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BEFORE THE PUBLIC SERVICE COMMISSION OF UTAH

<p>IN THE MATTER OF THE APPLICATION OF ROCKY MOUNTAIN POWER TO ESTABLISH EXPORT CREDITS FOR CUSTOMER GENERATED ELECTRICITY</p>	<p>DOCKET NO. 17-035-61</p>
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CORRECTED REDLINE SURREBUTTAL TESTIMONY OF KATE BOWMAN

ON BEHALF OF

UTAH CLEAN ENERGY

SEPTEMBER 15, 2020

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1 **I. INTRODUCTION AND QUALIFICATIONS**

2 **Q. Please state your name, title, and employer.**

3 A. My name is Kate Bowman. I am the Renewable Energy Program Manager for Utah
4 Clean Energy.

5 **Q. Are you the same Kate Bowman that provided direct testimony in this Docket on**
6 **March 3, 2020 and rebuttal testimony on July 15?**

7 A. Yes.

8 **Q. What is the purpose of your surrebuttal testimony?**

9 A. The purpose of my surrebuttal testimony is to respond to rebuttal testimony filed by
10 other parties, particularly the rebuttal testimonies of Rocky Mountain Power, the Office
11 of Consumer Services, and The Division of Public Utilities. In Section II of my
12 surrebuttal testimony I provide a summary of my findings and recommendations. In
13 Section III I address statements regarding the likely impact of the Company’s proposal
14 on rooftop solar adoption in Utah. In Section IV I respond to statements made by the
15 Company regarding state policy. In Section V I address categories of cost and benefit
16 that parties have quantified for inclusion in the Export Credit Rate. In Section VI I
17 address the rate design of the Export Credit Rate, including the term of the Export
18 Credit Rate for individual customers and other issues related to the Export Credit Rate
19 tariff.

20 **II. SUMMARY OF FINDINGS AND RECOMMENDATIONS**

21 **Q. Please summarize the main findings of your surrebuttal testimony.**

22 A. I have reviewed the direct and rebuttal testimonies of other parties related to the
23 determination of the Export Credit Rate, including their recommendations related to the
24 value of the rate and the rate design. A just and reasonable Export Credit Rate that is in

25 the best interest of electricity customers and Utah as a whole should provide rooftop
26 solar customers with fair compensation for the value of the energy that is exported to
27 the grid. To be just and reasonable, the design of the Export Credit Rate should be
28 simple and comprehensible to customers, employ gradualism if necessary to mitigate
29 severe economic impacts, and provide solar customers with sufficient certainty about
30 their future rates.

31 The Company's Export Credit Rate proposal is discriminatory against rooftop
32 solar customers. The Company's proposal omits consideration of many of the benefits
33 that result from exported solar energy. The sole benefit included in the Company's
34 analysis, avoided energy costs, is calculated using a methodology that is not granular
35 enough to capture the impact of distributed solar resources and is not transparent or
36 easily accessible to stakeholders. Implementation of Company's proposal would
37 severely curtail rooftop solar adoption in Utah, resulting in detrimental economic
38 impacts and limiting Utah customers' ability to invest in distributed generation. In the
39 long term, the Company's proposal will stifle private investments in grid edge
40 technologies and slow innovation and grid modernization efforts. If implemented, the
41 Company's proposal will deny all utility customers the benefits of distributed
42 generation resources, including improved grid flexibility, resiliency, and carbon-free
43 electricity.

44 Vote Solar has quantified a reasonable range of costs and benefits that result from
45 exported solar energy and recommends a return to net metering. Given the significant
46 value of exported solar energy, as quantified by Vote Solar's experts, net metering is a
47 reasonable way to compensate solar customers for exported solar energy that is also
48 simple to administer and easy for customers to understand. Further, analysis from

49 previous proceedings has shown that net metering would not result in adverse impacts
50 on non-participating customers. Although it is not my primary position, I do not oppose
51 a return to net metering.

52 I recommend that the Commission set the Export Credit Rate at 10.19 cents per
53 kilowatt-hour. Evidence presented by Vote Solar shows that the value of the utility-
54 based benefits of exported solar energy is 10.19 cents per kilowatt-hour.¹ This
55 demonstrates that even excluding the significant and real value of the economic, health,
56 environmental, and societal benefits, exported solar energy is a valuable resource and
57 should be compensated appropriately for the benefits it provides to the grid.

58 Finally, if the Commission approves a value for the Export Credit Rate that is less
59 than the current Transition Program rate, I propose that the Commission approve a
60 glide path for gradually phasing in the new Export Credit Rate in order to avoid severe
61 adverse economic impacts.

62 **Q. Please summarize Utah Clean Energy’s recommendations related to the value of**
63 **the Export Credit Rate.**

64 A. I recommend that the Commission approve an Export Credit Rate of 10.19 cents per
65 kilowatt-hour. Specifically, I recommend that the value of the Export Credit Rate
66 include:

- 67 • A calculation of avoided energy costs that is based on market data that is transparent
68 and accessible to stakeholders. I recommend the use of forward-looking market
69 price forecasts and support Vote Solar’s avoided energy value.
- 70 • A calculation of capacity value that is based on the export profile of aggregated
71 distributed solar resources and uses a capacity contribution based on the Company’s

¹ Docket No. 17-035-61, Revised Affirmative Testimony of Sachu Constantine, May 8 2020, Table 1.

72 current resource portfolio, rather than forecasting the capacity contribution for solar
73 assuming that all solar planned in the Integrated Resource Plan has already been
74 built. Specifically, I recommend that the Commission approve Vote Solar's
75 proposed values for generation, transmission, and distribution capacity.

- 76 • A calculation of avoided carbon compliance costs that is based on a reasonable
77 forecast of future costs. I support Vote Solar's value, which is based on a reasonable
78 CO₂ price scenario used in the Company's Integrated Resource Plan
- 79 • Placeholders for grid support services and for reliability and resilience so that these
80 benefits can be quantified in the future.

81 **Q. Please summarize your recommendations related to the design of the Export**
82 **Credit Rate.**

83 A. I recommend that the Commission approve an Export Credit Rate that provides
84 customers with sufficient certainty about the value of an investment in rooftop solar and
85 allows customers to reasonably estimate anticipated savings under the Export Credit
86 Rate. Specifically, I recommend that:

- 87 • Individual customers be allowed to remain on the Export Credit Rate current on the
88 date of their interconnection application for 20 years.
- 89 • The value of the Export Credit Rate be updated concurrent with future rate cases, as
90 recommended by Vote Solar.
- 91 • The Commission reject the Company's proposal to create on-peak and off-peak
92 Export Credit Rate values.
- 93 • The Export Credit rate should be netted hourly in order to ensure that it is
94 comprehensible and actionable.

95 If the Commission approves a value for the Export Credit Rate that is less than the
96 current Transition Program value, I recommend the Export Credit Rate be phased in to
97 avoid serious adverse economic impacts. Specifically, I recommend that:

- 98 • ~~The Transition Program rate be maintained until the Transition Program Cap has~~
99 ~~been reached~~ Export Credit rate be set at the value of the Transition Program Rate

100 until rooftop solar capacity equivalent to the Transition Program Cap has been
101 installed.

- 102 • The Commission approve a glide path for phasing in the Export Credit Rate
103 incrementally, as I have proposed in Figure 4.

104 Finally, regarding the tariff for the Transition Program and the Export Credit Rate,
105 Schedules 136 and 137, I recommend that:

- 106 • Schedule 136 be amended to specify that Transition Program customers who
107 complete an interconnection application before the close of the Transition Program
108 will have 12 – 18 months to complete their installation, consistent with the terms of
109 Schedule 135.
- 110 • The Commission reject the Company’s proposal to add battery storage to Schedule
111 137 at this time.

112
113 **III. THE COMPANY’S PROPOSAL WILL SEVERELY CURTAIL ROOFTOP**
114 **SOLAR ADOPTION IN UTAH**

115 **Q. Witnesses for the Company and the Division assert that rooftop solar growth in**
116 **2018 and 2019 shows that the market for rooftop solar has not been negatively**
117 **impacted by the changes implemented through the Transition Program. How do**
118 **you respond?**

119 A. I do not agree with the Company’s and the Division’s characterizations of rooftop solar
120 growth in recent years.

121 **Q. When the Division asserts that the market for rooftop solar has not been**
122 **negatively impacted by the transition, does their analysis present a complete and**
123 **accurate picture of how rooftop solar adoption has been impacted by the**
124 **transition?**

125 A. No. Mr. Davis’ analysis is misleading because it focuses only on customers using
126 Schedule 136. The Division’s analysis states that the 2019 net metering report

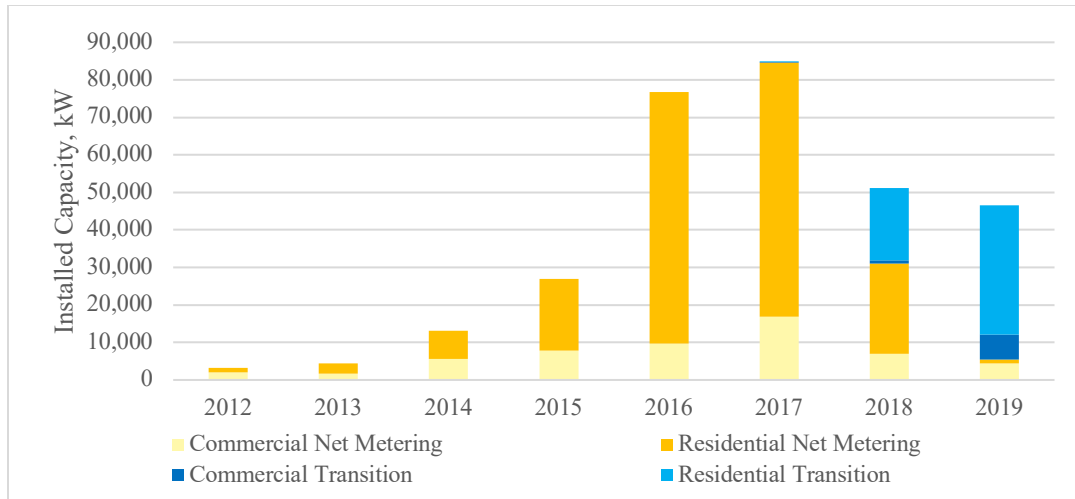
127 illustrates “a robust increase in solar facilities... equating to a year over year increase of
128 203 percent for Schedule 136 customers.” (Mr. Davis direct, lines 428 – 430). The
129 Schedule 136 tariff was opened (and the preceding tariff, Schedule 135, was closed to
130 new customers) on November 15, 2017. Even once a prospective solar customer has
131 completed an interconnection application, it can take weeks and likely months to
132 schedule and complete their installation. As a result, more than half of the customers
133 who installed solar in 2018 did so under Schedule 135, and not Schedule 136. The
134 Division’s analysis captures *the uptake of Schedule 136*, a brand new tariff, and not
135 growth in solar adoption overall.

136 **Q. Have you assessed solar adoption in recent years considering both Schedules 135**
137 **and 136?**

138 A. Yes. Figure 1, reproduced from my direct testimony, illustrates incremental new
139 rooftop solar capacity per year in Utah from 2012 through 2019. Although capacity
140 installed under the Schedule 136 tariff roughly doubled from 2018 to 2019, rooftop
141 solar adoption only increased slightly compared to the year prior. New rooftop solar
142 installations fell significantly in 2018 and 2019, compared to 2016 and 2017.

143 **Figure 1. Rooftop Solar Capacity Annual Growth in Utah, 2012 - 2019²**

² As reported in VoteSolar Data Request 9.8.



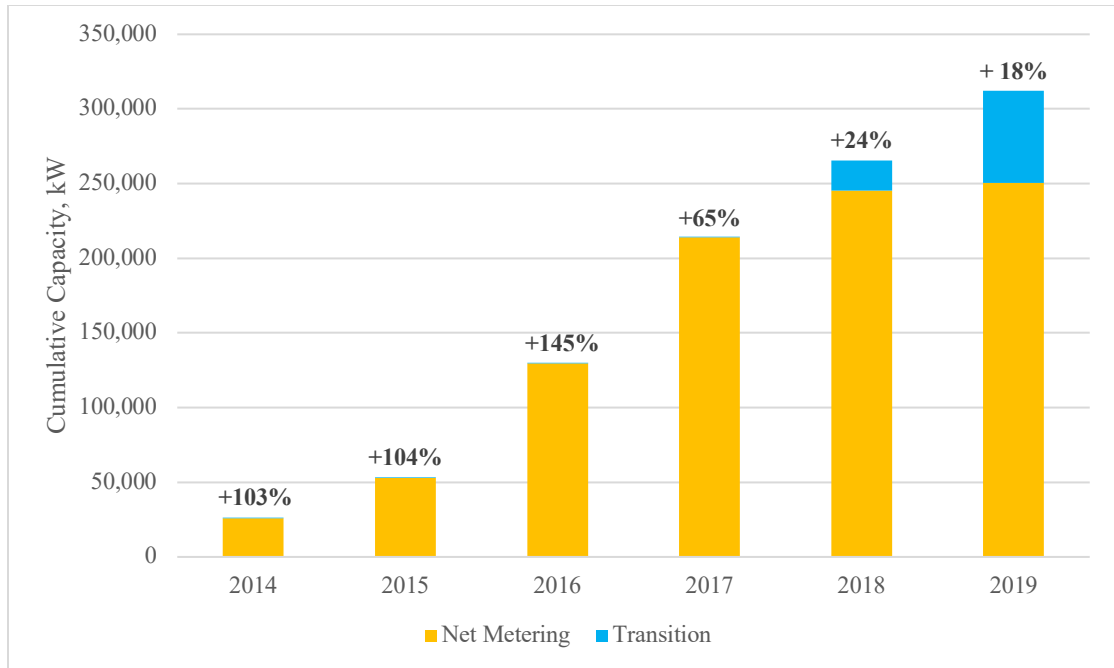
144

145 **Q. How has the rate of solar adoption changed since the creation of the Transition**
 146 **Program?**

147 A. Figure 2 illustrates the cumulative growth of rooftop solar capacity in Utah from 2014 –
 148 2019. When both Schedule 135 and Schedule 136 customers are considered, there was
 149 18% year over year growth in the number of solar customers in 2019 compared to
 150 2018. This is a significant decrease compared to previous years, in which there was
 151 24% year-over-year growth in 2018, and 65% year-over-year growth in 2017.

152 **Figure 2. Cumulative Rooftop Solar Capacity in Utah, 2014 – 2019³**

³ As reported in VoteSolar Data Request 9.8.



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Q. Please summarize your findings regarding solar adoption in recent years.

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A. The cumulative amount of rooftop solar in Utah has continued to increase in 2018 and 2019, however the rate of growth has fallen considerably compared to the period before the implementation of the Transition Program.

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Q. Division witness Robert Davis disputes that the Company’s proposed Export Credit Rate will result in the decline of rooftop solar installations in the future (Mr. Davis rebuttal, lines 361 – 320). How do you respond?

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A. I do not agree with Mr. Davis’ assessment that the Company’s proposed Export Credit Rate, an average of 1.5 cents per kilowatt-hour, will not negatively impact solar adoption. The Transition Program resulted in a relatively small reduction in the export credit value, from net metering at the retail rate to a credit that equals 90 – 92% of the retail rate. As shown above, rooftop solar growth fell significantly following this reduction of 8 - 10%. An additional 84% reduction in the value of exported energy, as proposed by the Company, is likely to significantly curtail solar adoption.

169 **Q. Division witness Mr. Davis further states that “the Division has no discernable**
170 **evidence before it that... leads it to believe that the outcome of this proceeding,**
171 **should the Commission adopt RMP’s proposal or something similar, is the leading**
172 **cause of detriment to the roof-top solar industry in Utah.” (Mr. Davis surrebuttal,**
173 **lines 39 – 42). How do you respond?**

174 A. The Company’s proposal may not *currently* be the leading cause of detriment to Utah’s
175 rooftop solar industry because prospective solar customers can still install through the
176 Transition Program. Awareness that rates are about to change may give some customers
177 pause, but the Settlement Stipulation provides customers who install solar now through
178 Schedule 136 with certainty about the value of their Export Credit Rate through 2032.
179 However, if the Company’s Export Credit Rate proposal were implemented it would
180 almost certainly have a detrimental impact on the rooftop solar industry in Utah.

181 **Q. Has the Company provided an analysis of the likely impact of their proposal on**
182 **solar adoption in Utah?**

183 A. Not directly. Ms. Steward asserts that customers in Utah will continue to have
184 “customer choice.” This statement does not acknowledge the severe impacts that the
185 Company’s proposal will have on solar adoption. The Company’s proposal will
186 significantly increase the time it takes for customers to realize net savings from
187 installing solar, to the point that solar adoption rates could approach zero in Utah. I also
188 expect that the number of solar companies doing business in Utah will decrease, and so
189 customers will have fewer choices when it comes to installers, solar equipment, and
190 financing options.

191 **Q. In rebuttal testimony, Mr. Davis states that “Navigant’s report illustrates that**
192 **simple payback for private generation occurs at ten years.” (Mr. Davis rebuttal**

193 **lines 437 – 438.) Does the report referenced by Mr. Davis illustrate that simple**
194 **payback for private generation occur at ten years?**

195 A. No. Mr. Davis is incorrectly interpreting a market analysis commissioned by the
196 Company for use in the development of the Integrated Resource Plan. In a data request
197 to Mr. Davis about the basis for this statement, he referenced footnotes that cite Figure
198 6 at page 10 of the “Private Generation Long-Term Resource Assessment” completed
199 by Navigant.⁴ I referenced this figure in my rebuttal testimony, and it is reproduced
200 again below as Figure 3.

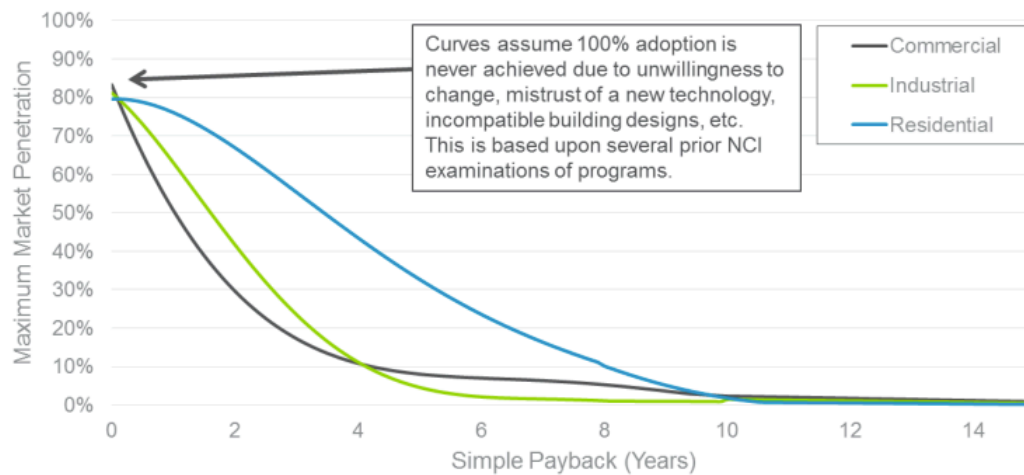
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204 **Figure 3. Payback Acceptance Curves from Navigant Private Generation Long-**
205 **Term Resource Assessment (2019 – 2038)⁵**
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⁴ Exhibit A: DPU to UCE Data Request Response Set 3 – 8 – 27 - 2020

⁵ Paidipati, J., Goffri, S., Romano, A., & Aufer, R. (2018, August 15). Private Generation Long-Term Resource Assessment (2019 – 2038). Prepared for PacifiCorp by Navigant Consulting. https://www.pacificorp.com/content/dam/pcorp/documents/en/pacificorp/energy/integrated-resource-plan/2019-irp/2019-irp-support-and-studies/PacifiCorp_IRP_DG_Resource_Assessment-2018_Final-Corrected.pdf Page 10

Figure 6 Payback Acceptance Curves



Source: Navigant Consulting based upon work for various utilities, federal government organizations, and state/local organizations. The curves were developed from customer surveys, mining of historical program data, and industry interviews.

207

208 **Q. What does this figure illustrate?**

209 A. This figure illustrates the relationship between the simple payback of a solar installation
210 for residential, commercial, and industrial customers and the corresponding rate of
211 adoption. It is used to forecast the percentage of customers who will adopt solar at a
212 given price point. Navigant explains that “given a calculated payback period, the curve
213 predicts the level of maximum market penetration.”⁶ It does not illustrate the simple
214 payback for solar under any specific rate proposal. It does show that when the simple
215 payback for a solar installation is 10 years or longer, the maximum market penetration
216 for rooftop solar is extremely low, close to zero.

217 **Q. Does Navigant’s Long-Term Resource Assessment include inputs to reflect the**
218 **Company’s proposed Export Credit Rate value of an average of 1.5 cents per**
219 **kilowatt-hour?**

⁶ Paidipati, Goffri, Romano, & Aufer, Private Generation Long-Term Resource Assessment (2019 – 2038). Page 10.

220 A. No, Navigant’s Assessment forecasted adoption based on the Schedule 136 Transition
221 Program rate.⁷ A more recent version of Navigant’s forecast, completed in 2019 as part
222 of the latest 2021 Integrated Resource Plan, is also based on the Schedule 136 rate.⁸

223 **Q. What effect is the Company’s proposal likely to have?**

224 A. The Company’s proposal will cause rooftop solar adoption in Utah to fall dramatically.
225 Anecdotally, the payback period for a residential solar installation under the Transition
226 Program varies widely by customer, but ranges from roughly 8 – 12 years. An 84%
227 reduction in the value of energy exports, as proposed by the Company, would
228 dramatically increase the payback period of a solar installation, almost certainly beyond
229 the range shown in Navigant’s analysis. Navigant’s Payback Acceptance Curve only
230 illustrates likely percentages of solar adoption for payback periods of up to 14 years, at
231 which point the percentage of solar adoption is close to zero. According to the solar
232 adoption curves developed by Navigant, there will be little to no demand for solar if the
233 Company’s proposal is implemented.

234 **Q. Will the Company’s proposal result in a level of solar adoption that satisfies utility
235 customers’ preference when it comes to rooftop solar adoption?**

236 A. Probably not. A survey commissioned by Rocky Mountain Power to inform the
237 development of the Subscriber Solar program found that 48% of general residential
238 customers were likely to consider purchasing or leasing a rooftop solar power system

⁷ Ibid. Page 3.

⁸ Navigant Consulting Inc. PacifiCorp: Private Generation Resource Assessment for Long Term Planning. July 30, 2021 IRP Stakeholder meeting.
https://www.pacificorp.com/content/dam/pcorp/documents/en/pacificorp/energy/integrated-resource-plan/07-30-2020_Navigant_Private_Resource_Assessment.pdf Page 23.

239 for their home in the next five years.⁹ This finding demonstrates that there are many
240 more “non-participating” customers who are interested in installing rooftop solar than
241 there are customers with solar currently.

242 **Q. The Division is concerned that Vote Solar’s proposal to return to net metering will**
243 **result in “unsustainable economic problems” because it “does not offer a**
244 **reasonable solution for ensuring that CG [customer generation] customers pay the**
245 **full cost to serve them with the services provided by the utility.” (Mr. Davis**
246 **rebuttal testimony, 263 – 265). Do you agree?**

247 A. No, experts retained by Utah Clean Energy and Vote Solar during the Commission’s
248 previous investigation of the net metering program found that revenue collected from
249 customers with rooftop solar was generally sufficient to cover their cost of service. In
250 Docket No. 14-035-114, our expert Ms. Melissa Whited found that the Company’s own
251 cost of service analysis demonstrated that customers with rooftop solar reduced revenue
252 requirements for all classes, resulting in lower costs to other customers, not higher
253 costs.¹⁰ Company witness Mr. Robert Meredith found that revenue collected from
254 Schedule 6 and Schedule 8 net metering customers *exceeded* their cost of service.¹¹
255 Finally, testimony from Dr. David DeRamus filed on behalf of Vote Solar disputed the
256 valuation of bill credits used by Mr. Meredith in his analysis, and found that the

⁹ Market Strategies International. Berkshire Hathaway Energy Distributed Generation Study Results Summary: Rocky Mountain Power Residential Customers in Utah.
<http://pscdocs.utah.gov/electric/15docs/1503561/266958ExBClementsTestExPHC2UTDistGenMktResearchSummGenStudy6-16-2015.pdf> Page 2.

¹⁰ Docket No. 14-035-114, Direct Testimony of Melissa Whited, June 8 2017.
<https://pscdocs.utah.gov/electric/14docs/14035114/294515DirTestWhited6-8-2017.pdf> Lines 259 - 266

¹¹ Docket No. 14-035-114, Direct Testimony of Robert Meredith, November 9 2016.
2017 <https://pscdocs.utah.gov/electric/14docs/14035114/290070DirTestMeredith11-9-2016.pdf> Table 3.

257 Company was recovering 91% of the costs to serve residential net metering
258 customers.¹²

259 **Q. The Division says that Vote Solar’s proposal would create an “unsustainable**
260 **frenzy in the solar market.” Do you agree?**

261 A. No. The Division seems to be referring to Vote Solar’s secondary proposal, which is
262 that exported solar energy be credited at 22.22 cents per kilowatt-hour.¹³ As I
263 understand it, Vote Solar’s primary proposal is that the Commission make a
264 determination that the benefits of the net metering Program exceed its costs and re-open
265 the net metering program to new customers. The majority of states currently allow net
266 metering, so a return to net metering would not create an environment in which Utah is
267 a materially better place to install solar compared to the majority of the country. In fact,
268 Utah has lower electricity prices than most other states, and so even if net metering
269 were reinstated Utah would likely remain a less attractive market for solar compared to
270 states with higher electricity prices.¹⁴

271 **Q. Do you share the Division’s concerns that sudden changes in policy can lead to**
272 **undesirable market impacts?**

273 A. Yes. The Division’s concern that a much higher export credit value would cause an
274 “unsustainable frenzy” highlights an issue with any policy change – to the extent that
275 some actors will be worse off after the policy change, they will rush to take action
276 before it takes effect. Those who install solar immediately after the change will be

¹² Docket No. 14-035-114, Direct Testimony of David DeRamus, June 8 2017
<https://pscdocs.utah.gov/electric/14docs/14035114/294527DirTestDeRamus6-8-2017.pdf> Lines 850 - 852.

¹³ Docket No. 17-035-61, Revised Affirmative Testimony of Sachu Constantine, May 8 2020, Table 1.

¹⁴ Solar Power World, “Which States Offer Net Metering?”
<https://www.solarpowerworldonline.com/2020/03/which-states-offer-net-metering/>

277 significantly disadvantaged relative to customers who installed solar prior to the
 278 change. The more significant the policy change, the more severe the disruption. One
 279 way to manage this is gradual implementation of a new policy, as I have recommended
 280 in rebuttal testimony.

281 **Q. Please reiterate your recommendation.**

282 A. My primary recommendation is that the Commission approve a value of 10.19 cents per
 283 kWh for the Export Credit Rate. If the Commission approves an Export Credit Rate that
 284 is lower than the current Transition Program rate, then I recommend that the Transition
 285 Program ~~rate be maintained until the Transition Program Cap has been reached~~ be
 286 closed to new customers and that the Commission set the initial Export Credit Rate
 287 equal to the Transition Program Rate until rooftop solar capacity equivalent to the
 288 Transition Program cap has been installed (set at 170 megawatts for residential and
 289 small commercial customers and 70 megawatts for large commercial customers.) I
 290 propose that the final Export Credit Rate approved by the Commission in this
 291 proceeding be considered the “floor value”, and that the Commission approve a glide
 292 path for phasing in the floor value incrementally, based on tiered capacity caps. I
 293 propose the following glide path:

294 **Figure 4. Proposed Export Credit Implementation Glide Path**

Export Credit Value (% of average retail rate)	Total Capacity Available
90% for schedules 1, 2, and 3; 92.5% for all other schedules (current Transition Program rate)	240 MW (170 MW res./small comm. & 70 MW large comm.)
85%	80 MW
80%	80 MW

295 *Etc. until final value of Export Credit is reached.*

296 **IV. THE COMPANY’S PROPOSAL IS NOT ALIGNED WITH STATE POLICY**

297 **Q. Ms. Steward characterizes any export credit rate above what the Company has**
298 **proposed as a subsidy that is “contrary to state policy that recognizes a phase-out**
299 **of tax credits that support the solar industry.” (Ms. Steward direct, lines 120 –**
300 **121) Do you agree?**

301 A. First, I do not agree that an export credit rate greater than what the Company has
302 proposed amounts to a subsidy. The Company’s proposal omits consideration of
303 quantifiable benefits that exported rooftop solar energy provides, as discussed in
304 Section V. I also do not agree that a solar export rate that supports the continued growth
305 of the solar industry is contrary to state policy. In fact, the Company’s proposal is
306 contrary to nearly two decades of state policy that has created conditions to foster the
307 growth of a significant solar industry in order to realize the benefits of clean energy
308 production, jobs, and economic development to the state.

309 **Q. How has state policy contributed to the development of the market for rooftop**
310 **solar in Utah?**

311 A. Nearly two decades of state policy choices have created and nurtured the market for
312 rooftop solar in Utah. Utah’s net metering policy was enacted during the 2002
313 legislative session in order to provide a practical means through which homes and
314 businesses can install solar for the purpose of meeting their own energy needs. From
315 2013 – 2016, Rocky Mountain Power offered customers an incentive to install solar
316 through the Utah Solar Incentive Program. Utah currently offers a state tax credit for
317 residential and commercial solar installations, equal to up to \$1,600 through 2020. The
318 state tax credits begin to phase down gradually in 2021 and they expire in 2024. The tax
319 credit phase out resulted from H.B. 23, passed during the 2017 legislative session. At
320 the time, net metering was still in place, the cost of solar had fallen significantly, and

321 rooftop solar adoption was growing quickly. Legislators were concerned that the cost of
322 the tax credit was also growing each year, but recognized that ending the tax credit
323 immediately would be disruptive and harmful to the solar industry. Instead, the bill
324 created a gradual tax credit phase out beginning in 2019, which helped to avoid severe
325 impacts on the solar industry. The Transition Program was created in late 2017, several
326 months after the state tax credit phase out schedule was determined. In recognition that
327 the Transition Program reduces the economics of going solar and was likely to slow the
328 adoption of solar, the initial year of the tax credit step down was delayed from 2019 to
329 2021, allowing solar customers to take advantage of the full \$1,600 tax credit for two
330 extra years.¹⁵

331 **Q. What do you conclude regarding the Company’s proposal and state policy?**

332 A. The Company’s proposal is counter to state policy in Utah, which has recognized the
333 value of promoting access to rooftop solar and crafted policies to support this
334 technology for nearly two decades. State policy has also sought to mitigate severe
335 impacts to the industry through gradual implementation of policy changes. In contrast,
336 the Company’s proposal would have severe adverse impacts on the solar industry, and
337 is not consistent with state policy that has committed taxpayer dollars to allow a solar
338 industry to take hold in Utah. If the Commission approves a rate lower than the current
339 Transition Program rate, then a gradual implementation of that rate is aligned with state
340 policy that has sought to find a reasonable balance between incentivizing the growth of
341 a beneficial technology and using taxpayer dollars wisely.

¹⁵ Utah S.B. 141 2018.

342 **Q. According to Ms. Steward, gradualism has already been employed because “The**
343 **solar industry will have had almost seven years to adapt to the changes” (Ms.**
344 **Steward rebuttal, lines 87 – 89). Do you agree?**

345 A. No. The Company’s proposal was unknown until it was filed with the Commission in
346 February 2020. The Export Credit value the Company has proposed is significantly
347 lower than policies in place in most other states, and based on a methodology that is
348 specific to Rocky Mountain Power. There is no way the solar industry could have
349 anticipated an 84% cut from the Transition Program rate.

350 **V. CATEGORIES OF COST & BENEFIT**

351 **Q. According to Division witness Mr. Davis, “Unless the output profile of CG solar is**
352 **significantly better or the integration costs are significantly lower, there is no**
353 **scenario where CG solar should meaningfully be valued higher than the cost to**
354 **acquire new solar resources or purchase power via purchase agreements**
355 **(“PPA”)” (Davis rebuttal, lines 187 – 190). Do you agree?**

356 A. No. Distributed rooftop solar is capable of providing benefits that distant utility-scale
357 resources cannot provide. Rooftop solar generates electricity close to load, and so
358 should be compensated appropriately for avoiding costs associated with line losses and
359 transmission and distribution costs. Further, rooftop solar is part of a portfolio of
360 distributed technologies that can be used as “non-wires alternatives” to avoid
361 investments in new “poles and wires” infrastructure. Customers will only realize the
362 benefits that distributed generation provides if rates account for the value of distributed
363 rooftop solar appropriately.

364 **A) Avoided Energy**

365 **Q. Vivint Solar has proposed to determine an avoided energy cost based on historical**
366 **EIM data. In response, the Company states that they are “open to the concept as**
367 **long as the historical prices and volumes are aligned and the value is updated**
368 **frequently.” (Mr. MacNeil rebuttal, lines 137 – 139). How do you respond?**

369 A. I have already recommended that avoided energy costs be determined using forward-
370 looking projections of energy costs and data that are accessible to stakeholders. I
371 continue to assert that historical data is not likely to accurately reflect the future costs of
372 energy, and that avoided energy costs should be based on a forward-looking price
373 forecast. However, I do agree with the Company’s finding that “the ease of calculating
374 and reviewing a value derived from historical EIM data are points in its favor,” (Mr.
375 MacNeil rebuttal, lines 137 – 138) compared to the use of the Company’s GRID model,
376 which is difficult for stakeholders to access. Use of recent historical EIM data, updated
377 concurrent with updates to the Export Credit Rate in order to capture changing market
378 trends, is a reasonable approximation of avoided energy costs that is also transparent
379 and easy to calculate. I do not oppose use of historical EIM data to determine the
380 avoided energy cost for purposes of determining the Export Credit. However,
381 regardless of the source of the data used to determine avoided energy costs, it is
382 important that individual solar customers are able to remain on the Export Credit Rate
383 current at the time of their interconnection application for 20 years.

384 **Q. What do you recommend?**

385 A. I continue to recommend that the Commission approve Vote Solar’s calculation of the
386 avoided energy costs, which is based on forward-looking market price forecasts that are
387 transparent and accessible to stakeholders. I do not oppose use of recent historical

388 market prices to determine avoided energy costs, provided they are also transparent and
389 accessible.

390 **B) Avoided Capacity**

391 **Q. Have any parties presented evidence that exports from rooftop solar do not avoid**
392 **capacity costs?**

393 A. No. Rocky Mountain Power has not included a value for avoided capacity in their
394 export credit calculation primarily because rooftop solar customers do not sign a
395 contract to deliver power, and not because it is not possible to calculate the capacity
396 benefit from exported solar energy. In rebuttal testimony, the Company provides
397 detailed commentary about different methodologies for calculating the capacity
398 contribution of solar (Mr. MacNeil rebuttal, lines 289 – 748).

399 **Q. Does the Company account for the capacity value of rooftop solar in long-term**
400 **resource planning?**

401 A. Yes. As I discussed in rebuttal testimony, Table 5.12 in the 2019 IRP includes a
402 forecast of rooftop solar’s contribution to reduce summer and winter peak loads.
403 Additionally, the 2019 IRP includes two sensitivities representing “low” and “high”
404 levels of solar adoption, S-04 and S-05. According to Table 8.23 in the IRP the “high”
405 S-05 sensitivity delays the need for a new thermal plant by one year, from 2029 to
406 2030.¹⁶

407 **Q. How does the Company suggest that avoided capacity costs for distributed solar**
408 **could be calculated?**

¹⁶ PacifiCorp 2019 Integrated Resource Plan.
https://www.pacificorp.com/content/dam/pcorp/documents/en/pacificorp/energy/integrated-resource-plan/2019_IRP_Volume_I.pdf Table 8.23 Summary of Additional Sensitivity Cases Page 263

409 A. The Company states that the avoided cost price for Schedule 37 resources calculated
410 using the PDDRR methodology is “a reasonable starting point for determining the
411 value of both capacity and energy from CG exports.” (Mr. MacNeil rebuttal, 862 –
412 864).

413 **Q. Do you agree?**

414 A. No. As I described in my rebuttal testimony, I have concerns with use of the PDDRR
415 methodology to evaluate the energy value of rooftop solar exports (Ms. Bowman
416 Rebuttal, lines 96 – 119). I have the same concerns with using the PDDRR
417 methodology to evaluate the capacity value of rooftop solar exports. Specifically, the
418 GRID model is not able to register changes resulting from the addition of a typical
419 rooftop solar installation, and the reliance on confidential data from the GRID output
420 creates barriers that make stakeholder review more difficult.

421 **Q. What does the Company say regarding the capacity contribution of rooftop solar**
422 **resources?**

423 A. The Company states that it is important to account for resource mix when calculating
424 the capacity contribution of a new resource (Mr. MacNeil rebuttal, lines 442 – 443). As
425 additional solar resources are added, the likelihood of loss of load during daylight hours
426 decreases and so the capacity contribution of additional solar resources declines.

427 **Q. Has the Company evaluated the capacity contribution value of solar in the near**
428 **term?**

429 A. Yes. Mr. MacNeil references capacity contribution studies conducted in the 2019 IRP,
430 including the “Equivalent Conventional Power” (“ECP”) study. According to Table N.1

431 of the 2019 IRP¹⁷, and the rebuttal testimony of Mr. MacNeil, the Company determined
432 that the average capacity contribution of the solar resources in the Company’s initial
433 portfolio is 43%. (Mr. MacNeil rebuttal, lines 460 – 465).

434 **Q. Has the Company provided analysis of the capacity contribution of aggregated**
435 **rooftop solar installations?**

436 A. Not as far as I’m aware.

437 **Q. Is the capacity contribution of the initial portfolio from the ECP study directly**
438 **comparable with rooftop solar?**

439 A. Not precisely. First, the Company’s IRP evaluates single-axis tracking solar, and
440 rooftop solar is generally fixed. Second, for purposes of the export credit value, the
441 capacity contribution of rooftop solar should be calculated based on the profile of
442 energy that is exported after accounting for energy that is used by the customer onsite.
443 What the ECP study does show is that the capacity contribution of the initial portfolio
444 of solar resources is quite high.

445 **Q. Company witness Mr. MacNeil states that “the capacity contribution of CG**
446 **exports is projected to decline or remain low over time as the Company’s portfolio**
447 **of solar assets grows” (Mr. MacNeil rebuttal, lines 738 – 740). Is this relevant to**
448 **the determination of the Export Credit Rate?**

449 A. Not currently. Determination of the Export Credit Rate in this proceeding should be
450 based on a current evaluation of the capacity contribution of distributed solar resources,
451 and not an evaluation of what the capacity contribution may be after resource additions

¹⁷ PacifiCorp 2019 Integrated Resource Plan, Volume II – Appendices M – R.
https://www.pacificorp.com/content/dam/pcorp/documents/en/pacificorp/energy/integrated-resource-plan/2019_IRP_Volume_I.pdf Page 401

452 in the distant future. The exact composition of the Company's preferred portfolio can
453 and will change over time, especially for resources identified in the later years of the
454 planning horizon.

455 **Q. Why shouldn't the capacity contribution value used to calculate the Export Credit**
456 **Rate account for future preferred portfolio resources?**

457 A. It is discriminatory to compensate distributed generation resources installed today, or in
458 the near future, based on their anticipated capacity contribution after the addition of
459 future resources from the preferred portfolio.

460 **Q. Are there other factors that will influence the capacity contribution of solar**
461 **resources in the future, apart from the amount of solar added to the grid?**

462 A. Yes. Changes to customer load profiles will also influence the capacity contribution of
463 all resources, including solar. The Company's IRP calls for significant investments in
464 battery storage resources, as do other utilities in the west. The continued addition of
465 solar resources to the grid creates an opportunity to leverage demand-side programs
466 that take advantage of low energy prices during daylight hours. Emerging technologies
467 will create new opportunities for demand-side management programs. For example,
468 some utilities are using customer-sited heat pump water heaters to provide services akin
469 to battery storage by superheating water during the day, shifting load away from the
470 early evening hours.¹⁸ I expect that utilities will find innovative ways to make use of
471 technology to take advantage of low-cost power during the day, which improves the
472 capacity contribution of solar. Load forecasts that don't account for the capabilities of

¹⁸ Delforge, Pierre. (Jan 2020). Heat Pump Water Heaters as Clean-Energy Batteries. NRDC.
<https://www.nrdc.org/experts/pierre-delforge/heat-pump-water-heaters-clean-energy-batteries>

473 controllable technologies or the growth of technologies like energy storage may not
474 accurately capture the future capacity contribution of solar resources.

475 **Q. Have other parties calculated the capacity contribution of energy exports from**
476 **rooftop solar?**

477 A. Yes, Mr. Milligan arrives at his proposed capacity value using a capacity factor method
478 that evaluates capacity contribution based on the top 10% of load hours. Mr. Milligan's
479 analysis is also based on actual energy export data from 1,217 customers who
480 participated in Vote Solar's load research study.

481 **Q. Please summarize your recommendations related to the capacity value of rooftop**
482 **solar.**

483 A. The capacity value of the export credit should be based on a reasonable assumption of
484 the avoided capacity cost that results from rooftop solar. It should also include a
485 capacity contribution that is based on the export profile of rooftop solar and the
486 Company's current existing resource portfolio, rather than a future resource mix. I
487 recommend that the Commission approve Vote Solar's methodology for calculating
488 avoided generation, transmission, and distribution capacity.

489 **C) Ancillary services**

490 **Q. What is your final recommendation regarding ancillary services?**

491 A. Parties have provided a detailed discussion of the ways in which distributed solar
492 interacts with grid infrastructure, the types of ancillary services and grid services
493 rooftop solar can provide, and the potential for new technology like smart inverters to
494 improve the value of ancillary and grid services. This category of value is emerging,
495 and no party has quantified ancillary services for the purpose of this proceeding.
496 However, it is clear that the growth of communications and control technologies, and

497 particularly smart inverters, will enable solar to provide services that benefit the grid as
498 a whole. I recommend that the Commission create a placeholder for the benefits of
499 ancillary services so that they can be quantified in the future.

500 **D) Reliability and resilience**

501 **Q. The Company disagrees with the consideration of the value of resiliency on the**
502 **grounds that “it would be contrary to ratemaking principles for backup**
503 **equipment serving the needs of an individual customer during outage conditions**
504 **to be paid for by other customers who don’t receive those outage reduction**
505 **benefits” (Mr. MacNeil rebuttal, lines 1090 – 1093). How do you respond?**

506 A. The resiliency benefits that result from a solar and storage installation that is configured
507 to provide emergency power in an outage are not necessarily isolated to an individual
508 customer. As I stated in rebuttal testimony, the resiliency benefits of solar and storage
509 can accrue to individual customers, groups of customers, or the grid as a whole. I also
510 provided examples of resiliency benefits that accrue to groups of customers. For
511 example, solar and storage located at public buildings or emergency response facilities
512 can help to keep critical services like air conditioning, heat, medical services, or
513 communications equipment online in the event of an outage.

514 **Q. Can a network of individual distributed energy resources be used to provide**
515 **resiliency benefits to a broader suite of customers?**

516 A. Yes. As one example, Southern California Edison is planning to build a city-wide
517 microgrid that will leverage privately owned, customer-sited distributed energy

518 resources to support essential city facilities.¹⁹ A rate design that discourages adoption of
519 rooftop solar will limit Utah’s ability to leverage innovative resiliency solutions in the
520 future.

521 **Q. What do you recommend?**

522 A. The value of resiliency is difficult to quantify, and no party has quantified a specific
523 value for resiliency in this proceeding. I recommend creating a placeholder value so
524 that the issue can be explored in the future.

525 **E) Climate and environmental impacts**

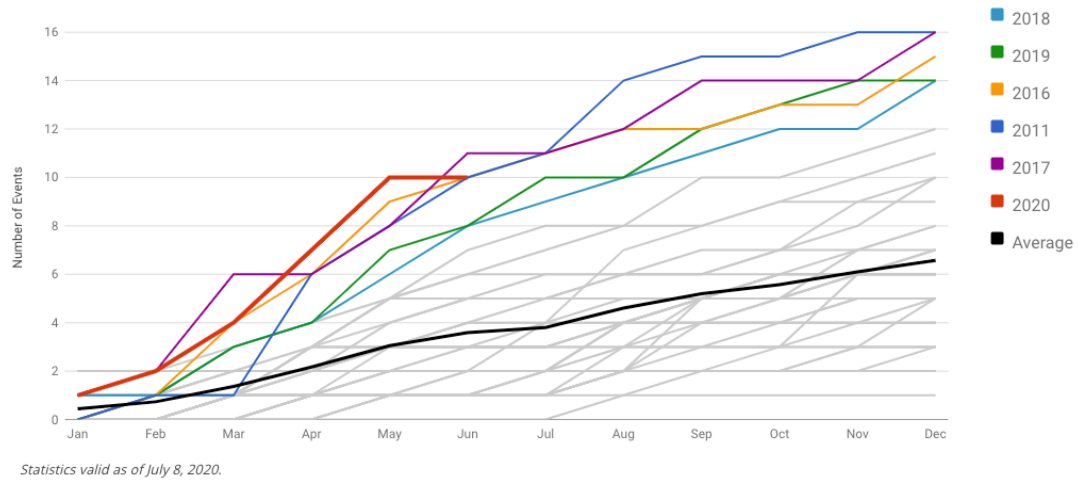
526 **Q. The Company objects to consideration of carbon compliance costs because “There**
527 **are no rules or laws in place which would result in Utah customers becoming**
528 **responsible for costs associated with carbon dioxide in the future, and in**
529 **particular during the 2021 export credit study period.” (Mr. MacNeil rebuttal,**
530 **lines 1186 – 1190). How do you respond?**

531 A. There is widespread scientific consensus that climate change, caused primarily by the
532 burning of fossil fuels for energy, is a major contributor to global warming and the
533 associated changing climatic conditions. Impacts on Utahns include drought, prolonged
534 heatwaves, more frequent and more devastating forest fires, increased catastrophic
535 storms and more. As of July, 2020 had already become the seventh consecutive year in
536 which the United States experienced at least 10 billion-dollar weather disasters. As
537 shown in Figure 5, until 2015 there were only four other years on record that reached
538 this threshold.

¹⁹ Wood, E. (Jan 2020). Utility Microgrids Come to California With Speed – and Invention. Microgrid Knowledge.
<https://microgridknowledge.com/utility-microgrids-california/>

539
540

Figure 5. 1980 – 2020 Year-to-Date United States Billion-Dollar Disaster Event Frequency²⁰



541

542

The risks and costs of climate change are real and significant, and addressing climate change requires a transformation of our energy system within the next decade. It is unreasonable, and irresponsible, to create policies that are not based on a reasonable forecast of the cost of carbon.

543

544

545

Q. What do you recommend?

546

A. I recommend that the Commission include the avoided cost of carbon compliance, at a minimum, in the Export Credit Rate. Omission of the value of carbon compliance from the Export Credit Rate is discriminatory to solar customers because it does not recognize the benefits of the zero-carbon energy they provide to the grid. I support Vote Solar's value for avoided carbon compliance costs, which is based on a CO₂ price scenario used in the IRP that represents a reasonable and moderate estimate of the costs of carbon compliance.

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²⁰ National Centers for Environmental Information. Billion-Dollar Weather and Climate Disasters: Overview. Accessed September 14, 2020. <https://www.ncdc.noaa.gov/billions/>

554 **Q. How do you recommend that the Commission consider the health, social, and**
555 **economic benefits that Vote Solar has quantified?**

556 A. In addition to the carbon compliance costs, Vote Solar has quantified the health benefits
557 from reduced air pollution and the environmental and social benefits of reduced carbon
558 emissions, which are separate and distinct from carbon compliance costs. I recognize
559 that it may be difficult to capture the widespread health, social, and environmental
560 benefits of rooftop solar in the design of the Export Credit Rate. It is often said that rate
561 design is equal parts art and science, because determination of rates that are in the
562 public interest requires regulators to balance competing principles and goals. NARUC’s
563 Distributed Energy Resources Rate Design Manual acknowledges the complexity of
564 designing rates for rooftop solar and determines that ultimately, “it is the job of the
565 regulator to weigh these principles and goals and approve a rate design that best reflects
566 the public interest as the regulator sees it.”²¹ All forecasts of the future are likely to be
567 wrong, yet prudent ratemaking requires regulators to make decisions today based on the
568 best available information about the future. Uncertainty about the precise magnitude of
569 the severity of climate impacts, or the exact policy mechanisms that will be used to
570 address carbon emissions, is not reasonable justification for failing to consider them
571 entirely. It is appropriate to weigh the significant value of the health, social, and
572 economic benefits of rooftop solar and consider whether the Export Credit Rate design
573 – as a whole – is likely to result in levels of solar adoption that help to mitigate the
574 serious and costly risks that climate change poses to Utahns.

²¹ NARUC Rate Design Manual, Page 20.

575 **VI. RATE DESIGN**

576 **A) Term of Export Credit Rate**

577 **Q. What do parties propose regarding the term of the Export Credit Rate?**

578 A. Rocky Mountain Power proposes that the Export Credit Rate is calculated based on a
579 single year, 2021, and updated annually. Vote Solar proposes an Export Credit Rate
580 based on a levelized 20-year value.

581 **Q. How have other parties responded to these proposals?**

582 A. The Office notes that a 20-year levelized payment is necessarily based on forecasts, and
583 long-term forecasts of the future are not error free. The Office is concerned that “the
584 risk of a 20 year levelized rate paid to solar customers who have not committed to a 20
585 year supply agreement is asymmetrical and unduly burdens non-participating
586 customers.” (Mr. Hayet rebuttal, lines 443 – 446). The Division also disagrees with a
587 20-year levelized payment for solar customers, on the grounds that “CG does not
588 perform like QF’s [qualifying facilities] and is not subject to reciprocal agreements for
589 long-term delivery obligations like those required for QFs to receive long-term contract
590 prices.” (Mr. Davis rebuttal, lines 439 – 441).

591 **Q. Do you agree that allowing rooftop solar customers to remain on the rate current**
592 **at the time of their installation for an extended period of time results in**
593 **asymmetrical risk for non-participating customers?**

594 A. No. A long-term levelized rate is necessarily based on forecasts of the future, and the
595 impact of errors in the forecast is more significant for a rooftop solar customer than for
596 a non-participating customer. A rate that is developed today based on a long-term
597 forecast of the future could overestimate the future value of energy, but it may also
598 underestimate the value of future energy. The Commission regularly approves multi-

599 million dollar Company investments based upon forecasts of the future, and customers
600 are responsible for paying for the long-term costs of utility investments even if the
601 future reality does not come to match forecasts. Allowing rooftop solar customers to
602 remain on a fixed rate for 20 years is no different. Further, the risk of a long-term fixed
603 rate based on today's energy costs is asymmetrical in favor of all customers. Given the
604 low energy prices available today, there is much more potential for the future cost of
605 energy to rise above forecasts, and much less potential for energy prices to fall
606 significantly below what is forecast.

607 **Q. How do you respond to the Division's concern that solar customers are not subject**
608 **to long-term delivery obligations?**

609 A. Rooftop solar installations are extremely small, relative to the system peak. It is
610 unlikely that a rooftop solar customer would choose to remove solar panels from their
611 rooftop, since doing so would negatively impact the value of their investment.
612 Nonetheless, if a customer were to remove their panels, the impact on the Company's
613 system (and non-participating customers) would be negligible. It is possible that a solar
614 customer will export less energy than expected over the term of their solar installation,
615 but it is also possible that a customer will deliver more energy than expected – for
616 example, if a solar customer's children left for college, or if the customer were to
617 transition from staying home to a job outside the home.

618 **Q. Does a one-year rate, updated annually, put solar customers at risk?**

619 A. Yes, so much so that it is unlikely that any customers would invest in rooftop solar. If
620 the Export Credit Rate is updated annually, prospective customers will not be able to
621 analyze the potential payback of their investment. As I stated in direct testimony,
622 evaluating the financial feasibility of rooftop solar requires customers to evaluate

623 whether their long-term anticipated bill savings justify the high upfront cost of a solar
624 installation. Without certainty regarding the term of their Export Credit Rate, it's
625 impossible for a potential solar customer to realistically estimate the financial impact of
626 installing solar. Individuals and businesses cannot make good decisions in an uncertain
627 regulatory environment. For this reason, it is important to provide a stable regulatory
628 environment in which customers can evaluate whether a long-term investment in
629 rooftop solar is in their best interest.

630 **Q. Are there other situations in which the Commission has dealt with the need to**
631 **balance the risk of a long-term rate with the need to provide certainty?**

632 A. Yes. In Docket No. 15-035-53 the Commission found that a 15-year contract is in the
633 public interest for QFs, noting “We believe a 15- year term strikes the appropriate
634 balance at this time by mitigating a fair portion of the fixed-price risk ratepayers would
635 otherwise bear while allowing QF developers and their financiers a reasonable
636 opportunity to adjust to this more modest change in business practice.”²² Further, in the
637 case of small QFs, the Commission has found that it is reasonable to allow projects
638 smaller than 3MW to receive a fixed published price, rather than a custom price
639 calculated specifically for the resource. The fixed price is available until it has been
640 used by 25 MW of resources, which strikes a balance between the need to keep the rate
641 up to date and the benefits of avoiding burdensome regulatory proceedings.²³ More
642 specifically to rooftop solar, the Commission also approved the Settlement Stipulation,

²² Docket No. 15-035-53, Public Service Commission Order issued January 7, 2016.
<https://pscdocs.utah.gov/electric/15docs/1503553/2712701503553o.pdf> Page 20.

²³ Rocky Mountain Power Schedule 37
https://www.rockymountainpower.net/content/dam/pcorp/documents/en/rockymountainpower/rates-regulation/utah/rates/037_Avoided_Cost_Purchases_from_Qualifying_Facilities.pdf

643 which allowed Net Metering customers to remain on their rate for 18 years, and
644 allowed Transition Program customers to receive a fixed Export Credit Rate for up to
645 15 years.

646 **Q. What is your recommendation?**

647 A. I recommend that individual customers be allowed to remain on the Export Credit Rate
648 current on the date of their interconnection application for 20 years.

649 **B) Export Credit Rate Update**

650 **Q. How often should the Export Credit Rate be updated?**

651 A. It is reasonable to update the Export Credit Rate regularly to ensure that it remains
652 aligned with current costs and forecasts. However, annual updates, as proposed by the
653 Company, will create a significant new regulatory burden. I support Vote Solar's
654 proposal to update the Export Credit Rate concurrent with future rate cases. I continue
655 to recommend that individual solar customers remain on the Export Credit value
656 current on their date of interconnection approval for 20 years.

657 **C) Time of Use Rates**

658 **Q. The Company has proposed on-peak and off-peak values for the Export Credit**
659 **Rate that vary seasonally from 1.3 cents per kilowatt-hour to 2.6 cents per**
660 **kilowatt-hour. How do you respond?**

661 A. The Company's proposed on-peak and off-peak rates will make it impossible for
662 customers to forecast savings from a solar installation, and will not motivate significant
663 changes to customer behavior. Customers do not currently have access to historical
664 information about their usage during the Company's proposed on-peak and off-peak
665 periods, and so cannot reasonably estimate their savings from installing solar under the
666 Company's proposed rate design. Further, the value of energy exports during the on-

667 peak and the off-peak rate are both so low that customers will be discouraged from ever
668 exporting energy, regardless of the time of day. The Company's proposed on-peak and
669 off-peak rates do not send customers a meaningful price signal to change behavior and
670 they further complicate a rate that is already difficult for customers to understand and
671 evaluate.

672 **Q. Is there a better way to send solar customers a price signal that encourages energy**
673 **use to keep grid costs low?**

674 A. Yes. Instead of differentiating on-peak and off-peak prices for exported energy, it is
675 more appropriate to create a Time of Use rate that applies to energy consumption for all
676 customers. A well-designed Time of Use rate for energy consumption sends both solar
677 and non-solar customers a price signal to avoid energy usage at times when system
678 costs are high. Customers may then choose whether it is in their best interest to take any
679 number of actions to avoid higher on-peak energy charges, including conserving
680 energy, purchasing more efficient appliances, or installing rooftop solar.

681 **Q. What do you recommend?**

682 A. I recommend that the Commission reject the Company's proposed on-peak and off-
683 peak rates.

684 **D) Hourly netting**

685 **Q. Company witness Mr. Meredith asserts that instantaneous netting is simpler for**
686 **customers to understand than hourly netting and that it will be easier for**
687 **customers to match load with generation on an instantaneous basis. Do you agree?**

688 A. No. Solar panel generation and home energy consumption vary from minute to minute
689 in ways that customers cannot predict or respond to. A passing cloud could temporarily
690 curtail solar generation, but customers cannot respond by curtailing energy usage in real

691 time. Hourly netting helps customers to understand that it is advantageous to shift
692 energy usage to sunnier hours of the day. Instantaneous netting is so precise that it is
693 meaningless. Instantaneous netting will make it very difficult for solar customers to
694 review their bills and understand how they are being charged for electricity. The
695 Company is currently implementing technology that will allow residential customers to
696 review their energy charges on an hourly basis. I am not aware of any way that
697 customers can review a record of their instantaneous energy usage. I continue to
698 recommend that the Export Credit Rate is not be netted more frequently than hourly in
699 order to ensure that it is comprehensible and actionable.

700 **E) Customer Generation Meter Fees**

701 **Q. The Company's proposal includes a metering fee of \$160 for new solar customers.**

702 **How do you respond?**

703 A. All customers have electrical meters, and the cost of replacing meters as newer meters
704 become available and older meters become obsolete is typically paid for by all
705 customers through general rates. The Company plans to begin replacing the meters of
706 175,000 customers with new Advanced Meter Infrastructure (AMI) in 2021, at an
707 estimated cost of \$77.9 million in capital costs.²⁴ The cost of replacing these meters
708 will be included in rates. It is discriminatory to charge solar customers for the full cost
709 of their new meter when they would otherwise have received a new meter in the near
710 future as part of the Company's AMI project. I recommend that the Commission reject
711 the Company's proposed metering fee.

²⁴ Docket No. 20-035-04, Direct Testimony of Curtis Mansfield.
<https://pscdocs.utah.gov/electric/20docs/2003504/313716DirTestCurtisBMansfieldRMP5-8-2020.pdf> Lines 503 – 600.

712 **F) Other Proposed Tariff Changes**

713 **Q. Do you have other recommendations related to the customer generation tariff?**

714 A. Yes, I recommend a small change to the Schedule 136 tariff. The Settlement Stipulation
715 specifies that customers can participate in the Transition Program if they submit an
716 interconnection application before (a) the date on which the Transition Cap is reached,
717 or (b) the date the Commission issues a final order in the Export Credit Proceeding.²⁵ It
718 does not specify how long a prospective solar customer may take to complete their
719 solar installation once their interconnection application has been submitted. This is
720 likely to create confusion for customers and installers as the Transition Program closes.
721 The Settlement Stipulation provided clear guidance regarding the amount of time
722 customers who have applied to interconnect under Schedule 135 may take to complete
723 their installation,²⁶ and there is clear language in the Schedule 135 tariff to that effect:

724 *13. A Customer submitting an application for service under this Schedule has 12*
725 *months from the Customer's receipt of confirmation that the interconnection*
726 *request is approved to interconnect. Large Non-Residential Customers will be*
727 *allowed a six-month extension of the 12-month interconnection deadline upon*
728 *request.*²⁷
729

730 The Company has also proposed that Schedule 136 customers have 12 months to
731 complete their installation, as described in direct testimony filed February 3, 2020 (Ms.
732 Steward direct, lines 195 – 197). I recommend that the Schedule 136 tariff be amended

²⁵ Docket No. 14-035-114, Settlement Stipulation, August 28, 2017.
<https://pscdocs.utah.gov/electric/14docs/14035114/296270RMPSettleStip8-28-2017.pdf>

Paragraph 15.

²⁶ Docket No. 14-035-114, Settlement Stipulation, August 28, 2017. Paragraph 12

²⁷ Rocky Mountain Power Schedule 135

https://www.rockymountainpower.net/content/dam/pcorp/documents/en/rockymountainpower/rates-regulation/utah/rates/135_Net_Metering_Service.pdf

733 to include the same clear guidance allowing Transition Program customers 12 – 18
734 months to complete their installation.

735 **Q. Company witness Mr. Meredith proposes that batteries be listed as an eligible**
736 **technology under the Proposed Schedule 137 tariff. Do you support this change?**

737 A. No, not at this time. This change was first proposed in rebuttal testimony filed in July.
738 Up to this point, the purpose of this proceeding – including two rounds of testimony,
739 months of discovery, and a technical conference – has been to evaluate the costs and
740 benefits of exported energy from rooftop solar. I generally support the creation of
741 tariffs and programs that incentivize customer-sited batteries or allow the utility to
742 leverage energy from distributed batteries to provide benefits to the grid. I also believe
743 that customer-sited batteries will be an important resource in the future, and that
744 distributed batteries will contribute to a more flexible and resilient grid. However, it is
745 simply too late in this proceeding to expect parties to analyze whether the export credit
746 values and rate designs that have been proposed for distributed solar are also
747 appropriate for energy storage. Further, there are many areas of disagreement when it
748 comes to determination of a just and reasonable rate design for exported solar energy,
749 and it is a disservice to the Commission’s investigation to introduce a new element at
750 this point.

751 **Q. What do you recommend?**

752 A. I recommend that the creation of a tariff that appropriately compensates customers with
753 batteries for energy they export to the grid be addressed through a separate proceeding.

754

755

756

757 **VII. SUMMARY OF UCE PROPOSAL AND RECOMMENDATIONS**

758 **Q. Please summarize your final proposal and recommendations.**

759 A. I recommend that the Commission reject the Company’s proposed Export Credit Rate
760 and approve a value of 10.19 cents per kilowatt-hour for the Export Credit Rate, based
761 on the utility-based costs and benefits identified by Vote Solar. Should the Commission
762 approve a different methodology for determination of the Export Credit Rate value, I
763 recommend that it include the following:

- 764 • A calculation of avoided energy costs that is based on market data that is transparent
765 and accessible to stakeholders. I recommend the use of forward-looking market
766 price forecasts.
- 767 • A calculation of generation, transmission, and distribution capacity value that is
768 based on the export profile of aggregated distributed solar resources and uses a
769 capacity contribution based on the Company’s current resource portfolio, rather than
770 forecasting the capacity contribution for solar assuming that all solar planned in the
771 Integrated Resource Plan has already been installed.
- 772 • A calculation of avoided carbon compliance costs that is based on a reasonable
773 forecast of future costs.
- 774 • Placeholders for grid support services and for reliability and resilience so that these
775 benefits can be quantified in the future.

776
777 I also recommend that the Commission approve an Export Credit Rate that provides
778 customers with sufficient certainty about the value of an investment in rooftop solar and
779 allows customers to reasonably estimate anticipated savings under the Export Credit
780 Rate. Specifically, I recommend that the Commission approve an Export Credit Rate
781 that:

- 782 • Allows individual customers to remain on the Export Credit Rate current on the time
783 of their interconnection application for 20 years.

- 784
- Is updated concurrent with future rate cases, as recommended by Vote Solar.
- 785
- Includes a flat Export Credit Rate, and I recommend the Commission reject the
- 786
- Company’s proposal to create on-peak and off-peak Export Credit Rate values.
- 787
- Is netted hourly in order to ensure that it is comprehensible and actionable.

788

789 If the Commission approves a value for the Export Credit Rate that is less than the

790 current Transition Program value, I recommend the Export Credit Rate be phased in to

791 avoid serious adverse economic impacts. Specifically, I recommend that:

- 792
- The ~~Transition Program rate be maintained until the Transition Program Cap has~~
- 793 ~~been reached~~ Export Credit rate be set at the value of the Transition Program Rate
- 794 until rooftop solar capacity equivalent to the Transition Program Cap has been
- 795 installed.

796

 - The Commission approve a glide path for phasing in the Export Credit Rate

797 incrementally.

798

799 Finally, regarding the tariff for the Transition Program and the Export Credit Rate,

800 Schedules 136 and 137, I recommend that:

- 801
- Schedule 136 be amended to specify that Transition Program customers who
- 802 complete an interconnection application before the close of the Transition Program
- 803 will have 12 – 18 months to complete their installation, consistent with the terms of
- 804 Schedule 135.

805

 - The Commission reject the Company’s proposal to add battery storage to Schedule

806 137 at this time.

807

808 **Q. Does that conclude your surrebuttal testimony?**

809 A. Yes.