

Hunter Holman Utah Bar No. (15165)
Utah Clean Energy
1014 2nd Ave.
Salt Lake City, UT 84103
(801) 363-4046
hunter@utahcleanenergy.org
Attorney for Utah Clean Energy

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 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 Export Credit rate be set at the value of the Transition Program Rate until
99 rooftop solar capacity equivalent to the Transition Program Cap has been installed.

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

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

104 • Schedule 136 be amended to specify that Transition Program customers who
105 complete an interconnection application before the close of the Transition Program
106 will have 12 – 18 months to complete their installation, consistent with the terms of
107 Schedule 135.

108 • The Commission reject the Company’s proposal to add battery storage to Schedule
109 137 at this time.

110
111 **III. THE COMPANY’S PROPOSAL WILL SEVERELY CURTAIL ROOFTOP**
112 **SOLAR ADOPTION IN UTAH**

113 **Q. Witnesses for the Company and the Division assert that rooftop solar growth in**
114 **2018 and 2019 shows that the market for rooftop solar has not been negatively**
115 **impacted by the changes implemented through the Transition Program. How do**
116 **you respond?**

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

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

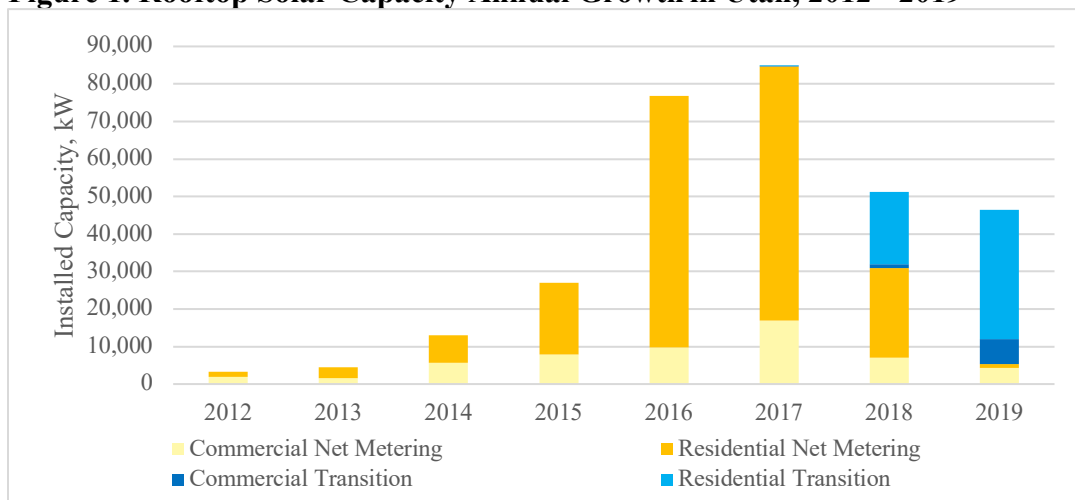
123 A. No. Mr. Davis’ analysis is misleading because it focuses only on customers using
124 Schedule 136. The Division’s analysis states that the 2019 net metering report
125 illustrates “a robust increase in solar facilities... equating to a year over year increase of
126 203 percent for Schedule 136 customers.” (Mr. Davis direct, lines 428 – 430). The

127 Schedule 136 tariff was opened (and the preceding tariff, Schedule 135, was closed to
128 new customers) on November 15, 2017. Even once a prospective solar customer has
129 completed an interconnection application, it can take weeks and likely months to
130 schedule and complete their installation. As a result, more than half of the customers
131 who installed solar in 2018 did so under Schedule 135, and not Schedule 136. The
132 Division’s analysis captures *the uptake of Schedule 136*, a brand new tariff, and not
133 growth in solar adoption overall.

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

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

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



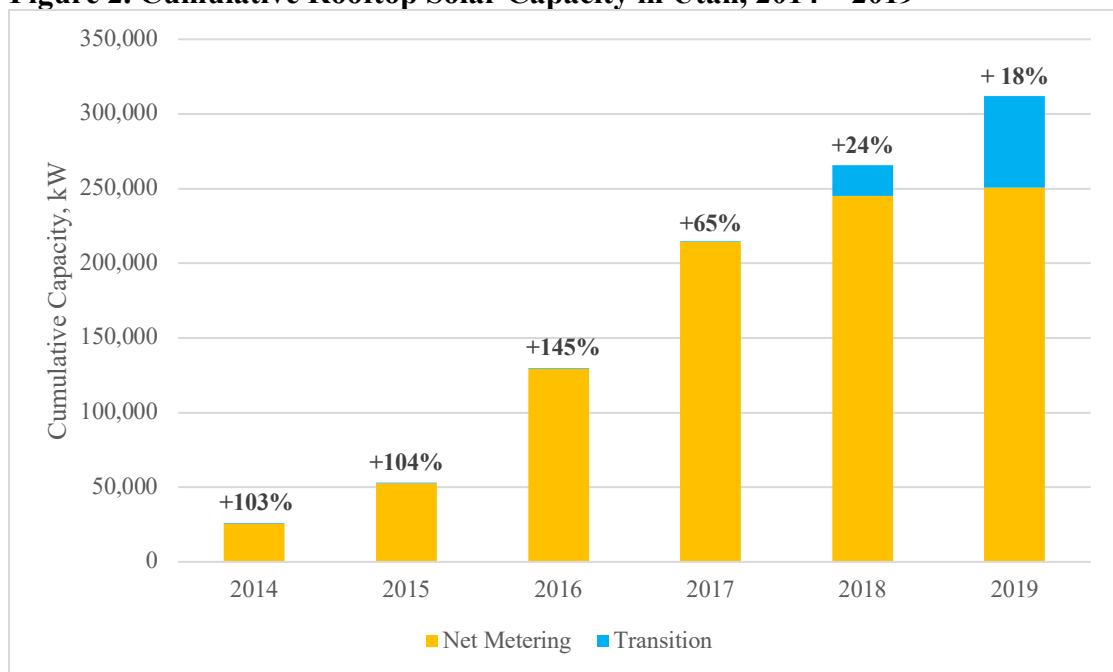
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² As reported in VoteSolar Data Request 9.8.

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

145 A. Figure 2 illustrates the cumulative growth of rooftop solar capacity in Utah from 2014 –
146 2019. When both Schedule 135 and Schedule 136 customers are considered, there was
147 18% year over year growth in the number of solar customers in 2019 compared to
148 2018. This is a significant decrease compared to previous years, in which there was
149 24% year-over-year growth in 2018, and 65% year-over-year growth in 2017.

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



151 **Q. Please summarize your findings regarding solar adoption in recent years.**
152

153 A. The cumulative amount of rooftop solar in Utah has continued to increase in 2018 and
154 2019, however the rate of growth has fallen considerably compared to the period before
155 the implementation of the Transition Program.
156

³ As reported in VoteSolar Data Request 9.8.

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

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

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

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

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

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

189 **Q. In rebuttal testimony, Mr. Davis states that “Navigant’s report illustrates that**
190 **simple payback for private generation occurs at ten years.” (Mr. Davis rebuttal**
191 **lines 437 – 438.) Does the report referenced by Mr. Davis illustrate that simple**
192 **payback for private generation occur at ten years?**

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

199

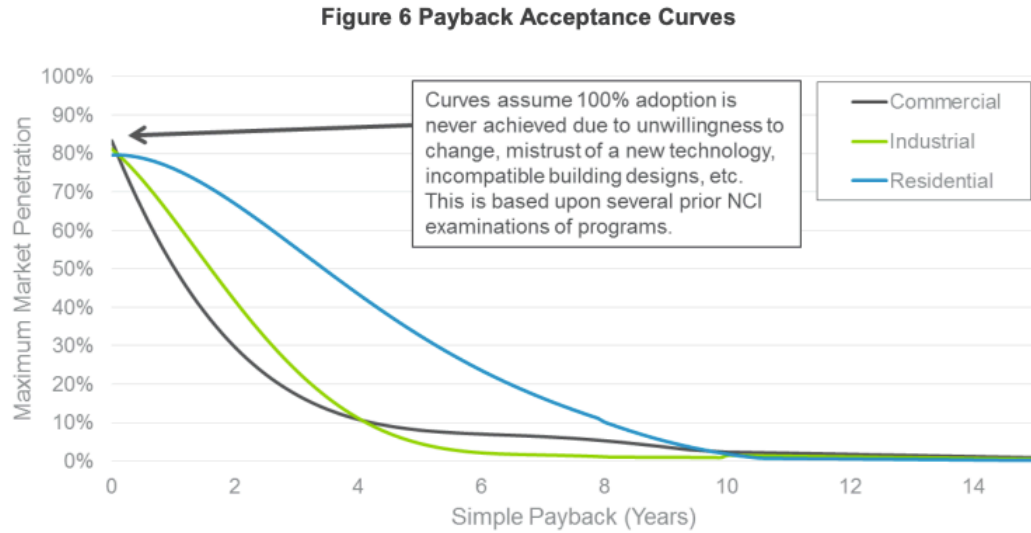
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⁴ Exhibit A: DPU to UCE Data Request Response Set 3 – 8 – 27 - 2020

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203
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Figure 3. Payback Acceptance Curves from Navigant Private Generation Long-Term Resource Assessment (2019 – 2038)⁵



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.

205

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

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

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

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

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

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

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

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

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

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.

234 A. Probably not. A survey commissioned by Rocky Mountain Power to inform the
235 development of the Subscriber Solar program found that 48% of general residential
236 customers were likely to consider purchasing or leasing a rooftop solar power system
237 for their home in the next five years.⁹ This finding demonstrates that there are many
238 more “non-participating” customers who are interested in installing rooftop solar than
239 there are customers with solar currently.

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

245 A. No, experts retained by Utah Clean Energy and Vote Solar during the Commission’s
246 previous investigation of the net metering program found that revenue collected from
247 customers with rooftop solar was generally sufficient to cover their cost of service. In
248 Docket No. 14-035-114, our expert Ms. Melissa Whited found that the Company’s own
249 cost of service analysis demonstrated that customers with rooftop solar reduced revenue
250 requirements for all classes, resulting in lower costs to other customers, not higher
251 costs.¹⁰ Company witness Mr. Robert Meredith found that revenue collected from

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

252 Schedule 6 and Schedule 8 net metering customers *exceeded* their cost of service.¹¹

253 Finally, testimony from Dr. David DeRamus filed on behalf of Vote Solar disputed the
254 valuation of bill credits used by Mr. Meredith in his analysis, and found that the
255 Company was recovering 91% of the costs to serve residential net metering
256 customers.¹²

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

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

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

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.

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/>

271 A. Yes. The Division’s concern that a much higher export credit value would cause an
272 “unsustainable frenzy” highlights an issue with any policy change – to the extent that
273 some actors will be worse off after the policy change, they will rush to take action
274 before it takes effect. Those who install solar immediately after the change will be
275 significantly disadvantaged relative to customers who installed solar prior to the
276 change. The more significant the policy change, the more severe the disruption. One
277 way to manage this is gradual implementation of a new policy, as I have recommended
278 in rebuttal testimony.

279 **Q. Please reiterate your recommendation.**

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

291
292
293
294

295

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

296

Etc. until final value of Export Credit is reached.

297

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

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Q. Ms. Steward characterizes any export credit rate above what the Company has

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proposed as a subsidy that is “contrary to state policy that recognizes a phase-out

300

of tax credits that support the solar industry.” (Ms. Steward direct, lines 120 –

301

121) Do you agree?

302

A. First, I do not agree that an export credit rate greater than what the Company has

303

proposed amounts to a subsidy. The Company’s proposal omits consideration of

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quantifiable benefits that exported rooftop solar energy provides, as discussed in

305

Section V. I also do not agree that a solar export rate that supports the continued growth

306

of the solar industry is contrary to state policy. In fact, the Company’s proposal is

307

contrary to nearly two decades of state policy that has created conditions to foster the

308

growth of a significant solar industry in order to realize the benefits of clean energy

309

production, jobs, and economic development to the state.

310

Q. How has state policy contributed to the development of the market for rooftop

311

solar in Utah?

312

A. Nearly two decades of state policy choices have created and nurtured the market for

313

rooftop solar in Utah. Utah’s net metering policy was enacted during the 2002

314

legislative session in order to provide a practical means through which homes and

315 businesses can install solar for the purpose of meeting their own energy needs. From
316 2013 – 2016, Rocky Mountain Power offered customers an incentive to install solar
317 through the Utah Solar Incentive Program. Utah currently offers a state tax credit for
318 residential and commercial solar installations, equal to up to \$1,600 through 2020. The
319 state tax credits begin to phase down gradually in 2021 and they expire in 2024. The tax
320 credit phase out resulted from H.B. 23, passed during the 2017 legislative session. At
321 the time, net metering was still in place, the cost of solar had fallen significantly, and
322 rooftop solar adoption was growing quickly. Legislators were concerned that the cost of
323 the tax credit was also growing each year, but recognized that ending the tax credit
324 immediately would be disruptive and harmful to the solar industry. Instead, the bill
325 created a gradual tax credit phase out beginning in 2019, which helped to avoid severe
326 impacts on the solar industry. The Transition Program was created in late 2017, several
327 months after the state tax credit phase out schedule was determined. In recognition that
328 the Transition Program reduces the economics of going solar and was likely to slow the
329 adoption of solar, the initial year of the tax credit step down was delayed from 2019 to
330 2021, allowing solar customers to take advantage of the full \$1,600 tax credit for two
331 extra years.¹⁵

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

333 A. The Company’s proposal is counter to state policy in Utah, which has recognized the
334 value of promoting access to rooftop solar and crafted policies to support this
335 technology for nearly two decades. State policy has also sought to mitigate severe

¹⁵ Utah S.B. 141 2018.

336 impacts to the industry through gradual implementation of policy changes. In contrast,
337 the Company’s proposal would have severe adverse impacts on the solar industry, and
338 is not consistent with state policy that has committed taxpayer dollars to allow a solar
339 industry to take hold in Utah. If the Commission approves a rate lower than the current
340 Transition Program rate, then a gradual implementation of that rate is aligned with state
341 policy that has sought to find a reasonable balance between incentivizing the growth of
342 a beneficial technology and using taxpayer dollars wisely.

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

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

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

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

357 A. No. Distributed rooftop solar is capable of providing benefits that distant utility-scale
358 resources cannot provide. Rooftop solar generates electricity close to load, and so
359 should be compensated appropriately for avoiding costs associated with line losses and

360 transmission and distribution costs. Further, rooftop solar is part of a portfolio of
361 distributed technologies that can be used as “non-wires alternatives” to avoid
362 investments in new “poles and wires” infrastructure. Customers will only realize the
363 benefits that distributed generation provides if rates account for the value of distributed
364 rooftop solar appropriately.

365 **A) Avoided Energy**

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

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

383 important that individual solar customers are able to remain on the Export Credit Rate
384 current at the time of their interconnection application for 20 years.

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

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

391 **B) Avoided Capacity**

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

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

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

402 A. Yes. As I discussed in rebuttal testimony, Table 5.12 in the 2019 IRP includes a
403 forecast of rooftop solar’s contribution to reduce summer and winter peak loads.
404 Additionally, the 2019 IRP includes two sensitivities representing “low” and “high”
405 levels of solar adoption, S-04 and S-05. According to Table 8.23 in the IRP the “high”

406 S-05 sensitivity delays the need for a new thermal plant by one year, from 2029 to
407 2030.¹⁶

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

410 A. The Company states that the avoided cost price for Schedule 37 resources calculated
411 using the PDDRR methodology is “a reasonable starting point for determining the
412 value of both capacity and energy from CG exports.” (Mr. MacNeil rebuttal, 862 –
413 864).

414 **Q. Do you agree?**

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

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

424 A. The Company states that it is important to account for resource mix when calculating
425 the capacity contribution of a new resource (Mr. MacNeil rebuttal, lines 442 – 443). As

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

426 additional solar resources are added, the likelihood of loss of load during daylight hours
427 decreases and so the capacity contribution of additional solar resources declines.

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

430 A. Yes. Mr. MacNeil references capacity contribution studies conducted in the 2019 IRP,
431 including the “Equivalent Conventional Power” (“ECP”) study. According to Table N.1
432 of the 2019 IRP¹⁷, and the rebuttal testimony of Mr. MacNeil, the Company determined
433 that the average capacity contribution of the solar resources in the Company’s initial
434 portfolio is 43%. (Mr. MacNeil rebuttal, lines 460 – 465).

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

437 A. Not as far as I’m aware.

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

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

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

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

450 A. Not currently. Determination of the Export Credit Rate in this proceeding should be
451 based on a current evaluation of the capacity contribution of distributed solar resources,
452 and not an evaluation of what the capacity contribution may be after resource additions
453 in the distant future. The exact composition of the Company’s preferred portfolio can
454 and will change over time, especially for resources identified in the later years of the
455 planning horizon.

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

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

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

463 A. Yes. Changes to customer load profiles will also influence the capacity contribution of
464 all resources, including solar. The Company’s IRP calls for significant investments in
465 battery storage resources, as do other utilities in the west. The continued addition of
466 solar resources to the grid creates an opportunity to leverage demand-side programs
467 that take advantage of low energy prices during daylight hours. Emerging technologies
468 will create new opportunities for demand-side management programs. For example,
469 some utilities are using customer-sited heat pump water heaters to provide services akin

470 to battery storage by superheating water during the day, shifting load away from the
471 early evening hours.¹⁸ I expect that utilities will find innovative ways to make use of
472 technology to take advantage of low-cost power during the day, which improves the
473 capacity contribution of solar. Load forecasts that don't account for the capabilities of
474 controllable technologies or the growth of technologies like energy storage may not
475 accurately capture the future capacity contribution of solar resources.

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

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

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

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

490 **C) Ancillary services**

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>

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

492 A. Parties have provided a detailed discussion of the ways in which distributed solar
493 interacts with grid infrastructure, the types of ancillary services and grid services
494 rooftop solar can provide, and the potential for new technology like smart inverters to
495 improve the value of ancillary and grid services. This category of value is emerging,
496 and no party has quantified ancillary services for the purpose of this proceeding.
497 However, it is clear that the growth of communications and control technologies, and
498 particularly smart inverters, will enable solar to provide services that benefit the grid as
499 a whole. I recommend that the Commission create a placeholder for the benefits of
500 ancillary services so that they can be quantified in the future.

501 **D) Reliability and resilience**

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

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

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

517 A. Yes. As one example, Southern California Edison is planning to build a city-wide
518 microgrid that will leverage privately owned, customer-sited distributed energy
519 resources to support essential city facilities.¹⁹ A rate design that discourages adoption of
520 rooftop solar will limit Utah’s ability to leverage innovative resiliency solutions in the
521 future.

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

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

526 **E) Climate and environmental impacts**

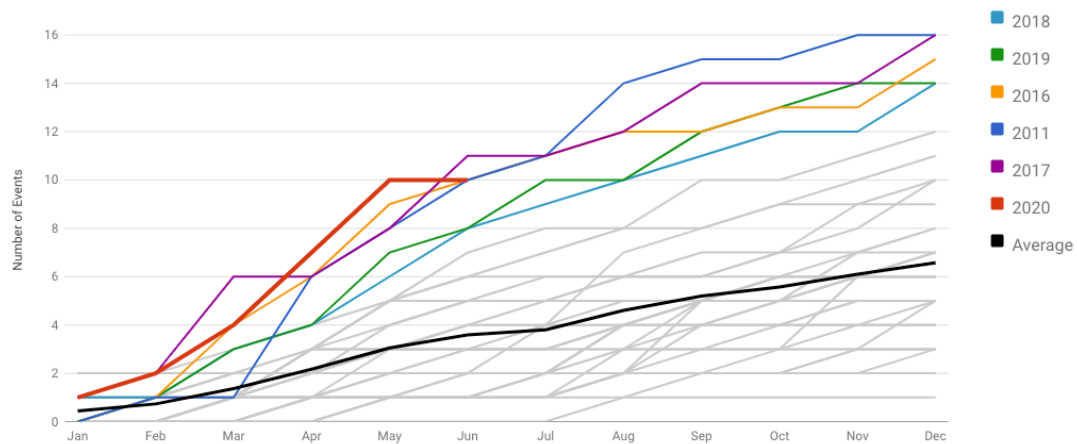
527 **Q. The Company objects to consideration of carbon compliance costs because “There**
528 **are no rules or laws in place which would result in Utah customers becoming**
529 **responsible for costs associated with carbon dioxide in the future, and in**
530 **particular during the 2021 export credit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

532 A. There is widespread scientific consensus that climate change, caused primarily by the
533 burning of fossil fuels for energy, is a major contributor to global warming and the
534 associated changing climatic conditions. Impacts on Utahns include drought, prolonged
535 heatwaves, more frequent and more devastating forest fires, increased catastrophic

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

536 storms and more. As of July, 2020 had already become the seventh consecutive year in
537 which the United States experienced at least 10 billion-dollar weather disasters. As
538 shown in Figure 5, until 2015 there were only four other years on record that reached
539 this threshold.

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



542 *Statistics valid as of July 8, 2020.*

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

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

548 A. I recommend that the Commission include the avoided cost of carbon compliance, at a
549 minimum, in the Export Credit Rate. Omission of the value of carbon compliance from
550 the Export Credit Rate is discriminatory to solar customers because it does not
551 recognize the benefits of the zero-carbon energy they provide to the grid. I support Vote

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

552 Solar’s value for avoided carbon compliance costs, which is based on a CO₂ price
553 scenario used in the IRP that represents a reasonable and moderate estimate of the costs
554 of carbon compliance.

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

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

²¹ NARUC Rate Design Manual, Page 20.

573 economic benefits of rooftop solar and consider whether the Export Credit Rate design
574 – as a whole – is likely to result in levels of solar adoption that help to mitigate the
575 serious and costly risks that climate change poses to Utahns.

576 **VI. RATE DESIGN**

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

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

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

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

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

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

595 A. No. A long-term levelized rate is necessarily based on forecasts of the future, and the
596 impact of errors in the forecast is more significant for a rooftop solar customer than for

597 a non-participating customer. A rate that is developed today based on a long-term
598 forecast of the future could overestimate the future value of energy, but it may also
599 underestimate the value of future energy. The Commission regularly approves multi-
600 million dollar Company investments based upon forecasts of the future, and customers
601 are responsible for paying for the long-term costs of utility investments even if the
602 future reality does not come to match forecasts. Allowing rooftop solar customers to
603 remain on a fixed rate for 20 years is no different. Further, the risk of a long-term fixed
604 rate based on today's energy costs is asymmetrical in favor of all customers. Given the
605 low energy prices available today, there is much more potential for the future cost of
606 energy to rise above forecasts, and much less potential for energy prices to fall
607 significantly below what is forecast.

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

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

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

620 A. Yes, so much so that it is unlikely that any customers would invest in rooftop solar. If
621 the Export Credit Rate is updated annually, prospective customers will not be able to
622 analyze the potential payback of their investment. As I stated in direct testimony,
623 evaluating the financial feasibility of rooftop solar requires customers to evaluate
624 whether their long-term anticipated bill savings justify the high upfront cost of a solar
625 installation. Without certainty regarding the term of their Export Credit Rate, it's
626 impossible for a potential solar customer to realistically estimate the financial impact of
627 installing solar. Individuals and businesses cannot make good decisions in an uncertain
628 regulatory environment. For this reason, it is important to provide a stable regulatory
629 environment in which customers can evaluate whether a long-term investment in
630 rooftop solar is in their best interest.

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

633 A. Yes. In Docket No. 15-035-53 the Commission found that a 15-year contract is in the
634 public interest for QFs, noting “We believe a 15- year term strikes the appropriate
635 balance at this time by mitigating a fair portion of the fixed-price risk ratepayers would
636 otherwise bear while allowing QF developers and their financiers a reasonable
637 opportunity to adjust to this more modest change in business practice.”²² Further, in the
638 case of small QFs, the Commission has found that it is reasonable to allow projects
639 smaller than 3MW to receive a fixed published price, rather than a custom price
640 calculated specifically for the resource. The fixed price is available until it has been

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.

641 used by 25 MW of resources, which strikes a balance between the need to keep the rate
642 up to date and the benefits of avoiding burdensome regulatory proceedings.²³ More
643 specifically to rooftop solar, the Commission also approved the Settlement Stipulation,
644 which allowed Net Metering customers to remain on their rate for 18 years, and
645 allowed Transition Program customers to receive a fixed Export Credit Rate for up to
646 15 years.

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

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

650 **B) Export Credit Rate Update**

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

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

658 **C) Time of Use Rates**

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

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

662 A. The Company's proposed on-peak and off-peak rates will make it impossible for
663 customers to forecast savings from a solar installation, and will not motivate significant
664 changes to customer behavior. Customers do not currently have access to historical
665 information about their usage during the Company's proposed on-peak and off-peak
666 periods, and so cannot reasonably estimate their savings from installing solar under the
667 Company's proposed rate design. Further, the value of energy exports during the on-
668 peak and the off-peak rate are both so low that customers will be discouraged from ever
669 exporting energy, regardless of the time of day. The Company's proposed on-peak and
670 off-peak rates do not send customers a meaningful price signal to change behavior and
671 they further complicate a rate that is already difficult for customers to understand and
672 evaluate.

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

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

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

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

685 **D) Hourly netting**

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

689 A. No. Solar panel generation and home energy consumption vary from minute to minute
690 in ways that customers cannot predict or respond to. A passing cloud could temporarily
691 curtail solar generation, but customers cannot respond by curtailing energy usage in real
692 time. Hourly netting helps customers to understand that it is advantageous to shift
693 energy usage to sunnier hours of the day. Instantaneous netting is so precise that it is
694 meaningless. Instantaneous netting will make it very difficult for solar customers to
695 review their bills and understand how they are being charged for electricity. The
696 Company is currently implementing technology that will allow residential customers to
697 review their energy charges on an hourly basis. I am not aware of any way that
698 customers can review a record of their instantaneous energy usage. I continue to
699 recommend that the Export Credit Rate is not be netted more frequently than hourly in
700 order to ensure that it is comprehensible and actionable.

701 **E) Customer Generation Meter Fees**

702 **Q. The Company's proposal includes a metering fee of \$160 for new solar customers.**
703 **How do you respond?**

704 A. All customers have electrical meters, and the cost of replacing meters as newer meters
705 become available and older meters become obsolete is typically paid for by all
706 customers through general rates. The Company plans to begin replacing the meters of
707 175,000 customers with new Advanced Meter Infrastructure (AMI) in 2021, at an

708 estimated cost of \$77.9 million in capital costs.²⁴ The cost of replacing these meters
709 will be included in rates. It is discriminatory to charge solar customers for the full cost
710 of their new meter when they would otherwise have received a new meter in the near
711 future as part of the Company's AMI project. I recommend that the Commission reject
712 the Company's proposed metering fee.

713 **F) Other Proposed Tariff Changes**

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

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

725 *13. A Customer submitting an application for service under this Schedule has 12*
726 *months from the Customer's receipt of confirmation that the interconnection*
727 *request is approved to interconnect. Large Non-Residential Customers will be*

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.

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

728 *allowed a six-month extension of the 12-month interconnection deadline upon*
729 *request.*²⁷

730
731 The Company has also proposed that Schedule 136 customers have 12 months to
732 complete their installation, as described in direct testimony filed February 3, 2020 (Ms.
733 Steward direct, lines 195 – 197). I recommend that the Schedule 136 tariff be amended
734 to include the same clear guidance allowing Transition Program customers 12 – 18
735 months to complete their installation.

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

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

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

750 and it is a disservice to the Commission’s investigation to introduce a new element at
751 this point.

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

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

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

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

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

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

774
775 I also recommend that the Commission approve an Export Credit Rate that provides
776 customers with sufficient certainty about the value of an investment in rooftop solar and

777 allows customers to reasonably estimate anticipated savings under the Export Credit
778 Rate. Specifically, I recommend that the Commission approve an Export Credit Rate
779 that:

- 780 • Allows individual customers to remain on the Export Credit Rate current on the time
781 of their interconnection application for 20 years.
- 782 • Is updated concurrent with future rate cases, as recommended by Vote Solar.
- 783 • Includes a flat Export Credit Rate, and I recommend the Commission reject the
784 Company's proposal to create on-peak and off-peak Export Credit Rate values.
- 785 • Is netted hourly in order to ensure that it is comprehensible and actionable.

786
787 If the Commission approves a value for the Export Credit Rate that is less than the
788 current Transition Program value, I recommend the Export Credit Rate be phased in to
789 avoid serious adverse economic impacts. Specifically, I recommend that:

- 790 • The Export Credit rate be set at the value of the Transition Program Rate until
791 rooftop solar capacity equivalent to the Transition Program Cap has been installed.
- 792 • The Commission approve a glide path for phasing in the Export Credit Rate
793 incrementally.

794
795 Finally, regarding the tariff for the Transition Program and the Export Credit Rate,
796 Schedules 136 and 137, I recommend that:

- 797 • Schedule 136 be amended to specify that Transition Program customers who
798 complete an interconnection application before the close of the Transition Program
799 will have 12 – 18 months to complete their installation, consistent with the terms of
800 Schedule 135.
- 801 • The Commission reject the Company's proposal to add battery storage to Schedule
802 137 at this time.

803
804 **Q. Does that conclude your surrebuttal testimony?**

805 A. Yes.