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BEFORE THE PUBLIC SERVICE COMMISSION OF UTAH

In the Matter of the Application of Rocky Mountain Power to Establish Export Credits for Customer Generated Electricity	Docket No. 17-035-61 Phase 2
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AFFIRMATIVE TESTIMONY OF BRIANA KOBOR

ON BEHALF OF

VOTE SOLAR

March 3, 2020

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1 **I. INTRODUCTION**

2 **Q. Please state your name and business address.**

3 A. My name is Briana Kobor. My business address is 358 S 700 E, Suite B206, Salt
4 Lake City, Utah 84102.

5 **Q. On whose behalf are you submitting this direct testimony?**

6 A. I am submitting this testimony on behalf of Vote Solar.

7 **Q. What is Vote Solar?**

8 A. Vote Solar is an independent 501(c)(3) non-profit working to repower the U.S. with
9 clean energy by making solar power more accessible and affordable through effective
10 policy advocacy. Vote Solar seeks to promote the development of solar at every scale,
11 from distributed rooftop solar to large utility-scale plants. Vote Solar has over
12 100,000 members nationally, including roughly 360 members in Utah. Vote Solar is
13 not a trade group nor does it have corporate members.

14 **Q. By whom are you employed and in what capacity?**

15 A. I serve as Regulatory Director for Vote Solar. I analyze the development and
16 implementation of policy initiatives related to distributed solar generation. I also
17 review regulatory filings, perform technical analyses, and testify in commission
18 proceedings relating to distributed energy resources and renewable generation.

19 **Q. Please describe your education and experience.**

20 A. I have a Bachelor of Science degree in Environmental Economics and Policy from the
21 University of California, Berkeley, and I have been employed in the utility regulatory
22 industry since 2007. Prior to joining Vote Solar in August of 2015, I was employed
23 by MRW & Associates LLC (“MRW”), a specialized energy consulting firm, for
24 eight years. At MRW, I focused on electricity and natural gas markets, ratemaking,
25 utility regulation, and energy policy development. I worked with a variety of clients
26 including energy policy makers, developers, suppliers, and end-users. My clients
27 included the California Public Utilities Commission, the California Energy
28 Commission, the California Independent System Operator, and several publicly-
29 owned utilities. From MRW, I have experience evaluating utility cost-of-service
30 studies, revenue allocation and ratemaking, wholesale and retail electric rate
31 forecasting, asset valuation, and financial analyses. A summary of my background
32 and qualifications is attached hereto as Exhibit 1-BSK.

33 **Q. Have you previously testified before the Utah Public Service Commission**
34 **(“Commission”)?**

35 A. No.

36 **Q. Have you previously testified before other regulatory commissions?**

37 A. Yes. I have testified in proceedings before the Arizona Corporation Commission, the
38 California Public Utilities Commission, the Idaho Public Utilities Commission, and

39 the Montana Public Service Commission. A full list of the testimony I have filed is
40 provided in Exhibit 1-BSK.

41 **II. PURPOSE OF TESTIMONY**

42 **Q. What is the purpose of your testimony in this proceeding?**

43 A. My testimony covers four subjects. *First*, I describe the history and scope of this
44 docket. *Second*, I introduce the witnesses who are testifying on behalf of Vote Solar
45 and provide a summary of the topics addressed in each testimony. *Third*, I provide
46 background on the Vote Solar Load Research Study (“Vote Solar LRS”). *Fourth*, I
47 describe Vote Solar’s proposed compensation for customer generation (“CG”)
48 exports as informed by the analyses conducted by the Vote Solar witnesses.

49 My lack of comments on RMP’s affirmative testimony should not be interpreted as
50 acquiescence or agreement with RMP. I reserve the right to express additional
51 opinions, to amend or supplement the opinions in this testimony, or to provide
52 additional rationale for these opinions as additional documents are produced, and new
53 facts are introduced during discovery and hearing. I also reserve the right to express
54 additional opinions in response to any opinions or testimony offered by other parties
55 to this proceeding.

56 **III. SUMMARY OF RECOMMENDATIONS**

57 **Q. Please summarize your recommendations.**

58 A. As described in detail below, I recommend the following:

59 1) The Commission should make a determination that the benefits of the net metering
60 (“NEM”) Program exceed its costs and should re-open the NEM Program to new
61 customers as of the effective date of its order in this proceeding.

62 2) In the alternative, if the Commission elects to maintain the general structure of the
63 Transition Program, as defined below, the Commission should adopt an Export Credit
64 Rate (“ECR”) of 22.6 c/kWh with the following Program details:

65 a) Exports should be netted on an hourly basis, rather than the current, 15-minute
66 netting period;

67 b) The ECR should be fixed for a period of 20 years for individual customers;

68 c) Eligibility for each ECR vintage should be consistent with the terms of
69 eligibility adopted for legacy access to the NEM Program under the terms of
70 the Stipulation;¹

71 d) The Commission should eliminate the annual expiration of excess export
72 credits; and

73 e) NEM² and Transition³ Customers should have the option to take service under
74 the new ECR Program at their sole discretion.

¹ Rocky Mountain Power, *Settlement Stipulation*, Public Service Commission of Utah, Docket No. 14-035-114, Aug. 28, 2017, <https://pscdocs.utah.gov/electric/14docs/14035114/296270RMPSettleStip8-28-2017.pdf>.

75 **IV. HISTORY AND SCOPE OF THE PRESENT DOCKET**

76 **Q. Please describe the history of this proceeding.**

77 A. In 2002, the Utah State Legislature approved House Bill 7, authorizing a statewide
78 NEM Program. NEM, as defined under House Bill 7, required “the electrical
79 corporation to give the customer a credit for electricity generated by the customer that
80 exceeds the amount supplied by the electrical corporation.”⁴ Passage of House Bill 7
81 and the resulting NEM Program led to consistent growth in CG resources, particularly
82 solar distributed generation (“DG”).

83 In 2014, Rocky Mountain Power (“RMP”) proposed a charge on NEM Customers at
84 the Commission, and new legislation focusing on net metering. This proposal,
85 reflected in Utah Senate Bill 208 (“SB 208”), was passed and signed into law. SB 208
86 recommended that “the governing authority shall . . . [i] determine, after appropriate
87 notice and opportunity for public comment, whether costs that the electrical
88 corporation or other customers will incur from a net metering program will exceed
89 the benefits of the net metering program, or whether the benefits of the net metering
90 program will exceed the costs; and . . . [ii] determine a just and reasonable charge,
91 credit, or ratemaking structure . . . in light of the costs and benefits.”⁵

² Net Metering Customers, as described more fully below, are those that will remain on the NEM Program through December 31, 2035.

³ Transition Customers, as described more fully below, are those that submit an interconnection application during the Transition Program period.

⁴ NET METERING OF ELECTRICITY, 2002 Utah Laws Ch. 6 (H.B. 7).

⁵ UT LEGIS 53 (2014), 2014 Utah Laws Ch. 53 (S.B. 208); *see also* Utah Code Ann. § 54-15-105.1.

92 Pursuant to SB 208, on November 10, 2015, the Commission established a structure
93 to analyze costs and benefits of the NEM Program, ordering RMP to conduct two cost
94 of service studies, one using RMP’s actual costs and the other using a hypothetical
95 situation where “net metering customers produced no electricity.”⁶ On November 9,
96 2016, RMP filed these cost of service studies with the Commission, and based on the
97 results, advocated for the end of the NEM Program and a new rate structure that
98 substantially reduced the compensation to customer generators.

99 The Commission never held a hearing on the merits of RMP’s proposal because RMP
100 and other parties, not including Vote Solar, reached a settlement stipulation
101 (“Stipulation”) that was submitted to the Commission on August 28, 2017.⁷ The
102 Stipulation included the establishment of a NEM “cap date,” under which existing
103 NEM Customers and those that applied to the Program prior to the cap date would
104 remain on the NEM Program through 2035. The Stipulation also established a
105 Transition Program, establishing an interim ECR for new customer generators after
106 the NEM cap date and until a final method for compensating exports from CG was
107 determined.

108 Without making a determination per SB 208 on whether costs of the NEM Program
109 exceed the benefits, or whether the benefits of the NEM Program exceed the costs,
110 the Commission approved the Stipulation on September 29, 2017.⁸ In its Order, the

⁶ Utah Public Service Commission, *Order*, Docket No. 14-035-114, p. 16, Nov. 10, 2015, <https://psc.utah.gov/2016/06/20/docket-no-14-035-114-2/>.

⁷ Public Service Commission of Utah, *Order Approving Settlement Stipulation*, Docket No. 14-035-114, p. 3–4, Sept. 29, 2017, <https://pscdocs.utah.gov/electric/14docs/14035114/29703614035114oass9-29-2017.pdf>.

⁸ *Id.* at 1.

111 Commission stated: “[T]he Settlement does not operate to annul our obligations under
112 Subsection One [to make a finding on NEM benefits and costs], rather it prolongs
113 them. Given the additional load studies and other data that will be collected in the
114 meantime, we anticipate being even better equipped to make the required findings at
115 that future date.”⁹ Moreover, the Commission acknowledged that “[a]s a practical
116 matter, we acknowledge the findings we would make in a docket devoted to fulfilling
117 Subsection One [whether the benefits of the NEM Program exceed the costs] will be
118 largely subsumed in the Export Credit Proceeding and the general rate cases we are
119 likely to consider between now and the conclusion of the Grandfathering Period.”¹⁰

120 On December 1, 2017, RMP filed a request for an Export Credit Proceeding to the
121 Commission, which began the present docket.¹¹

122 **Q. Please describe the scope of the present docket.**

123 A. As indicated in RMP’s application to open this docket, the purpose of the present
124 proceeding is to “determine the compensation rate for exported power from customer
125 generation systems for all customers, including after the expiration of the
126 Grandfathering Period and Transition Period.”¹² Phase 1 of this docket addressed the
127 design of RMP’s load research study (“RMP LRS”) and the information to be
128 collected in the RMP LRS to inform Phase 2 of this docket where just and reasonable

⁹ *Id.* at 9.

¹⁰ *Id.* at 9 n.9.

¹¹ Rocky Mountain Power, *Application*, Public Service Commission of Utah, Docket No. 17-035-61, p. 3, Dec. 1, 2017, <https://pscdocs.utah.gov/electric/17docs/1703561/298212RMPApp12-1-2017.pdf>.

¹² *Id.* at 2.

129 compensation for CG exports is to be determined.¹³ The Commission issued an Order
130 in Phase 1 on May 21, 2018.¹⁴ Additional background on Phase 1 is provided in
131 Section VI, below.

132 In the Stipulation, signing parties agreed to the following regarding Phase 2 of the
133 present docket:

134 Parties may present evidence addressing reasonably quantifiable
135 costs or benefits or other considerations they deem relevant, but
136 the Party asserting any position will bear the burden of proving its
137 assertions (for example, parties may present evidence addressing
138 the following costs or benefits: energy value, appropriate
139 measurement intervals, generation capacity, line losses,
140 transmission and distribution capacity and investments, integration
141 and administrative costs, grid and ancillary services, fuel hedging,
142 environmental compliance, and other considerations). The
143 Commission will also determine the appropriate study period over
144 which to quantify and model export credit components.”¹⁵

145 In addition, the Stipulation specified: “[T]he Parties agree that nothing from the
146 November 2015 Order or other aspects of this Docket No. 14-035-114 will: (a) limit
147 or preclude a Party from presenting evidence in the Export Credit Proceeding
148 identified in this Paragraph 30, or (b) be precedential in the Export Credit Proceeding
149 or any future case.”¹⁶

¹³ Public Service Commission of Utah, *Phase 1 Order*, Docket No. 17-035-61, p. 2, May 21, 2018, <https://pscdocs.utah.gov/electric/17docs/1703561/3022941703561pIo5-21-2018.pdf>.

¹⁴ *Id.*

¹⁵ Rocky Mountain Power, *Settlement Stipulation*, Public Service Commission of Utah, Docket No. 14-035-114, p. 10, Aug. 28, 2017, <https://pscdocs.utah.gov/electric/14docs/14035114/296270RMPSettleStip8-28-2017.pdf>.

¹⁶ *Id.* at 10.

150 **Q. Please describe how Vote Solar’s testimony complies with the scope of this**
151 **docket.**

152 A. Vote Solar acknowledges that the scope of this docket is limited to the appropriate
153 compensation method for CG exports. While additional costs and benefits result from
154 CG that is produced and consumed behind the meter, these costs and benefits are not
155 relevant to the design of just and reasonable compensation for CG exports. Similarly,
156 rate design for services that customers with DG receive from RMP above and beyond
157 what their own generation provides is outside the scope of the present docket. With
158 this scope in mind, Vote Solar has conducted an analysis of the value of CG exports
159 and has used the results of that analysis to inform its proposal for just and reasonable
160 compensation for CG exports.

161 For purposes of its analysis to support just and reasonable compensation for CG
162 exports in this case, Vote Solar has focused on the costs and benefits of DG solar in
163 RMP’s Utah service territory. This is a reasonable approach because the vast majority
164 of CG in RMP’s Utah service territory is solar, and the majority of future CG
165 installations are expected to be solar.¹⁷ Specifically, according to RMP’s most recent
166 NEM report, filed on July 1, 2019, 99.7% of NEM Customers had DG solar, and
167 100% of Transition Customers had DG solar.¹⁸

¹⁷ See Exhibit 2-BSK, Navigant PG LT RA_20180815.pdf, p. 31–32, RMP’s Responses to Vote Solar 6th Set Data Requests – Attach 6.16-2 (Aug. 16, 2019).

¹⁸ Rocky Mountain Power, *Rocky Mountain Power’s 2019 Net Metering Report*, Docket No. 19-035-29, Reference Docket No. 08-035-T04, p. 1, July 1, 2019, <https://pscdocs.utah.gov/electric/19docs/1903529/308974RMPCustomrOwndGeneandNetMeterReptforthePerdApril12018thrMarch3120197-1-2019.pdf>.

168 **V. INTRODUCTION TO VOTE SOLAR WITNESSES**

169 **Q. Please provide an introduction to all witnesses testifying on behalf of Vote Solar.**

170 A. As a part of its affirmative case, Vote Solar is providing testimony from a total of six
171 witnesses, including myself. I have provided a summary of the purpose of my
172 testimony in Section II above. A brief summary of the purpose of each of the
173 remaining Vote Solar witnesses is provided below:

174 1. Dr. Albert Lee, Founding Partner and Economist at Summit Consulting, LLC, is
175 filing testimony describing the Vote Solar LRS method and the data from the Vote
176 Solar LRS that was provided to other Vote Solar witnesses. Additional background
177 on the Vote Solar LRS is provided in Section VI below.

178 2. Dr. Michael Milligan, Principal at Milligan Grid Solutions, is filing testimony
179 describing the avoided energy cost, avoided generation capacity cost, and avoided
180 carbon emissions associated with CG in RMP's Utah service territory. Dr. Milligan's
181 analysis incorporates results from the Vote Solar LRS conducted by Dr. Lee and
182 provides inputs to Dr. Carolyn Berry's valuation of CG.

183 3. Mr. Curt Volkmann, President and founder of New Energy Advisors, LLC, is filing
184 testimony describing the avoided line losses, avoided distribution capital
185 expenditures, and integration costs associated with CG in RMP's service territory.
186 Mr. Volkmann's analysis incorporates results from the Vote Solar LRS conducted by
187 Dr. Lee and provides inputs to Dr. Berry's valuation of CG.

188 4. Dr. Spencer Yang, Principal at Bates White Economic Consulting, is filing testimony
189 describing avoided transmission capacity costs and avoided distribution capacity
190 costs associated with CG in RMP’s service territory. Dr. Yang’s analysis incorporates
191 results from the Vote Solar LRS conducted by Dr. Lee and conclusions reached by
192 Mr. Volkmann regarding distribution costs and line losses. Dr. Yang provides inputs
193 to Dr. Berry’s valuation of CG.

194 5. Dr. Carolyn Berry, Principal at Bates White Economic Consulting, is filing testimony
195 developing Vote Solar’s valuation of CG in RMP’s service territory. Dr. Berry
196 incorporates results from Dr. Lee, Dr. Milligan, Mr. Volkmann, and Dr. Yang and
197 conducts additional analysis to develop Vote Solar’s value of CG. In my testimony, I
198 rely on Dr. Berry’s assessment of the value of CG to inform Vote Solar’s proposal for
199 just and reasonable compensation for CG exports.

200 **VI. BACKGROUND ON THE VOTE SOLAR LRS**

201 **Q. What is the Vote Solar LRS?**

202 A. The Vote Solar LRS is an analysis of customer-owned generation in RMP’s Utah
203 service territory that examines meter data and solar inverter data to develop an
204 assessment of how and when customer generators interact with the electrical grid. In
205 particular, the Vote Solar LRS has been used to develop an hourly assessment of total
206 solar production, as well as exported solar production, for customers with DG. The
207 Vote Solar LRS has also been used to develop yield factors (kWh/kW) associated
208 with solar production and export. This information, provided by Dr. Lee to the other

209 Vote Solar witnesses in this proceeding, provides the foundation for the analysis
210 conducted to derive the value of CG presented by Vote Solar as summarized in the
211 testimony of Dr. Berry. Dr. Berry's value of CG analysis is in turn used to inform my
212 proposal for compensation for CG exports, as described in this testimony in Sections
213 VII and VIII.

214 **Q. Why did Vote Solar pursue its own LRS?**

215 A. On May 21, 2018, the Commission issued an Order on Phase 1 of this proceeding to
216 address the design of the RMP LRS that would inform the current phase of this
217 docket – Phase 2 – which addresses the determination of just and reasonable
218 compensation for electricity exported by CG.¹⁹ In its affirmative testimony in Phase 1
219 of this proceeding, Vote Solar expressed several concerns with the RMP LRS that
220 were not addressed by the Commission's decision. Vote Solar's concerns are
221 described in more detail in Dr. Lee's Phase 1 testimony on behalf of Vote Solar, his
222 testimony during the April 17, 2018 Phase 1 hearing before the Commission, and his
223 Phase 2 affirmative testimony filed concurrently with this testimony.²⁰ Under the
224 terms of the Commission's Phase 1 Order, the Commission expressed that parties
225 may construct their own LRS samples.²¹ In addition, per the Stipulation in Docket

¹⁹ *Supra* n.13 at 2.

²⁰ Lee, Albert, *Direct Testimony of Albert J. Lee, Ph.D. on Behalf of Vote Solar*, Public Service Commission of Utah, Docket No. 17-035-61, Apr. 10, 2018, <https://pscdocs.utah.gov/electric/17docs/1703561/301235DirTestLeeVoteSolar4-11-2018.pdf>; Public Service Commission of Utah, *Hearing*, Docket No. 17-035-61, p. 210–24, 229–33, Apr. 17, 2019, <https://pscdocs.utah.gov/electric/17docs/1703561/301740RepTransApr1720185-1-2018.pdf>; Vote Solar, *Affirmative Testimony of Albert J. Lee, Ph.D. on Behalf of Vote Solar*.

²¹ *Supra* n.13 at 19 (“To the extent a party or parties desire to construct their own load-research student sample, using inverter data and some data from PacifiCorp and CG customers, parties may coordinate with PacifiCorp to develop a process to obtain the needed information while maintaining customer privacy.”).

226 No. 14-035-114 setting forth the scope of this docket, it was agreed that any party to
227 the present docket would bear the burden of proving its assertions regarding just and
228 reasonable compensation for CG exports.²² The LRS provides a foundational element
229 of any proposal for just and reasonable compensation for CG exports. As a result,
230 because Vote Solar's concerns with the RMP LRS design were not fully addressed by
231 the modifications placed on the study in the Commission's Phase 1 Order, Vote Solar
232 decided to pursue its own LRS.

233 **Q. How did Vote Solar obtain the data that was used in the Vote Solar LRS?**

234 A. In order to allow Vote Solar to conduct its own LRS, the Commission issued an Order
235 on a Motion for Formal Discovery, outlining a process by which Vote Solar and RMP
236 were to confer and agree on a mailer to all CG customers of RMP that would describe
237 the Vote Solar LRS and provide a means for customers to opt in to the Vote Solar
238 LRS.²³

239 **Q. Was a mailer sent to all RMP customers with CG in Utah?**

240 A. Yes. A letter was sent to all RMP customers with CG in the state of Utah on
241 December 2, 2019. A copy of the letter is attached to my testimony as Exhibit 3-BSK.

²² See *supra* n.15 at 10.

²³ Public Service Commission of Utah, *Order on Motion for Formal Discovery*, Docket No. 17-035-61 Phase 2, p. 4, <https://pscdocs.utah.gov/electric/17docs/1703561/3081351703561oomffd5-8-2019.pdf>.

242 **Q. What information did the letter provide to RMP customers with CG?**

243 A. The letter provided information on the present docket, Vote Solar's interests in the
244 proceeding, and a means for customers to opt-in to the Vote Solar LRS by visiting a
245 website hosted by RMP and providing identifying information as well as permissions
246 for the study. The content of the website was agreed to by RMP and Vote Solar. A
247 printout is provided as Exhibit 4-BSK.

248 As shown in Exhibit 4-BSK, customers choosing to opt-in to the Vote Solar LRS
249 were asked to provide two specific permissions. The *first* authorized RMP to release
250 the customer's identifying information to Vote Solar (specifically, address) so that
251 Vote Solar could link the customer's meter data on imported and exported electricity
252 flows with his/her location. The *second* authorized Vote Solar to obtain inverter data
253 from the customer's solar installer. The solar inverter data provided information on
254 solar production and system attributes such as installed capacity. In his testimony, Dr.
255 Lee describes how this data was used to generate the Vote Solar LRS results relied on
256 by the other Vote Solar witnesses in this case.

257 **Q. How was the information received through the study website processed?**

258 A. RMP received all information from the study website and provided it to Vote Solar in
259 two forms. *First*, for those customers that released their identifying information, RMP
260 provided weekly updates to Vote Solar in the form of supplemental responses to Vote
261 Solar's Data Request 4.1 that identified Vote Solar LRS opt-in customers' addresses
262 to allow Vote Solar to analyze opt-in customer meter data. This information was
263 marked confidential and is subject to the confidentiality agreement in this proceeding.

264 *Second*, for those customers that released their inverter data, RMP provided Vote
265 Solar with individual .pdf files for each customer that contained the information they
266 provided in the web form including name, address, contact information, and solar
267 installer. A blank example is provided as Exhibit 5-BSK.

268 **Q. What steps were undertaken to obtain customer inverter data?**

269 A. Vote Solar processed the .pdf files provided by RMP into a database and sorted them
270 by identified solar installer. Vote Solar then conducted individual outreach to solar
271 installers identified to develop a process for Vote Solar to gain access to individual
272 customer inverter data through the inverter companies' application programming
273 interface ("API"). Based on conversations with the installer community, I ascertained
274 that the vast majority of CG customers in RMP's Utah service territory have either
275 SolarEdge or Enphase branded inverters. The one other major inverter company,
276 SMA, did not have a functioning API, preventing us from accessing customer data.
277 Therefore, the Vote Solar LRS focuses on customers with SolarEdge and EnPhase
278 Inverters. Vote Solar developed code to ping Enphase and SolarEdge APIs for
279 information on individual solar system characteristics and production for calendar
280 year 2019. This code was used to obtain the inverter data to support Vote Solar's LRS
281 in most instances. However, one solar installer opted to provide the needed inverter
282 data directly to Vote Solar.

283 **VII. NET METERING PROVIDES JUST AND REASONABLE**
284 **COMPENSATION FOR CG EXPORTS**

285 **Q. Please describe the results of Vote Solar's Value of CG analysis.**

286 A. As described in the affirmative testimony of Dr. Carolyn Berry, Vote Solar has
287 quantified a 20-year levelized value of CG in RMP's service territory of 22.6 c/kWh.
288 This value is expressed in 2021 dollars and is based on a study period of 2021-2040.
289 This approach was chosen because the compensation mechanism adopted by the
290 Commission in this docket will be effective beginning in 2021. By quantifying a 20-
291 year levelized value, Dr. Berry's analysis provides an assessment of the value of CG
292 over the typical minimum expected lifetime of a rooftop solar system. A summary of
293 the elements in Dr. Berry's value of CG calculation is provided in Table 1 below.

Table 1: Value of CG Exports in Utah²⁴

Category	Value ¢/kWh 2021USD (levelized)
Utility-Based Benefits	
Energy	
Avoided Energy	3.65
Avoided line losses	0.31
Capacity	
Avoided generation capacity	1.60
Avoided transmission capacity	1.45
Avoided distribution capacity	0.56
Grid Support Services	
Ancillary services	<i>nq*</i>
Financial Risk	
Fuel price hedge	0.20
Market price effect	<i>nq</i>
Security Risk	
Reliability and resilience	<i>nq</i>
Environmental	
Carbon (CO ₂) compliance costs	2.80
Utility Costs	
Integration costs	0.00
Subtotal	10.57
Community Benefits	
Environmental	
Health benefits from reduced air pollution	2.09
Benefits of reduced carbon emissions (CO ₂)	6.57
Avoided fossil fuel lifecycle costs	<i>nq</i>
Societal	
Local economic benefits	3.37
Subtotal	12.03
Total Value of CG Exports	22.60

**not quantified*

²⁴ Vote Solar, *Affirmative Testimony of Carolyn Berry*, Table 1.

295 **Q. In your opinion, is this an accurate assessment of the Value of CG in RMP's**
296 **Utah service territory?**

297 A. Yes, though it is likely an underestimate of the full value. I have reviewed the
298 testimony and methods employed by Dr. Berry, Dr. Milligan, Mr. Volkmann, Dr.
299 Yang, and Dr. Lee that support the valuation of CG at 22.6 c/kWh. I find that the
300 value of CG at 22.6 c/kWh is likely conservative as several categories of benefits
301 have not been able to be quantified. Namely, avoided ancillary services cost, market
302 price impacts, reliability and resiliency value, and avoided fossil fuel lifecycle costs. I
303 also note that the valuation of CG at 22.6 c/kWh is based on the Vote Solar LRS,
304 which examined attributes of exported CG from currently installed systems. At the
305 current moment, CG installations in RMP's Utah service territory are largely
306 standalone rooftop solar.²⁵ As the market for distributed energy storage matures, there
307 is immense opportunity for Utahns to reap additional benefits by dispatching storage
308 at the times when it is most valuable to grid operation, increasing efficiency in the
309 system and facilitating cost effective reduction in fossil fuel resources on the grid.

310 **Q. How does the value of CG compare to the average retail energy rate paid by**
311 **RMP's customers?**

312 A. Average retail energy rates vary by rate schedule as shown in Table 2 below.

²⁵ There are approximately 129 customers with behind-the-meter energy storage interconnected to RMP's system. Exhibit 6-BSK, Attach Vote Solar 6.3-10.XLSX, RMP's Responses to Vote Solar 6th Set of Data Requests – Attach 6.3-10 (Aug. 23, 2019). In comparison, there are roughly 33,588 NEM and Transition Customers with behind-the-meter solar PV. *Supra* n.18 at 1.

313

Table 2: Average Energy Charges Compared to Value of CG (c/kWh)²⁶

Rate Schedule	Retail Energy Rate	Value of CG Exports	Percentage
Residential - Schedule 1,2 & 3	10.2	22.6	221%
General Service - Schedule 6	3.7	22.6	615%
General Service Energy TOD - Schedule 6a	7.1	22.6	317%
General Service Demand TOD - Schedule 6b	3.7	22.6	615%
Large General Service - Schedule 8	3.8	22.6	597%
Irrigation - Schedule 10	6.1	22.6	373%
Outdoor Lighting - Schedule 15.1	5.3	22.6	427%
Traffic Signals - Schedule 15.2	8.4	22.6	268%
Small General Service - Schedule 23	8.9	22.6	255%

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As shown in Table 2, average retail energy rates are significantly lower than the full value of CG. This is an important finding, as an evaluation of the benefits and costs of the NEM program rests on this comparison. Under a NEM Program, where exported energy is provided a kWh-based credit to offset a customer’s bill at the full retail rate, the benefits of CG greatly exceed its costs on all of RMP’s tariffs. Table 3 below provides an estimate of the net benefits of the NEM Program on each of RMP’s rate schedules.

²⁶ Average energy rates are approximate and are calculated from Schedule 136 Transition Program rates for Schedules 1, 2, and 3 by dividing by 90% and for all other schedules by dividing by 92.5%. See Rocky Mountain Power, *Settlement Stipulation*, Public Service Commission of Utah, Docket No. 14-035-114, p. 6, Aug. 28, 2017, <https://pscdocs.utah.gov/electric/14docs/14035114/296270RMPSettleStip8-28-2017.pdf>.

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Table 3: Net Benefits of NEM Program

Rate Schedule	Net Benefits
Residential - Schedule 1,2 & 3	12.4
General Service - Schedule 6	18.9
General Service Energy TOD - Schedule 6a	15.5
General Service Demand TOD - Schedule 6b	18.9
Large General Service - Schedule 8	18.8
Irrigation - Schedule 10	16.5
Outdoor Lighting - Schedule 15.1	17.3
Traffic Signals - Schedule 15.2	14.2
Small General Service - Schedule 23	13.7

323 **Q. What do you recommend based on these findings?**

324 A. I recommend that the Commission fulfill its obligation to make a determination on
325 the relative costs and benefits of the NEM program under Section 54-15-105.1 of the
326 Utah Code which reads as follows:

327 The governing authority shall:

- 328
- 329 (1) determine, after appropriate notice and opportunity for public
- 330 comment, whether costs that the electrical corporation or other
- 331 customers will incur from a net metering program will exceed the
- 332 benefits of the net metering program, or whether the benefits of the
- 333 net metering program will exceed the costs; and
- 334 (2) determine a just and reasonable charge, credit, or ratemaking
- 335 structure, including new or existing tariffs, in light of the costs and
- 336 benefits.²⁷

337 Notably, while the Commission adopted a compensation mechanism for exported CG
338 alternative to the NEM Program in Docket No. 14-035-114, it never made the
339 determination as to whether the NEM Program resulted in net benefits or net costs.

²⁷ Utah Code Ann. § 54-15-105.1.

340 Indeed, the Commission indicated that it anticipated that evidence in this proceeding
341 may provide the basis for such a determination.²⁸

342 NEM is a mechanism by which exported energy from CG is compensated at the full
343 retail energy rate through a one-to-one kWh credit. As shown in Table 3 above,
344 benefits from CG far exceed the costs of compensating CG customers at the retail
345 rate. Vote Solar recommends that the Commission find that the NEM Program
346 constitutes a just and reasonable ratemaking structure in light of these costs and
347 benefits and re-open enrollment in the dormant program upon finalization of its order
348 in this proceeding. Per the terms of the Stipulation, Transition Customers should be
349 allowed to voluntarily enroll in the re-opened NEM Program at their discretion.²⁹

350 **VIII. IN THE ALTERNATIVE, THE COMMISSION SHOULD ADOPT**
351 **A FAIR ECR PROGRAM**

352 **Q. If the Commission elects to maintain the general structure of the Transition**
353 **Program rather than returning to the NEM Program, what would you**
354 **recommend?**

355 A. If the Commission elects to maintain the general structure of the Transition Program,
356 the evidence supports setting an ECR at 22.6 c/kWh based on the value of CG as
357 demonstrated in Table 1. Vote Solar recommends that the ECR be fixed for individual
358 customers for a period of 20 years as described in more detail below.

²⁸ See *supra* n.7 at 9; *id.* at 9 n.9.

²⁹ See *supra* n.15 at 11.

359 The Commission should revisit its evaluation of a just and reasonable ECR in RMP's
360 future general rate cases with the first re-evaluation occurring no earlier than 2024. If
361 an updated valuation of CG results in the determination that the ECR should be
362 updated, I recommend that a new vintage ECR be adopted for new customers
363 submitting interconnection applications after the effective date of the next vintage
364 ECR.

365 If an ECR structure is implemented, I recommend the following (addressed in turn
366 below):

- 367 1) Exports should be netted on an hourly basis, rather than the current, 15-minute
368 netting period;
- 369 2) The ECR should be fixed for a period of 20 years for individual customers;
- 370 3) Eligibility for each ECR vintage should be consistent with the terms of
371 eligibility adopted for legacy access to the NEM Program under the terms of
372 the Stipulation;
- 373 4) The Commission should eliminate the annual expiration of excess export
374 credits; and
- 375 5) NEM and Transition Customers should have the option to take service under
376 the new ECR Program at their sole discretion.

377 **Q. Please explain your proposal to net exports on an hourly basis.**

378 A. Well-designed rates provide price signals that are understandable and actionable for
379 customers. In comparison to retail rate net metering, it is far more complex for
380 customers to examine the billing implications of adoption of DG under an ECR,

381 resulting in a price signal that is inherently less understandable and less actionable.
382 Under retail rate net metering, a customer’s bill can be easily estimated based on total
383 expected monthly load and total expected monthly solar generation. This data is
384 readily available. Total monthly load is reported to customers on their monthly bill
385 from RMP, and solar installers are well prepared to provide customers with expected
386 monthly solar production based on the design of their specific system.

387 In contrast, under an ECR, the customer must understand how production would
388 relate to in-home consumption throughout each day within each month. While it is
389 less difficult for solar installers to provide customers with estimates of solar
390 production throughout each day and month, information about in-home consumption
391 is far more difficult to access. At the current time, RMP customers do not have access
392 to their own usage data at an interval more granular than monthly. However, it is my
393 understanding that the Commission has approved funding for RMP to make hourly
394 usage information available to all customers with Automated Meter Reading
395 (“AMR”) capable meters.³⁰

396 Under the Transition Program, exports are measured or “netted” every fifteen
397 minutes. In order to evaluate an investment in DG solar, a customer must estimate
398 their in-home consumption at 2,920 15-minute intervals in each month and compare
399 that estimate to assumptions about solar production at the same granularity.³¹

³⁰ Utah Public Service Commission, *Report and Order*, Docket No. 16-035-36, p. 4, June 28, 2019, <https://pscdocs.utah.gov/electric/16docs/1603536/3089131603536rao6-28-2019.pdf>.

³¹ This amounts to a total of over 70,000 data points needing evaluation each year (2,920 times 12 for both consumption and production), in contrast to 24 data points needing evaluation under a retail rate NEM Program.

400 Residential customers in particular will have little understanding or control over their
401 intra-hour electric consumption habits as many drivers of residential consumption like
402 air conditioners, refrigerators, and other major appliances cycle on and off
403 automatically. For those load drivers that are controlled by the customer such as
404 dishwashers, washing machines, hair dryers, and other appliances, many residential
405 customers will find it difficult to adjust consumption within the hour, as family
406 schedules and work schedules drive meal times and appliance use, rather than the
407 desire to match load with solar consumption. On the production side of the equation,
408 intra-hour variability in solar production due to passing clouds, adds uncertainty to
409 the equation. It is impracticable for a family to attempt to adjust behavior in response
410 to such a price signal, making the ECR under the Transition Program neither
411 understandable nor actionable. Burdensome netting periods lead to less efficient
412 behavior, in turn, forgoing the potential benefits of improved price signals.

413 In contrast to fifteen-minute netting, netting exports every hour would reduce the
414 burden on customers and provide a price signal that is more understandable and more
415 actionable for customers.

416 **Q. Please explain your proposal that the ECR should be fixed for a period of 20**
417 **years for individual customers.**

418 A. The ECR should be fixed for twenty years to provide a fair and actionable price
419 signal to customers with DG. Vote Solar is recommending an ECR that is based on a

Notably, netting on a 15-minute basis is also burdensome on RMP, which must capture and process the larger volume of data.

420 complex analysis that models avoided costs associated with CG on RMP's system.
421 The results of this analysis are impacted by the fundamentals of the electric system
422 and how that system may change over time. Individual families and businesses lack
423 the tools to understand and forecast potential changes to CG value over time and, as a
424 result, will be unable to reliably evaluate the impacts that an investment in CG would
425 have on their personal financial situation were the ECR allowed to fluctuate.

426 By investing private capital in their own energy source, individual families and
427 businesses fix a portion of their energy costs and are able to reduce their monthly
428 expenses once their system is paid off, similar to a mortgage. Most behind-the-meter
429 technology has a long operating life of twenty years or more. Customers may
430 accordingly invest in their systems as part of a long-term financial plan, with
431 anticipated savings tied to other financial needs such as retirement or college tuition.
432 Unforeseen changes to the ECR may materially impact customers' financial plans. As
433 a result it is reasonable to adopt an ECR that is fixed for an individual customer for a
434 period of twenty years from their date of interconnection.

435 **Q. By fixing the ECR for a period of twenty years, will the Commission be placing**
436 **undue burden of uncertainty on the non-participating ratepayer?**

437 A. No. RMP provides similar certainty to its other customers as well as solar developers.
438 On the customer side, RMP's own Subscriber Solar program allows customers to fix
439 the price they pay for solar energy that offsets their retail electric usage for a period of
440 20 years, a benefit of the program that is specifically highlighted in RMP's program

441 FAQ.³² For developers of renewable energy, it is extremely common for utilities to
442 sign fixed-price contracts for a period of 20 years or more. This pricing certainty
443 allows the developer to secure financing and is common despite the fact that it puts
444 ratepayers at risk of “over-paying” for that energy if the contract does not look as
445 cost-effective with perfect hindsight. In a recent example, PacifiCorp, RMP’s parent
446 company, signed a 25-year fixed price contract for solar energy from the 128 MW
447 Milford Solar Project, a term the project’s investors highlighted as follows: “The 25-
448 year [power purchase agreement] with PacifiCorp will provide stable long-term
449 infrastructure cashflows to our investors, something that is particularly pleasing in
450 this low interest rate environment.”³³

451 In the case of a 20-year fixed ECR, the “actual” value of CG is just as likely to fall
452 above the ECR as it is likely to fall below the ECR. While it is technically correct that
453 non-participating ratepayers may bear the risk of uncertainty, that risk is common to
454 all utility resource acquisitions, both through fixed-price power purchase agreements
455 (“PPAs”) as mentioned above, and indeed any utility-owned asset for which cost
456 recovery is anticipated. In addition, because CG makes up only a very small
457 proportion of RMP’s resource mix, the risk is immaterial to the average ratepayer. In
458 contrast, shifting pricing risk to the customer-generator, whose personal financial

³² Rocky Mountain Power, *Utah Subscriber Solar Program*, Rocky Mountain Power, <https://www.rockymountainpower.net/savings-energy-choices/blue-sky-renewable-energy/subscriber-solar.html> (last visited Mar. 3, 2020).

³³ Conor Ryan, *USF Completes Acquisition, Financing of 12MW PV Project in Utah*, PVTECH (Sept. 2, 2019, 10:09 PM BST), <https://www.pv-tech.org/news/usf-completes-acquisition-financing-of-128mw-pv-project-in-utah>.

459 outlook may be drastically impacted by unforeseen changes to the ECR, is very likely
460 to chill development in CG, foreclosing the benefits CG can provide to all ratepayers.

461 **Q. What ECR would an individual customer be provided at the end of their 20-year**
462 **lock-in period?**

463 A. At the end of the 20-year lock-in period customers would be compensated for
464 exported energy at the then-prevailing ECR.

465 **Q. Please explain your proposal for ECR vintage eligibility.**

466 A. Eligibility for enrollment in each vintage ECR should be modeled on the eligibility
467 criteria set forth in the Stipulation in Docket No. 14-035-114 for the legacy NEM
468 Program. Specifically, customers who submit complete interconnection applications,
469 including payment of applicable fees by the deadline date, would be eligible for a
470 locked-in ECR under that vintage. These customers would then have twelve months
471 from the date their interconnection application is approved to complete
472 interconnection. As with the legacy NEM Program, ECR vintage eligibility would be
473 maintained for subsequent customers served at the point of delivery approved for
474 interconnection. A customer's ECR vintage eligibility will cease if: (1) the equipment
475 approved for interconnection is affirmatively removed from service for any reason
476 other than on a short-term basis for replacement of equipment or repair of the
477 equipment or underlying structure; (2) the customer makes a material modification to
478 increase the size of the customer's generation system after interconnection; or (3) the
479 customer chooses to voluntarily change to another available CG program. If a

480 customer transfers ownership of the applicable property, the transferee will receive
481 the same vintage ECR rate throughout the remainder of the lock-in period.

482 **Q. Please explain your proposal for elimination of the annual expiration of excess**
483 **export credits.**

484 A. Under the Transition Program, any export credits remaining on the March billing
485 cycle expire and are unable to be carried forward to offset charges for consumption in
486 future months.³⁴ With this docket, the Commission may set an ECR Program based
487 on a full consideration of the value of CG, rather than a settled-on value derived via
488 Stipulation. As a result, it is not reasonable to wipe credits clean for customers
489 without any compensation. To do so can create perverse price signals that incentivize
490 customers to waste energy on uneconomic end uses to avoid large balances of energy
491 being forfeited to the utility.

492 Under the ECR Program, all credits should be monetized. At the end of each
493 annualized billing period the customer should have the choice of: (1) carrying over
494 credits to the next annualized billing period or (2) requesting a check from RMP for
495 their remaining balance.³⁵ This is similar to the terms in place for the export credit
496 program of Arizona Public Service Company (“APS”). Under the APS program, all
497 credits are monetized every month. At the end of the year, customer balances in

³⁴ For Schedule 10 customers, excess credits expire on the October billing cycle. *See* Rocky Mountain Power, *Electric Service Schedule No. 136*, p. 1, 8, Nov. 15, 2017, https://www.rockymountainpower.net/content/dam/pcorp/documents/en/rockymountainpower/rates-regulation/utah/rates/136_Transition_Program_for_Customer_Generators.pdf.

³⁵ Section 54-15-104 of the Utah Code requires the expiration of excess credits at the end of the annualized billing period under net metering. *See* Utah Code Ann. § 54-15-104. The same restrictions do not apply to an ECR Program.

498 excess of \$25 are automatically refunded to customers via a check from the utility.³⁶
499 Because the current CG program contains caps on installed capacity of 25 kW for
500 residential and 2 MW for non-residential, any concerns about customers “over-
501 sizing” CG is unfounded.

502 **Q. Please explain your proposal that Net Metering and Transition Customers**
503 **should have the option to take service under the new ECR Program at their sole**
504 **discretion.**

505 A. Continued enrollment on the NEM Program and Transition Program should be
506 optional. NEM Customers and Transition Customers should be allowed, at their sole
507 discretion, to opt into the ECR Program. However, once a customer transitions to the
508 ECR Program, that customer should not be eligible to re-qualify for legacy NEM
509 Program or Transition Program access. This is consistent with the terms of the
510 Stipulation.³⁷

511 **IX. SUMMARY OF RECOMMENDATIONS**

512 **Q. Please summarize your recommendations.**

513 A. Taking into account the analyses and evidence reviewed in this case, I recommend the
514 following:

³⁶ Arizona Public Service, *Renewable Energy Riders*, APS, <https://www.aps.com/en/Residential/Service-Plans/Compare-Service-Plans/Renewable-Energy-Riders> (last visited Mar. 3, 2020).

³⁷ *See supra* n.15 at 11.

- 515 1) The Commission should make a determination that the benefits of the net metering
516 (“NEM”) Program exceed its costs and should re-open the NEM Program to new
517 customers as of the effective date of its order in this proceeding.
- 518 2) In the alternative, if the Commission elects to maintain the general structure of the
519 Transition Program, the Commission should adopt an ECR of 22.6 c/kWh with the
520 following program details:
- 521 a) Exports should be netted on an hourly basis, rather than the current, 15-minute
522 netting period;
 - 523 b) The ECR should be fixed for a period of 20 years for individual customers;
 - 524 c) Eligibility for each ECR vintage should be consistent with the terms of
525 eligibility adopted for legacy access to the NEM Program under the terms of
526 the Stipulation;
 - 527 d) The Commission should eliminate the annual expiration of excess export
528 credits; and
 - 529 e) NEM and Transition Customers should have the option to take service under
530 the new ECR Program at their sole discretion.

531 **Q. Does this conclude your testimony?**

532 A. Yes.

CERTIFICATE OF SERVICE

I hereby certify that on this 3rd day of March, 2020, a true and correct copy of the foregoing was served by email upon the following:

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