

THE STATE OF NEW HAMPSHIRE
BEFORE THE
PUBLIC UTILITIES COMMISSION

DE 20-170

Electric Distribution Utilities Electric Vehicle Time of Use Rates

City of Lebanon, NH

Testimony of Clifton C. Below

October 13, 2021

I. Introduction and Qualifications

1 **Q. Please state your name, business address and position relative to this docket.**

2 A. My name is Clifton C. Below and my personal office address is 1 Court Street, Suite 300,
3 Lebanon, NH 03766. The City's business address is 51 N. Park St, Lebanon, NH 03766. I am a
4 Lebanon City Councilor, Assistant Mayor, and Chair of the Lebanon Energy Advisory
5 Committee created by the Council. I am authorized by the City Manager and Council to
6 represent the City in this proceeding on a volunteer basis.

7 **Q. Have you previously testified before this Commission?**

8 A. Yes, I provided pre-filed direct and rebuttal testimony and live testimony in DE 16-576
9 concerning alternative net metering tariffs and pre-filed and live testimony in DE 17-189
10 concerning Liberty's battery storage pilot; both on behalf of the City of Lebanon. I also
11 provided pre-filed and rebuttal testimony in DE 19-064, a Liberty Utilities Distribution Rate case
12 on behalf of the City, and in DE 19-197, concerning Development of a Statewide, Multi-Use
13 Online Energy Data Platform, as part of the Local Government Coalition for the City.

14 **Q. Please describe your relevant experience and expertise regarding electric utilities.**

15 A. A detailed background statement can be found at p.66 of my testimony attachments in DE
16 19-067 found under tab 43¹. I will only highlight a few keys elements of my background here.
17 During my tenure as a State Representative from 1992-1998 I served on the House Science,
18 Technology, and Energy Committee where I was heavily involved in energy and regulatory
19 legislation. As Chair of the Policy Principles, Social and Environmental Issues Subcommittee
20 of the Retail Wheeling and Restructuring Study Committee in 1995 I facilitated a consensus

¹ https://www.puc.nh.gov/Regulatory/Docketbk/2019/19-064/TESTIMONY/19-064_2019-12-10_COL_ATT_TESTIMONY_FILED_12-09-19.PDF.

21 building legislative and stakeholder process that resulted in recommended “Restructuring
22 Policy Principles” that became the core of NH’s Electric Utility Restructuring statute, RSA
23 374-F, that was enacted to restructure and guide the future regulation of electric utilities in NH
24 . In 1998 I was elected to the NH Senate, serving on the energy and utility policy committees
25 throughout my six-year tenure. From 1997-2004 I served on the Advisory Council on Energy
26 of the National Conference of State Legislatures (NCSL), including 3 years as Chair, which
27 advised NCSL staff on emerging energy issues that may need the attention of state legislatures.
28 I also served on the Energy & Electric Utilities Committee, Assembly on Federal Issues of
29 NCSL where, as Chair in 2000-2001, I facilitated a consensus based comprehensive update of
30 NCSL’s National Energy Policy. I testified on behalf of NCSL before the United States Senate
31 Committee on Energy and Natural Resources on “Electric Industry Restructuring,” focusing on
32 transmission and jurisdictional issues. I also served as a member of the National Council on
33 Electricity Policy Steering Committee from 2001-2004, which was a policy collaborative with
34 NARUC, NGA, and NASEO.

35 In late 2005 I was appointed to serve as a NHPUC Commissioner with my tenure
36 ending in February 2012. During that time, I served on the FERC-NARUC Smart Grid and
37 Demand Response Collaborative, 2008-2011, and on the Electric Power Research Institute
38 (EPRI) Advisory Council, 2009-2011 and its Energy Efficiency/Smart Grid Public Advisory
39 Group, 2008-2010. I also served in a variety of other capacities, including as a Vice Chair of
40 NARUC’s Energy Resources and Environment Committee, as a member and Co-Chair of the
41 NEEP Steering Committee for the Regional Evaluation, Measurement & Verification (EM&V)
42 Forum, and as President of NECPUC. Through my involvement in NCSL, NARUC,
43 NECPUC, ISO New England stakeholder processes and particularly with EPRI I was fortunate

44 to enjoy numerous deep dives into emerging issues in the electric utility industry at the
45 intersection of technology, science, policy, markets, and regulation, including grid
46 modernization, smart rates, market design, energy efficient technologies, and distributed
47 energy resource issues.

48 I was an active participant in the PUC's Grid Modernization Investigation, IR 15-296
49 and in 2017 I collaborated with Liberty Utilities and the Office of the Consumer Advocate's
50 expert witness, Lon Huber, in the development and design of Liberty Utilities' Time-of-Use
51 rate model for their battery pilot in DE 17-189.²

52 **Q. Would you summarize your testimony?**

53 A. Yes. The City is concerned that Liberty's Utilities' proposed rate design for
54 commercial electric vehicle charging station customers, proposed Rates EV-L and EV-M do
55 not reflect basic cost causation principles of regulated rate design and risk substantial undue
56 cost shifting to other customers, possibly resulting in unjust and unreasonable rates. While the
57 City appreciates the effort to minimize the use of demand charges in their rate design, we are
58 disappointed that Liberty did not attempt to substantively comply with the Commission
59 guidance for EV charging rate design in Order 26,394 coming out of IR 20-004 and referenced
60 in the Order of Notice in this proceeding.

61 **Q, What is the City's interest in EV charging?**

62 A. The City currently has one all electric vehicle in its fleet and has put down a deposit to
63 reserve an all-electric Ford F-150 pick-up truck. The City is beginning to explore additional

² Explained in the "Technical Statement Regarding Time of Use (TOU) Rate Model" found at https://www.puc.nh.gov/Regulatory/Docketbk/2017/17-189/LETTERS-MEMOS-TARIFFS/17-189_2018-11-19_GSEC_TECH_STATEMENT_TOU.PDF.

64 opportunities for electrification of its fleet of vehicles with the expectation that over time large
65 portions of the City's vehicles will be electric. In addition, the City is interested in supporting
66 the expansion of electric vehicle charging for residents, businesses, and visitors to the City.
67 The local public transit authority that serves the City, Advance Transit, is in the process of
68 procuring 3 electric buses.

69 **Q. Why might Liberty's proposed rates result in undue cost shifting to other**
70 **customers?**

71 A. By designing a largely flat volumetric rate, with no coincident peak demand charge, the
72 rate design does not reflect any temporal price signal. Costs throughout the electric system are
73 largely driven by the need to provide enough capacity, in generation, transmission, and
74 distribution, to meet the coincident peak demand, plus a safety margin, experienced by each
75 component of the system. Growing coincident peak demands require new investment in
76 capacity to meet those peaks. New increments of capacity tend to cost more than existing
77 increments of capacity for a variety of reasons, such as scarcity of land, cost of materials and
78 labor, and the fact that existing capacity is to varying degrees depreciated and partially already
79 paid for. Without temporal price signals that reflect when demand and costs are high,
80 customers have no incentive shift flexible loads, such as a substantial portion of EV charging,
81 to times when underlying demand and costs are lower.

82 The concern with high demand charges that have no temporal dimension is that in low
83 volume EV charging, peak demand can be very high compared to the volume of kWh, thus
84 excessively burdening early adopters and making commercialization more difficult. However
85 a flat volumetric rate with high demand compared to volume can result in such a customer
86 having a disproportionate impact on cost drivers, costing increased transmission and capacity

87 charges for instance, while the volumetric rate does not fully compensate for those costs
88 caused by that customer.

89 **Q. Can you give a more specific examples?**

90 **A.** Yes, in New England the FERC regulated wholesale rates provide several very strong
91 temporal marginal cost price signals. Capacity costs in the Forward Capacity Market are
92 allocated to retail customers based on their share of the single hour of highest coincident peak
93 demand in all of New England. Likewise, most transmission costs are allocated based on the
94 single hour of highest demand in each month of the year. These are strong temporal price
95 signals reflecting cost causation. These high costs, as well as high energy costs and demand on
96 the distribution are primarily concentrated in the late afternoon and early evening of weekdays.
97 The average load factor or asset utilization rate in New Hampshire is about 57%, meaning, on
98 average we only use about 57% of the capacity of the system. If vehicle charging has a lower
99 load factor than average, as seems likely with no time differentiated price signals, then it will
100 tend to cause more costs than it pays for. Declining load factors mean that fixed cost (for
101 capacity) are being spread over fewer kWh, raising the cost per kWh. Improving load factors
102 will spread those costs over more kWh resulting in lower costs per kWh, all other things being
103 equal.

104 **Q. How would TOU rates help in this regard?**

105 **A.** Well designed TOU rates reflect the probability of incurring high costs in any given
106 time period, but do not impose fixed demand charges. So, if there is low volume, overall costs
107 can be manageable, even if costs are high in some periods of time, but may still be
108 substantially lower than current G-1 and G-2 rate designs where most distribution costs are in
109 the demand charge. They reflect cost causation and allow the customer to decide to what

110 extent they may want to shift their charging habits.

111 **Q. In discovery Liberty suggests that retail charging customers would appreciate a**
112 **flat rate and not be hit with a high rate at peak times, what's wrong with that?**

113 **A.** If the customer operating a commercial charging station wants to offer a level rates,
114 they should be the one deciding to do that, not the utility. A charging station operator could
115 put in their own storage system to shave their load during high price TOU rate periods, such as
116 Liberty is doing with their battery pilot. A significant portion of EV charging can be expected
117 to come from fleet charging and resident/employee charging that have may have 8 or more
118 hours in which they could undertake a 3-4 hour level 2 charge or even a quick 20-30 minute
119 level 3 charge. If there is no temporal price signal, then there is no incentive to shift flexible
120 loads, like fleet charging overnight to low demand, low-cost periods of time.

121 **Q. Does that conclude your testimony?**

122 **A.** Yes it does.