

Exhibit No. 502

Renew Missouri – Exhibit 502
Philip Fracica
Rebuttal Testimony
File Nos. ER-2022-0129 & ER-2022-0130

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Issues:	Low-Income Solar Subscription Pilot, Solar Subscription Pilot, Residential Battery Storage Pilot
Witness:	Philip Fracica
Sponsoring Party:	Renew Missouri Advocates
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MISSOURI PUBLIC SERVICE COMMISSION

**ER-2022-0129
and
ER-2022-0130**

**REBUTTAL TESTIMONY
OF
PHILIP FRACICA
ON BEHALF OF
RENEW MISSOURI ADVOCATES**

July 13, 2022

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1 **INTRODUCTION**

2 **Q: Please state your name, title, and business address.**

3 A: Philip A. Fracica, Director of Programs, Renew Missouri Advocates d/b/a Renew
4 Missouri (“Renew Missouri”), 409 Vandiver Dr. Building 5 Suite 205, Columbia,
5 Missouri, 65202.

6 **Q: Please describe your current position, your education, and background.**

7 A: I am employed by Renew Missouri as the Director of Programs. In that role I focus on
8 clean energy policy advocacy with rural electric cooperatives, municipal utility advisory
9 boards and city councils, organizing communities around renewable energy and energy
10 efficiency advocacy opportunities, researching utility clean energy programs, and
11 advocating for the expansion of energy efficiency programs with a focus on low-income
12 customers.

13 My educational experience consists of a Bachelor of Science in Business
14 Administration with an emphasis in Finance from the University of Missouri. From there,
15 I began working at Renew Missouri in May 2014 as an intern and began working full-
16 time with the organization on May 30, 2015. In my time at Renew Missouri, I have
17 conducted extensive research and analysis of various energy programs and policies. I
18 have analyzed solar subscription policies throughout the country and have reviewed all
19 utility solar programs across the state of Missouri. I also helped to develop Renew
20 Missouri’s analysis and comments regarding Ameren Missouri’s Solar Subscriber and
21 Solar Partnership filings EA-2016- 0207 and EA-2016-0208.

22 In addition to that work, I advocate for, and testify in favor of, clean energy
23 policies in a variety of forums. This includes testifying in favor of legislation in General

1 Assembly hearings and city council hearings in Kansas City, Columbia, and
2 Independence. I have testified in support of clean energy financing considerations, net
3 metering changes, and for the creation of climate action plans. In addition, I have
4 participated in and organized clean energy conferences including the Advancing
5 Renewables in the Midwest (ARM) and State Environmental Leader’s Conference
6 (SELP).

7 I participate in multiple coalitions to tackle issues surrounding energy burden in
8 low-income communities. My primary interaction with stakeholders working on low-
9 income energy issues has been through my time of service on the Missouri
10 Weatherization Policy Advisory Council (“MWPAC”) to help provide input on the
11 state’s administration of federal funding for WAP and LIHEAP. As part of these
12 meetings, we discuss the feasibility of using the Weatherization Assistance Program
13 (“WAP”) and Low-Income Home Energy Assistance Program (“LIHEAP”) dollars
14 towards new innovative project ideas such as integrating assistance with solar options. In
15 addition to my efforts here, I have been engaged with a national coalition of housing and
16 energy advocates with a focus on helping low-income multifamily Americans save on
17 energy, called Energy Efficiency For All (“EEFA”). With EEFA, I held large group
18 policy meetings in 2015 and 2016 to discuss policy recommendations with many
19 stakeholders from across Missouri to improve energy efficiency and solar access for low-
20 income multifamily communities across the state.

21 Most recently, I have been appointed to the Columbia Missouri Water and Light
22 Advisory Board to help the City and our municipal utility, Columbia Water & Light
23 (“CW&L”), with utility operations guidance and long-term energy planning to assist the

1 City Council and Mayor with their decision making on utility matters for the City.

2 Attached as Schedule PF-1 is a list of my case participation.

3 **Q: What is the purpose of your testimony?**

4 A: The purpose of my testimony is to provide analysis and recommendations on Evergy's
5 proposed Low-Income Solar Subscription Pilot. While this program has potential to
6 provide currently unavailable access to renewable energy to low-income communities,
7 there are opportunities to modify the program design to deliver more meaningful savings
8 to program participants. In addition, my testimony will provide support for Evergy's
9 proposed tariff changes to the existing Solar Subscription Pilot Program as well as
10 analysis and support for Evergy's proposed Residential Battery Energy Storage Pilot.

11 **Low-Income Solar Subscription Pilot**

12 **Q: Please briefly summarize your testimony about Evergy's proposed Low-Income**
13 **Solar Subscription Pilot.**

14 A: I would first like to express my general support for Evergy's efforts to develop a low-
15 income community solar program. Renew Missouri was a signatory to Stipulation and
16 Agreement in Evergy's 2018 rate case directing the Company to consider utilizing a
17 portion of solar resources constructed to meet the needs of the Solar Subscription
18 Program to serve low-income customers.¹ The organization and myself continue to take
19 the stance that equitable access to clean energy is a critical goal that can be achieved
20 through community solar programs. My testimony regarding the Low-Income Solar
21 Subscription Pilot will provide analysis on Evergy's proposed Pilot Program and will
22 discuss my recommendations on how this program can be modified to achieve greater

¹ See EFIS File Nos. ER-2018-0145 and ER-2018-0146, Doc. No. 258.

1 impact and more equitable results through modifications in program design. I will first
2 summarize the program as proposed by Evergy. Then, I discuss successful low-income
3 community solar programs across the country. Finally, I will share my recommendations
4 on changes Evergy can and should make to improve this program.

5 **Q: Please provide an overview of the Company's proposed Low-Income Solar**
6 **Subscription Pilot.**

7 A: In the 2018 Evergy Rate Case, the signatories to the rate design Stipulation and
8 Agreement agreed the Company would work to offer a 1MW tranche of the originally
9 proposed 5 MW facility serving the Solar Subscription Pilot program to income-eligible
10 customers.² The intention of the program is to allow for income-qualified customers, who
11 have historically been unable to see the benefits of photovoltaic generation on their own
12 property due to upfront cost barriers, to participate in and achieve bill savings from this
13 program. To provide an economic benefit to income-eligible customers, the Company
14 now proposes to integrate the program with other economic support programs available
15 through Evergy.³

16 **Q: You mentioned cost savings are a potential benefit to low-income community solar**
17 **program participants. How is the participant charge designed in Evergy's proposed**
18 **pilot?**

19 A: The low-income solar block subscription charge being proposed is a lower price offering
20 below the current standard rates and will escalate at a percentage not to exceed average
21 retail rates.⁴ The participant charge is enshrouded by the Services and Access charge,

² *Id.*

³ EFIS File No. ER-2022-0129, Doc. No. 23; EFIS File No. ER-2022-0130, Doc. No. 23.

⁴ EFIS File No. ER-2022-0129, Doc. No. 23; EFIS File No. ER-2022-0130, Doc. No. 23; Evergy Response to Renew Missouri Data Request 1-8.

1 which is proposed to be the same across solar subscription programs.⁵ The participants’
2 shares of the solar resource are subtracted from the metered energy on their bills.⁶

3 **Q: What kinds of benefits can community solar programs deliver to low-income**
4 **customers?**

5 A: Community solar can offer financial savings and flexibility for customers facing barriers
6 to utilizing rooftop arrays. These programs harness economies of scale, utilize sizing and
7 packaging that leads to low upfront entry costs, allow participation of customers who do
8 not own their dwelling, protect against unexpected maintenance costs, and monetize the
9 investment tax credit in order to pass along savings to customers.⁷ Community solar
10 programs also have substantial ancillary benefits, such as spurring investment in under-
11 resourced communities, supporting job creation and workforce development, mitigating
12 environmental impacts in communities that have historically borne the brunt of fossil fuel
13 pollution, and promoting resilience.⁸

14 **Q: How can Energy’s proposal be modified to allow participants in the Low-Income**
15 **Solar Subscription Pilot to achieve greater savings?**

16 A: The way in which community solar programs can deliver maximum energy savings
17 opportunities for income-eligible customers is through a partnership with the state energy
18 office — in Missouri, this is the Division of Energy under the Department of Natural
19 Resources — and the US Department of Energy (“DOE”). DOE is enabled to approve the

⁵ *Id.*

⁶ *Id.*

⁷ Hausman, Nate, *How Community Solar Can Benefit Low- and Moderate-Income Customers*, World Resources Institute (June 16, 2022).

⁸ *Id.*

1 use of WAP dollars for community solar programs if requested by a state agency.⁹ As
2 such, Evergy’s proposal could be modified to include a partnership with the Missouri
3 Department of Natural Resources (“DNR”) to aggressively pursue approval of solar PV
4 within the Missouri WAP program. In this type of model, DNR may submit a request to
5 its DOE Project Officer to include solar PV as an approved weatherization measure into
6 the Missouri WAP program.¹⁰ This request must include a solar analysis utilizing DOE
7 analysis tools and must include sample analysis submitted to DOE for review.¹¹ The
8 request to approve solar PV can be made at any time, but the intention to implement a
9 Low-Income Solar Subscription Pilot Program should be included in the Missouri Annual
10 Plan submission to DOE for approval.

11 This program design would allow Evergy to fully leverage all of the energy
12 assistance programs available to it in its growing suite of assistance programs — not only
13 by offering robust energy efficiency savings but by allowing for substantial cost savings
14 in low-income solar subscription offerings. The feasibility of this model has increased
15 exponentially since the 2018 rate case due to the recent investment in federal funding for
16 state WAP and LIHEAP budgets over the next five years. This significant level of
17 investment will create new opportunities and challenges for Missouri community action
18 agencies (“CAAs”) to spend this money in a timely manner. As such, integrating WAP
19 dollars with this program will deliver the added benefit of providing CAAs another way
20 to spend down this increased budget. Without this type of program design, Evergy will
21 not be able to provide a meaningful net benefit to low-income subscribers.

⁹ *WAP Memorandum 024: The Use of Solar PV in the WAP*, United States Government Department of Energy (January 17, 2017).

¹⁰ *Id.*

¹¹ *Id.*

1 **Q: Is your recommendation consistent with the design of other low-income community**
2 **solar programs across the country?**

3 A: My recommendation differs from the design of other referenced low-income community
4 solar programs because of the recent influx of weatherization dollars that can be applied
5 to this program. The largest scale example of a low-income community solar program
6 was developed by the Colorado Energy Office in conjunction with several cooperatives
7 around the state.¹² Of the various community solar projects built through this partnership,
8 the Poudre Valley Rural Electric Cooperative Association’s Coyote Ridge Community
9 Solar Array is the largest and offers community solar access to all customer classes.¹³
10 The system is 1.95 MW and has a 700 kW carveout for income-qualified residents and a
11 500 kW carveout for nonprofits, with the remaining 750 kW left available for traditional
12 subscription customers.¹⁴ This model has three different rate tiers for these classes. The
13 low-income portion is designed to remove the retail rate calculation and instead allow
14 participants to receive a solar credit at \$.065772/kWh with a 5kW cap.¹⁵ The program
15 includes a four-year cap on participation in hopes that, after four years of assistance, the
16 low-income subscribers would be in a better position to rejoin the program at a different
17 tier.¹⁶ This program targets income-eligible customers that had already sought or received
18 some level of energy assistance through WAP or LIHEAP.¹⁷ Evergy should look at

¹² Dobos, Hillary and Artale, Emily, *Insights from the Colorado Energy Office Low-Income Community Solar Demonstration Project*, Colorado Energy Office (December 2017). See also Cook, Jeffrey J. and Shah, Monisha, *Reducing Energy Burden with Solar: Colorado’s Strategy and Roadmap for States*, National Renewable Energy Laboratory (2018).

¹³ *Id.*

¹⁴ *Id.*

¹⁵ *Id.*

¹⁶ *Id.*

¹⁷ *Id.*

1 adopting a similar methodology here in addition to my above recommendations in order
2 to leverage existing support programs offered by the Company for low-income
3 subscribers. This could also help strengthen the proposal in offering the low-income solar
4 block subscription charge below the current rates.

5 Other utilities in states across the country have also begun developing low-income
6 community solar programs to provide equitable access to clean energy for those that need
7 it the most. These states include, but are not limited to: Arizona, California, D.C., Hawaii,
8 Illinois, Massachusetts, Minnesota, Nevada, and Oregon.¹⁸ These states have statewide
9 programs actively incentivizing solar systems for low-income households, which differ
10 from Colorado’s utility-specific approach.¹⁹ While not all of the aforementioned solar
11 programs are utilizing WAP dollars, seven of these states’ programs have design
12 elements that incorporate an energy efficiency component.²⁰ States have also leveraged
13 these programs to create community benefits through workforce training initiatives and
14 programs as part of low-income community solar project development.

15 **Q: Do you have any recommendations regarding the marketing strategy and budget for**
16 **this pilot?**

17 A: The marketing of the Low-Income Solar Subscription Pilot should focus on income-
18 eligible customers already receiving assistance through targeted energy efficiency
19 offerings from the Company or CAAs. In a response to Renew Missouri Data Request 1-
20 4, Company witness Kevin Brannan noted that the marketing strategy for the Low-

¹⁸ Koepp, CJ, *Sunshine for All: A Survey of Statewide Low-Income Solar Programs*, The Environmental Law & Policy Center (October 2021).

¹⁹ *Id.*

²⁰ *Id.* These programs are located in California, Illinois, Minnesota, and Hawaii. Of the programs listed above, the Washington D.C. program is the least applicable to Missouri, as their Solar For All funding mechanism is through a Renewable Energy Standard Ordinance that fines participating utilities that are not in compliance with the RES.

1 Income Solar Subscription Pilot includes integrating the pilot into its current suite of
2 programs being promoted to customers, with the focus of encouraging those customers to
3 make appointments with Connection Specialists to learn more about the available
4 program offerings.²¹ Witness Brannan also noted Evergy Connect cross-promotes and is
5 cross-promoted by other community resources.²²

6 While there is value in connecting low-income customers to information about
7 available resources all at one time, it would be more efficient for the Company to
8 prioritize marketing this program to customers already receiving some level of energy
9 assistance first. This project could also be marketed as an incentive to participate in
10 energy efficiency programs, such as eligibility for this program being linked to receiving
11 a direct install kit from Evergy. I believe this approach, in addition to what is already
12 outlined by the Company, will ensure that customers are reaping the most benefits from
13 coordinating low-income program offerings.

14 **Q: What is your conclusion and recommendation to the Commission regarding the**
15 **proposed Low-Income Solar Subscription Pilot?**

16 A: The Low-Income Solar Subscription Pilot will be most impactful for Evergy customers in
17 need if the energy savings component can be greater for participating low-income
18 households. Savings can be achieved through leveraging WAP dollars through a
19 partnership between DNR and Evergy. Without leveraging federal assistance dollars or
20 an additional funding mechanism, the Company will not be able to create deep energy
21 savings for low-income solar subscribers. As there are no funding mechanisms available

²¹ Evergy Response to Renew Missouri Data Request 1-4.

²² *Id.*

1 to Missouri customers that do not leverage federal dollars, utilizing WAP dollars is the
2 best way for Evergy to achieve the desired outcome.

3 **Solar Subscription Pilot**

4 **Q: Please briefly summarize your testimony about the Solar Subscription Pilot?**

5 A: I wish to express my support for the changes to the Solar Subscription Pilot (“SSP”)
6 proposed by Evergy. These changes will allow the Company to grow the SSP and better
7 accommodate customer demand, all while reducing lengthy wait times.

8 **Q: What changes to the existing SSP tariff is Evergy proposing?**

9 A: Evergy is proposing changes to its SSP similar to the terms agreed upon in Ameren’s
10 Unanimous Stipulation and Agreement for its 2021 rate case.²³ This includes changing
11 the pilot designation to permanent, lowering the subscription threshold required to
12 construct a new resource to 70%, and lowering the threshold for shareholder
13 responsibility of unsubscribed portions of the resource to 50%.²⁴ Additionally, the
14 Company proposes eliminating the cap on system size, removing limitations for non-
15 residential participation, removing the pilot evaluation terms, and finally, removing the
16 two year delay required before constructing a new resource.²⁵

17 **Q: Are these changes consistent with other community solar programs in the state?**

18 A: Yes. Renew Missouri was a signatory to the above-referenced Unanimous Stipulation and
19 Agreement in the 2021 Ameren rate case.²⁶ In that case, we worked closely with Ameren
20 to ensure appropriate changes were made to facilitate the expansion of its Community

²³ See EFIS File No. ER-2021-0240, Unanimous Stipulation and Agreement, November 24, 2021.

²⁴ EFIS File Nos. ER-2022-0129 and ER-2022-0130, Doc. No. 17.

²⁵ *Id.*

²⁶ EFIS File No. ER-2021-0240, Unanimous Stipulation and Agreement, November 24, 2021.

1 Solar program. These changes are consistent with the changes Evergy has proposed in
2 regard to its SSP. Ameren has achieved overwhelmingly positive results as it has
3 continued to grow its Community Solar program, with two solar resources now in service
4 in Montgomery County and at the St. Louis Lambert International Airport.²⁷ Prior to
5 completion of the Montgomery County project, Ameren's Community Solar reports
6 indicated that customer enrollment was at 100% of resource capacities, with a waitlist of
7 766 customers.²⁸ I believe Evergy is similarly poised to build out its SSP to meet similar
8 high customer demand.

9 **Q: How will these changes help the Company expand its Solar Subscription Pilot to**
10 **meet customer demand?**

11 A: As described in the Direct Testimony of Bradley Lutz²⁹, the 90% enrollment threshold -
12 coupled with the timeframe for approvals and construction - led to a lengthy waiting
13 period for customers on the SSP wait list. This is compounded by the requirement the
14 Company must demonstrate 90% enrollment for two years prior to allowing additional
15 subscriptions. By removing barriers to expansion, Evergy will be able to serve the
16 demand of customers on its waitlist without extensive delays. In response to a Staff Data
17 Request, Company witness Kevin Brannan indicated these changes are estimated to
18 reduce customer wait time by approximately six months.³⁰ In addition, removing the cap
19 on resource size will allow the Company more flexibility to provide clean energy directly
20 to customers. This will work in tandem with the removal of the limitations for non-

²⁷ EFIS File No. EA-2016-0207 and EA-2020-0371.

²⁸ EFIS File No. EA-2020-0371, Doc. No. 28.

²⁹ EFIS File No. ER-2022-0129, Doc. No. 17; EFIS File No. ER-2022-0130, Doc. No. 17.

³⁰ Evergy Response to Staff Data Request 0303.

1 residential participation, which together will enable Evergy to accommodate the
2 sustainably-minded businesses that prefer to purchase clean energy directly from its
3 utility, and may require more capacity than what current constraints on the program
4 provide. In this way, community solar programs provide a benefit that the Company's
5 proposed Green Pricing REC Program cannot — the ability to directly benefit from a
6 clean energy resource within the state. This point is addressed more thoroughly in the
7 Rebuttal Testimony of James Owen, filed concurrently with my testimony.

8 It is worth noting the changes Evergy proposes are not unfounded or cosmetic, but
9 rather reflected by customer demand. Recently, the Company obtained approval to
10 construct its first facility to serve its SSP.³¹ Prior to its CCN application, the Company
11 had reached over 90% subscription, with customer reaffirmation confirming the high
12 level of interest.³² The Company estimated construction would be completed by Fall of
13 2022, and believes the program will be fully subscribed by that point.³³ This is consistent
14 with Company witness Brannan's response to Staff Data Requests, in which he indicated
15 the program currently has a waitlist.³⁴ In addition, the Company indicated it is aware of a
16 larger commercial customer that sought participation in the SSP, but was unable to have
17 its need met due to the jurisdictional cap.³⁵ Commercial demand for participation in the
18 SSP will only increase as time goes on, as more and more businesses are committing to
19 renewable energy targets that set goals for direct purchase of renewable energy.

³¹ EFIS File No. EA-2022-0043.

³² *Id.* at Doc. No. 3.

³³ *Id.*

³⁴ Evergy Response to Staff Data Request 0302.

³⁵ EFIS File No. ER-2022-0129, Doc. No. 17; EFIS File No. ER-2022-0130, Doc. No. 17.

1 **Q: What is your conclusion and recommendation regarding Evergy’s proposed changes**
2 **to the SSP tariff?**

3 A: The proposed changes to Evergy’s SSP are consistent with the terms of similar,
4 previously approved programs in the state. These modifications will allow the Company
5 to reduce waiting times and accommodate customers that may currently be excluded or
6 stuck on a waitlist. The Company has shown — through its high level of enrollment and
7 through the initiation of construction on the first facility — it is committed to supporting
8 the expansion of this program, and that high customer demand for community solar
9 exists. These changes will help the program grow and bring more direct access to clean
10 energy to Evergy’s Missouri customers.

11 **Residential Battery Storage Pilot Program**

12 **Q: Please briefly summarize your testimony about Evergy’s Residential Battery**
13 **Storage Pilot Program.**

14 A: The purpose of my testimony as it relates to the Residential Battery Storage Pilot
15 Program (“RBES”) is to express support for the Company’s proposal. I encourage the
16 Commission to approve RBES with my additional suggestions, as the pilot will provide
17 tangible research benefits to Evergy while providing program participants with numerous
18 benefits associated with battery storage systems. Finally, I will discuss how
19 implementing RBES is in line with the goals of Missouri’s public policy.

20 **Q: Can you provide an overview of what the Company is proposing with this Program?**

21 A: Evergy is proposing a pilot program in which the Company will install approximately
22 fifty battery energy storage systems in residential locations across its Metro and West

1 service territories.³⁶ The Company will use this pilot to increase operational knowledge
2 of how battery storage systems can provide benefits to customers as well as the overall
3 grid. Eligible program participants will include those enrolled in TOU rates, customers
4 seeking to utilize a battery storage system with existing rooftop solar arrays, and
5 customers who own electric vehicles or other smart home devices.³⁷ This will allow
6 Evergy to evaluate the benefits of battery storage as they relate to other varying customer
7 factors. Participating customers will pay a \$10 monthly service fee that will allow Evergy
8 to offset costs to administer the pilot and provide ongoing support for participation.³⁸
9 Evergy will own and maintain the battery storage systems through 2025, at which time
10 customers will have several options to either keep the battery system under Evergy's
11 ownership, purchase the battery system at a depreciated cost, or remove the battery
12 system.³⁹

13 **Q: How do battery storage systems benefit customers?**

14 A: The use of battery storage systems is rapidly increasing across the United States. Between
15 2016 and 2017 alone, deployment of residential battery storage systems increased
16 200%.⁴⁰ In 2019, utilities reported 402 MW of existing small-scale battery storage
17 capacity, with 41% of that figure being attributed to residential customers.⁴¹ Battery
18 storage systems benefit different customers in different ways. For customers that have
19 opted into a TOU rate program, battery systems allow customers to shift their energy use

³⁶ EFIS File No. ER-2022-0129, Doc. No. 23; EFIS File No. ER-2022-0130, Doc. No. 23.

³⁷ *Id.*

³⁸ *Id.*

³⁹ *Id.*

⁴⁰ Esch, Nick, and Keller, Maclean, *2018 Utility Energy Storage Market Snapshot*, Smart Electric Power Alliance, August 2018.

⁴¹ *Battery Storage in the United States: An Update on Market Trends*, United States Energy Information Administration, August 2021.

https://www.eia.gov/analysis/studies/electricity/batterystorage/pdf/battery_storage_2021.pdf.

1 from higher-pricing periods to lower-pricing periods by charging the battery in an off-
2 peak period and discharging the battery during on-peak periods. This allows TOU
3 customers to save money by reducing the amount of electricity they must purchase during
4 higher pricing periods. Batteries provide similar benefits to electric vehicle owners, who
5 can reduce costs from shifting energy use for charging. As Company Witness Kimberly
6 Winslow points out in her direct testimony, these battery storage systems can be
7 programmed with Evergy's TOU rate schedules.⁴² For solar customers, batteries are often
8 paired with distributive systems to maximize benefits, as excess energy generated by the
9 solar panels beyond the household's needs can be diverted to the battery and discharged
10 during hours of lower solar generation. Studies show solar customers particularly benefit
11 from paired battery storage due to the predictability of solar generation patterns.⁴³
12 Finally, battery storage improves the resiliency of a customer's home by providing
13 backup power during outages — especially for those with a need for continuous
14 electricity such as customers with home medical equipment, those who work at home,
15 and/or those who have children who are educated remotely. Residential battery storage
16 systems have particularly high levels of adoption in California, as residents need more
17 backup power due to an increase in wildfires and other disruptive events.⁴⁴ Storage is also
18 at the forefront of conversations surrounding the prevention of future events such as the

⁴² EFIS File Nos. ER-2022-0129 and ER-2022-0130, Doc. No. 23.

⁴³ *Battery Storage in the United States: An Update on Market Trends*, United States Energy Information Administration, August 2021.

⁴⁴ Prasanna, Ashreeta, Kevin McCabe, Ben Sigrin, and Nate Blair. *Storage Futures Study: Distributed Solar and Storage Outlook: Methodology and Scenarios*. Golden, CO: National Renewable Energy Laboratory. NREL/TP-7A40-79790. <https://www.nrel.gov/docs/fy21osti/79790.pdf>.

1 Texas blackouts, as researchers believe increasing occurrences of climate events will lead
2 to an increased adoption of distributed storage systems.⁴⁵

3 **Q: What other benefits are associated with residential battery energy storage systems?**

4 A: In addition to the benefits for individual customers, distributive battery storage is
5 beneficial to the overall grid as it helps to reduce demand, reduce peak consumption, and
6 facilitate the arbitrage of energy from low to high periods of demand.⁴⁶ Evergy’s
7 proposed RBES pilot, like other residential battery storage pilots around the country that I
8 will discuss below, requires participants to allow the Company to use a certain percentage
9 of stored energy to support demand-side management programs. This will allow Evergy
10 to gain insights into the ways utilities around the country have deployed distributed
11 battery storage systems to reduce the demand on the grid during peak periods. This pilot
12 program will provide Evergy with information it needs to pursue a more robust
13 residential battery program, which should eventually include a bring-your-own device
14 option with customer rebates. Finally, this program will allow Evergy insights into steps
15 necessary to move towards adopting some form of virtual power plants, which aggregate
16 distributed energy resources and coordinate disparate distributed resources into holistic,
17 demand-flexible resources.⁴⁷

18 **Q: How does Evergy’s RBES compare to other utility battery storage programs around**
19 **the country?**

⁴⁵ *Id.*

⁴⁶ *Id.*

⁴⁷ Shah, Jigar, “Introducing VPPieces: Bite-Sized Blogs About Virtual Power Plants,” United States Department of Energy Loan Programs Office (May 12, 2022).

1 A: In response to OPC Data Request 2014, Evergy provided a list of other IOUs with similar
2 residential battery storage programs.⁴⁸ Of these programs, the majority require customers
3 to purchase a battery system and include rebates for participation in the program.
4 Portland General Electric (“PGE”) is currently operating a five-year pilot program that
5 incents the installation and connection of 525 residential battery storage systems. These
6 batteries are dispatchable by PGE and contribute up to four megawatts of energy to its
7 grid. Program participants with existing battery storage systems will receive a monthly
8 bill credit of \$20 if the system is charged with solar power. Participants seeking to
9 purchase a battery system are eligible for instant rebates of up to \$3,000 and a monthly
10 bill credit of \$20. Aside from program scale, the main difference between the PGE
11 program and Evergy’s proposed program is that PGE program participants own their
12 battery systems from the start.⁴⁹ In addition to PGE, Arizona Public Service is operating a
13 residential battery pilot program with two participation options: data-only or data and
14 battery management. The participants in the data-only option agree to share battery
15 system performance data with the utility and are eligible for an incentive of \$500 per
16 installed kW of battery capacity with a maximum incentive of \$2,500. Participants in the
17 data and battery management option allow the utility access to data associated with the
18 battery system, but also agree to share up to 80% of the battery’s capacity for a maximum
19 of one hundred peak reduction events per year. Incentives under this option are \$500 per
20 installed kW up to \$2,500 plus an additional \$1,250. All incentives under this program
21 are one-time payments to customers.⁵⁰

⁴⁸ Evergy Response to OPC Data Request 2014.

⁴⁹ To read more about PGE’s Smart Battery Pilot Program, see <https://portlandgeneral.com/about/who-we-are/innovative-energy/smart-battery-pilot>.

⁵⁰ To read more about the APS Residential Battery Pilot, see <https://www.chargingrewards.com/apsbattery/>.

1 Lastly, and perhaps most similarly to Evergy’s proposed program, Liberty
2 Utilities New Hampshire launched a residential battery storage pilot in 2019. Under this
3 program, Liberty will initially install two-hundred Tesla Powerwall systems in one-
4 hundred homes, or two batteries per home, which will increase to serve an additional 150
5 homes in the second phase of the program. Liberty maintains ownership of the battery
6 systems, and participants pay \$50 per month for ten years. Participants also have the
7 option to pay the full amount upfront. These costs cover the installation, service, and
8 maintenance of the battery systems. Participating customers are then moved to TOU rates
9 and the battery systems are programmed to charge during off-peak hours. When
10 discharging the battery systems, Liberty’s program mandates that the utility leave a
11 minimum of 20% stored energy and that the utility not discharge battery systems during
12 an outage. When the batteries are discharged by Liberty, participants are compensated
13 using net metering rates. The second phase of Liberty’s pilot will also include a bring-
14 your-own-device option, in which customers can purchase their own utility-approved
15 battery system.⁵¹ Program evaluation reports show, cumulatively, power output from
16 Liberty’s installed residential battery systems has exceeded performance targets during
17 peak reduction events called by the utility.⁵² The same program evaluations also show the
18 primary driver for program enrollment is the desire to have a source of backup power in
19 case of an outage.⁵³ Finally, solar net metering customers, along with program
20 participants without a PV system, were placed on TOU rates to achieve maximum

⁵¹ To read more about the Liberty Utilities Battery Storage Program, see <https://new-hampshire.libertyutilities.com/grafon/residential/smart-energy-use/electric/battery-storage.html>.

⁵² New Hampshire Public Utilities Commission Docket No. DE 17-189, Docs. No. 85, 87, 88, 97, and 102.

⁵³ *Id.*

1 possible savings.⁵⁴ As Evergy’s RBES Pilot is most closely aligned with that of Liberty
2 New Hampshire’s, Evergy should explore offering compensation for energy discharged
3 onto the grid by customer batteries with net metering rates. This topic is more thoroughly
4 addressed in the Rebuttal Testimony of James Owen, filed concurrently with this
5 testimony.

6 **Q: Are there other programs around the country not identified by the Company seeing**
7 **success with battery storage pilots?**

8 A: Yes. The largest electric utility in Vermont — Green Mountain Power (“GMP”) — offers
9 a residential battery storage program with lease or bring-your-own-device options.
10 Program participants have the option to lease two Tesla Powerwall battery systems for
11 \$55 per month for ten years, or two Enphase IQ batteries for \$65 per month for ten years.
12 Both options include the ability to make a one-time upfront payment, but only the Tesla
13 Powerwall option covers the installation cost of the batteries. Under this program, the
14 utility has discretion to utilize the entirety of the stored energy in the battery systems.
15 Under the bring-your-own device portion of the program, participants have the option to
16 choose whether they are enrolling in the backup-only program or the self-consumption
17 program. Under the backup-only option, the utility has full control to discharge the
18 battery completely during peak reduction events. A one-time rebate is offered at \$850 per
19 kW installed for a three-hour capacity battery system and \$950 per kW installed for a
20 four-hour capacity system. An additional \$100 per kW installed is available for systems
21 in constrained areas of GMP’s grid. Participants under the self-consumption program are
22 required to self-supply energy from their battery systems for the duration of peak events.

⁵⁴ *Id.*

1 Participants under this option are eligible for a one-time incentive of \$850, with an
2 additional \$100 available in areas that GMP identified as constrained.⁵⁵ Regulators
3 approved making this a full-fledged program after the pilot phase ended.

4 As of October 2020, GMP had installed 2,567 Tesla Powerwalls, representing
5 thirteen megawatts and a savings to the utility in payments to ISO New England of \$3
6 million.⁵⁶ In addition to GMP's program, the ConnectedSolutions program offers similar
7 battery programs through a partnership between Tesla, National Grid, Eversource, and
8 Cape Light Compact to serve customers in Massachusetts, Connecticut, and Rhode
9 Island.⁵⁷ Hawaiian Electric Co. also offers a Battery Bonus program in which customers
10 who add battery storage to an existing rooftop solar system are eligible for incentive
11 payments per kW of installed capacity and must agree to use or export energy stored on
12 the battery on a firm two-hour schedule specified by the utility.⁵⁸ Several utilities also
13 offer simple rebate programs for battery storage systems, including Jacksonville Electric
14 Authority, Salt River Project, Arizona Public Service, and Sacramento Municipal Utility
15 District.⁵⁹ The below graphic illustrates where battery storage programs, both residential
16 and non-residential, are being offered around the country.

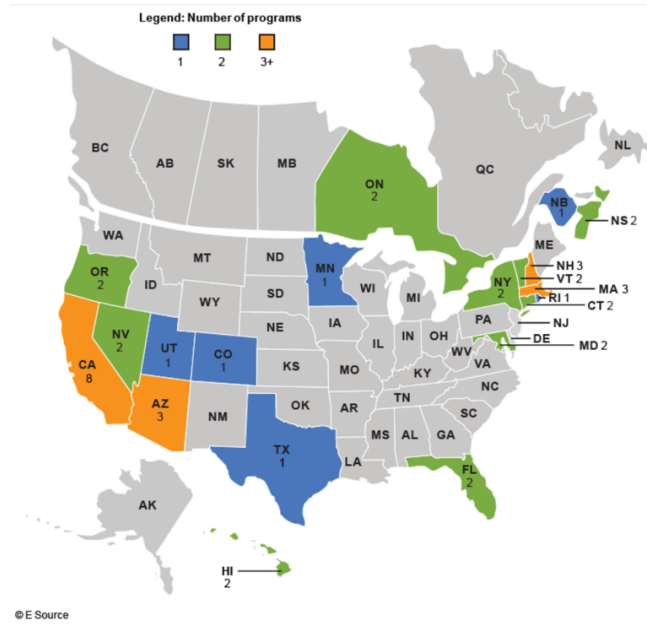
⁵⁵ To read more about Green Mountain Power's Home Energy Storage options, see <https://greenmountainpower.com/rebates-programs/home-energy-storage/>.

⁵⁶ Spector, Julian, "From Pilot to Permanent: Green Mountain Power's Home Battery Network is Here to Stay," Greentech Media, October 16, 2020. <https://www.greentechmedia.com/articles/read/from-pilot-to-permanent-green-mountain-powers-home-battery-network-is-sticking-around>.

⁵⁷ See <https://www.tesla.com/support/energy/powerwall/own/connectedsolutions>.

⁵⁸ To read more about Hawaiian Electric Co.'s Battery Bonus program, see <https://www.hawaiianelectric.com/products-and-services/customer-renewable-programs/rooftop-solar/battery-bonus>.

⁵⁹ *2018 Utility Energy Storage Market Snapshot*, Smart Electric Power Alliance, August 2018; Patnaude, Sara, "How Utilities are Structuring Effective Incentives for Battery Storage," ESource, December 2, 2021.



Source: E Source 2021. Map of states and provinces offering battery storage programs.

Q: How does the RBES pilot further the public policy of the State?

A: Evergy’s proposed RBES is directly in line with the intention of the Legislature in passing Senate Bill 564, as well as the Commission’s previously stated goal of advancing the development of renewables. As highlighted in the direct testimony of Kimberly Winslow⁶⁰, the SB 564 legislation authorizes the Commission to approve investments in small scale or pilot innovative technology projects, which specifically includes energy storage.⁶¹ In addition, the Commission has previously found, “customers and the general public have a strong interest in the development of renewable energy sources to provide safe, reliable, and affordable service while improving the environment and reducing the amount of carbon dioxide released into the atmosphere.”⁶² Battery storage systems are proven to improve grid stability, accelerate the deployment of renewable energy, and

⁶⁰ EFIS File No. ER-2022-0129, Doc. No. 23; EFIS File No. ER-2022-0130, Doc. No. 23.

⁶¹ Section 393.1610 RSMo.

⁶² EFIS File No. EA-2016-0208, Doc. No. 126; EFIS File No. EA-2015-0256, Doc. No. 84.

1 save customers money. Because of this, expanding the deployment of battery storage
2 systems — both behind the meter and at the utility-scale level — are key to supporting
3 the development of renewable energy in this state. Evergy’s proposed pilot program will
4 allow the Company to gain key insights into the necessary steps forward to reaching the
5 residential battery storage market and leveraging this growing technology to deliver
6 substantial benefits to its customers.

7 **Q: What is your conclusion and recommendation regarding Evergy’s proposed RBES**
8 **program?**

9 A: As the consumer interest in residential battery storage systems increases, utilities have
10 developed similar pilot programs to gather data and inform approaches to developing
11 fully-funded residential battery storage programs. These programs are widely successful
12 and have provided benefits to participating customers through resilience and bill savings
13 while providing peak reduction and stability to the utilities’ grids. This program will
14 provide a solid first step for the Company to explore a more robust and widely accessible
15 residential battery storage program. As such, I recommend the Commission approve
16 Evergy’s proposed RBES pilot program, and to even include additional terms similar to
17 those of Liberty New Hampshire’s residential battery storage program. In considering
18 this proposal, I recommend the Commission look to the Rebuttal Testimony of James
19 Owen, filed concurrently with my testimony.

20 **Q: Does this conclude your testimony?**

21 A: Yes it does.

