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BEFORE THE PUBLIC SERVICE COMMISSION OF UTAH

In the Matter of the Application of Rocky
Mountain Power to Implement the Programs
Authorized by the Sustainable Transportation
and Energy Plan Act

Docket No. 16-035-36
UCE Exhibit 2.0 – Phase Two Direct
Testimony

PHASE TWO DIRECT TESTIMONY OF KATE BOWMAN

ON BEHALF OF

UTAH CLEAN ENERGY

DATED this 7th day of March, 2017



Sophie Hayes
Attorney for Utah Clean Energy

1 **INTRODUCTION**

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

3 A: My name is Kate Bowman. My business address is 1014 2nd Ave, Salt Lake City,
4 Utah 84103.

5 **Q: By whom are you employed and in what capacity?**

6 A: I am the Solar Project Coordinator for Utah Clean Energy, a non-profit and non-
7 partisan public interest organization whose mission is to lead and accelerate the clean
8 energy transformation with vision and expertise. We work to stop energy waste, create
9 clean energy, and build a smart energy future.

10 **Q: On whose behalf are you testifying?**

11 A: I am testifying on behalf of Utah Clean Energy (UCE).

12 **Q: Please review your professional experience and qualifications.**

13 A: I have worked for Utah Clean Energy for five years as a project coordinator with
14 a focus on the development and implementation of programs that provide education
15 about, expand access to, and facilitate the installation of solar photovoltaic energy.
16 Through partnerships with the utility, local governments, the solar industry, and national
17 expert consultants, I have worked to understand best practices related to solar
18 interconnection and integration and identify strategies for improving solar permitting and
19 interconnection processes in Utah. I currently manage a U.S. Department of Energy-
20 supported partnership between Salt Lake City and UCE that is working to guide the
21 development of a sustainable and robust solar market in Utah by making
22 recommendations regarding permitting and interconnection for distributed energy

23 resources (DERs), including solar and battery storage. I hold a bachelor's degree in
24 government with a focus on public policy from Dartmouth.

25 **Q. Have you previously filed testimony with this Commission?**

26 A. No.

27 **OVERVIEW AND CONCLUSIONS**

28 **Q: What is Utah Clean Energy's interest in this docket?**

29 A: Utah Clean Energy prioritizes a more efficient, cleaner, and smarter energy future
30 which is predicated on a modernized and resilient electricity grid. We envision and
31 enable increased utilization of energy efficiency, distributed generation, and utility-scale
32 renewable energy. We further believe that DERs will play a critical role in the grid of the
33 future and will provide valuable grid services while improving reliability and resiliency.
34 Increased data visibility into the distribution system can help us to understand how
35 increasing amounts of DERs, including solar, storage, demand response and energy
36 efficiency, can be integrated cost-effectively. Furthermore, this data can be used to
37 inform long-term utility planning processes in order to leverage the benefits of private
38 investments in DERs to keep costs low for all customers.

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

40 A: The purpose of my testimony is to address only the portion of the Company's
41 Application related to the Advanced Substation Metering Program. I do not provide
42 review, evaluation, or recommendations regarding any other aspect of the Company's
43 STEP filing, and my silence on these issues should not be construed to indicate any
44 position.

45 **Q. Please summarize your testimony.**

46 A. The Company's proposed substation metering program is in the public interest to
47 the extent that the data gathered by the Company can be used productively and
48 transparently to benefit the utility's ratepayers. Increased data visibility has the potential
49 to benefit ratepayers by enabling the cost-effective integration of higher levels of
50 distributed resources and by informing long-term utility planning processes. Without
51 increased data visibility the Company may miss opportunities to leverage private
52 investments in DERs and to keep costs low for all ratepayers in the long term. In order to
53 maximize the value of this program to ratepayers, we respectfully request that regulators
54 and stakeholders be able to access data gained from this program and that the Company
55 prepare a report outlining key findings when the program has been implemented.

56 **ADVANCED SUBSTATION METERING PROGRAM PROPOSAL**

57 **Q: What is the basis for the company's proposal?**

58 A: As part of the comprehensive legislative package that was the "Sustainable
59 Transportation and Energy Plan," in 2016, the Utah Legislature enacted Utah Code
60 Section 54-20-105, "Innovative utility programs," which is set forth below:

61 (1) The commission may authorize, subject to funding available under Subsection
62 54-7-12.8(6)(b)(ii)(B), a large-scale electric utility to implement programs that the
63 commission determines are in the interest of large-scale electric utility customers
64 to provide for the investigation, analysis, and implementation of:
65 (a) an economic development incentive rate;
66 (b) a solar generation incentive;
67 (c) *a battery storage or electric grid related project*;
68 (d) a commercial line extension pilot program;
69 (e) a program to curtail emissions from thermal generation plant in the Salt
70 Lake non-attainment area during a non-attainment event as defined by the
71 Division of Air Quality;
72 (f) an additional electric vehicle incentive program incremental to the
73 program described in Section 54-20-103;

74 (g) an additional clean coal program incremental to the program described
75 in Section 54-20-104;

76 **and (h) any other technology program.**

77 (2) The commission may review the expenditures made by a large-scale electric
78 utility for a program described in Subsection (1) in order to determine if the large-
79 scale electric utility made the expenditures prudently in accordance with the
80 purposes of the program.

81 (3) The commission may authorize and establish funding for a conservation,
82 efficiency, or new technology program in addition to the programs described in
83 this chapter if the conservation, efficiency, or new technology program is cost-
84 effective and in the public interest [*emphasis added*].

85
86 The Company has proposed this program as an innovative utility program under
87 Section 54-20-105. As such, the Commission must determine that the grid related project
88 or technology program is “in the interest” of the utility’s customers before the
89 Commission may approve it (U.C.A. Section 54-20-105(1)).

90 **Q. Please describe the Company’s program proposal.**

91 A. The Company requests the authorization of \$1,100,000 “to deploy an advanced
92 substation metering program that includes, but is not limited to, installing advanced
93 meters at approximately fifty circuits connected to distribution substations in Utah where
94 limited or no existing communications exist”¹ in order to improve data visibility on the
95 distribution system. The Company explains that this program “will allow for the
96 development of a more progressive grid”² and offer several benefits, one of which is to
97 “enable increasing levels of DERs on the power grid in an affordable and reliable
98 way...”³

¹ RMP STEP Application, Exhibit C – Advanced Substation Metering Program, page 2 (filed September 12, 2016).

² RMP STEP Application, Exhibit C – Advanced Substation Metering Program, page 2 (filed September 12, 2016).

³ RMP STEP Application, Exhibit C – Advanced Substation Metering Program, page 3 (filed September 12, 2016).

99 **Q. What is your general response to the Company’s proposal?**

100 A. Utah Clean Energy does not provide feedback on the technical appropriateness of
101 the equipment proposed or the electrical quantities the Company proposes to measure. In
102 general, Utah Clean Energy supports the Company’s stated intentions to modernize the
103 grid, enable increasing levels of DERs, improve customer service, and maintain grid
104 integrity. However, given that the proposed program will be funded using ratepayer
105 money, Utah Clean Energy recommends that the program result in transparent
106 information that is made available to stakeholders in order to maximize the value of the
107 investment for ratepayers.

108 **Q. Please explain what you mean.**

109 A. Improved data visibility is critical to facilitate a cost-effective shift toward a
110 modernized and resilient electricity grid. The NARUC DERs Rate Design and
111 Compensation Manual notes that the growth of DERs requires both regulators and
112 utilities to have greater visibility into utility circuits and distribution systems, and that
113 additionally, “the smart grid technology driving these improvements should represent
114 opportunities for more efficiencies to benefit utilities and customers alike.”⁴

115 Detailed distribution-level data can help the utility collect the information
116 necessary to process interconnection applications for DERs more quickly and cost-
117 effectively. Additionally, greater data visibility can allow the utility to evaluate the
118 technical basis for existing interconnection rules and identify opportunities to improve

⁴ NARUC. *Distributed Energy Resources Rate Design and Compensation* (November 2016), page 147. <
<http://pubs.naruc.org/pub/19FDF48B-AA57-5160-DBA1-BE2E9C2F7EA0>>

119 the efficiency of the existing interconnection process. This will allow for continued cost-
120 effective integration of increasing levels of DERs.

121 Furthermore, DERs can offer a variety of grid benefits, including deferral of
122 transmission and distribution infrastructure investments, frequency regulation, voltage
123 support, and reduction of peak load.⁵ The magnitude of these benefits depends on the
124 type of distributed energy technology (or suite of technologies) deployed, and benefits
125 can also very depending on the local conditions at the point on the distribution system
126 where the technology is deployed. Improved data visibility at the distribution level can
127 improve our understanding of how DERs interact with the grid and how to best utilize
128 these technologies to maximize grid benefits. The information collected can also be
129 integrated with distribution system planning to evaluate the relative value of different
130 types of infrastructure investments and identify strategies to keep long term grid costs
131 low for all utility customers.

132 Utah Clean Energy supports the Company making the proposed investments in
133 advanced substation metering infrastructure to the extent that the information the
134 Company collects is used to inform integration of DERs in the most cost effective
135 manner and to facilitate lower cost solutions to customer needs system-wide.

136 **Q. What are some benefits of distributed energy technologies?**

137 A. Distributed energy technologies offer a variety of benefits to the utility and to
138 utility customers, particularly when they are deployed in concert with one another.

⁵ Rocky Mountain Institute. *The Economics of Battery Energy Storage* (October 2015). <
http://www.rmi.org/electricity_battery_value>

139 Distributed solar, especially when combined with battery storage and demand response,
140 can reduce peak demand at the system level, deferring or avoiding investments in
141 generation or grid infrastructure, and can offer distribution grid benefits including
142 frequency regulation and voltage support. In the long term, private investments in DERs
143 can help to avoid costly infrastructure investments.

144 **Q. The company makes the point that this program is necessary to integrate DERs and**
145 **resolve technical challenges for the Company and its customers, and may help to**
146 **avoid unnecessary equipment upgrades and therefore save ratepayers money. Are**
147 **there other issues the Company should be considering?**

148 **A.** Yes. The Company notes that the proposed program will provide data to perform
149 interconnection studies more cost-effectively. However, studies in other states have found
150 that the amount of distributed energy generation that can be accommodated at a given
151 point on the grid varies depending on local conditions at a specific location on the
152 distribution system. To date, Utah stakeholders have had access to minimal data about the
153 interaction between DERs and the distribution system. This data is necessary to develop a
154 robust understanding of the integration of increasing amounts of DERs. Collecting actual
155 data from real locations on the Utah distribution system can allow the utility to evaluate
156 the technical basis for existing interconnection rules and ensure that the interconnection
157 rules are in line with best practices.

158 Second, without improved data visibility the Company may miss opportunities to
159 accurately account for DERs in long-term planning processes and leverage the benefits of
160 these resources. These benefits vary based on the technology or technologies deployed
161 (including rooftop solar, smart inverters, energy storage, controllable loads, electric

162 vehicles, and energy efficiency resources) and their location. Improved data visibility into
163 the distribution system can reveal local grid conditions at specific times, within specific
164 contexts. Such insight can help evaluate the benefits of DERs, inform long-term utility
165 planning processes, and assess strategies to avoid unnecessary investments in the long
166 term.

167 **Q. Are the challenges this program seeks to address uniquely caused by DERs?**

168 A. No, the challenges identified by the Company are not solely caused by increasing
169 distributed energy resource penetration. For example, changes in loads and the age and
170 condition of distribution grid infrastructure will also impact grid conditions and necessary
171 utility investments. The benefits of increased data visibility go beyond improved
172 integration of DERs and can be used to resolve a variety of technical issues that impact
173 customer service and satisfaction and inform distribution system planning.

174 **Q. The company would be funding this proposed program with ratepayer money. How**
175 **do you recommend maximizing benefits of this program to ratepayers?**

176 A. The proposed program would be funded with ratepayer money so the data
177 collected should provide benefits to ratepayers. We appreciate that the Company is
178 looking to facilitate higher levels of renewable energy development and address technical
179 challenges that can impact customers through this proposed program. To maximize the
180 benefits of this proposed program to ratepayers, the data collected should also be able to
181 inform strategies for leveraging private investments in DERs and to improve distribution

182 system planning. To that end, we request that information collected through this program
183 be made available to regulators and stakeholders through regular reporting.

184 **Q. Why is a more transparent distribution system process necessary?**

185 A. More and more customers are taking control of their own energy usage and
186 becoming active participants in the grid by adopting a variety of DERs. These distributed
187 energy technologies offer a variety of capabilities that affect the long-term cost and
188 operational benefits of the electric system. For example, both advanced solar inverters
189 and battery storage can provide frequency regulation and voltage support, and both solar
190 and storage can reduce peak load. Given that we build our infrastructure to meet peak
191 load, DERs may defer investments in transmission, generation, and distribution
192 infrastructure, especially when combined with battery storage. It is critical that we not
193 only evaluate the Company's concerns about integration of DERs, but also evaluate
194 strategies to capitalize on the benefits that these resources can provide to the utility and
195 ratepayers. If the Company does not accurately account for and plan for the growth of
196 DERs in their distribution system planning then the Company may miss opportunities to
197 leverage these resources to keep costs low for all customers. The data collected from this
198 proposed program can be used to evaluate strategies for the cost-effective integration of
199 DERs and should be integrated with distribution system planning to avoid unnecessary
200 infrastructure investments over the long term.

201 **Q. How can we ensure this program is in the public interest?**

202 A. In the Company's filing, they note a number of potential impacts to the Company
203 and to customers if this program is not implemented. We appreciate the Company's
204 interest in taking a proactive approach to make the grid more progressive and understand

205 innovative technology solutions. To date, little data related to the interaction between
206 DERs and the distribution system has been made available to stakeholders.

207 The nature of the grid is changing as customers become more active participants
208 in today's electric grid. The market for new distributed energy technologies is growing,
209 including rooftop solar, smart inverters, energy storage, controllable loads, electric
210 vehicles, and energy efficiency resources. If managed appropriately, the Company can
211 leverage these private investments in DERs to inform long-term planning processes and
212 keep costs low for all customers. The data collected from this program should be used to
213 evaluate the cost-effective integration of the full breadth of DERs.

214 Therefore, for this program to be in the public interest, the data collected should
215 be available to regulators and stakeholders and used to understand how to improve the
216 cost-effective integration of DERs. The data should also be capable of informing a more
217 robust and transparent distribution system planning process for the benefit of all
218 customers.

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

220 A. We appreciate the Company's proposal and proactive efforts to design a program
221 that supports the modernization of the grid. To ensure that this program is in the interest
222 of the utility's customers, we recommend that stakeholders be able to access data gained
223 from this program, that the Company provide regular updates to inform stakeholders as
224 key milestones are reached, and that the Company prepare a report outlining key findings
225 when the program has been implemented.

226 **Q: Does that conclude your testimony?**

227 A: Yes.