont, this 17th day of June, 2022.

Anthony Z. Roisman) PUBLIC UTILITY
)
)
Margaret Cheney) COMMISSION
)
J. Riley Allen) OF VERMONT
)

OFFICE OF THE CLERK

Filed: June 17, 2022

Attest: _____
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.

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