

STATE OF NEW HAMPSHIRE
BEFORE THE
PUBLIC UTILITIES COMMISSION

Docket No. DE 19-057

Public Service Company of New Hampshire d/b/a Eversource Energy

TESTIMONY OF
KEVIN MILLER

On behalf of ChargePoint, Inc. and Clean Energy NH

December 20, 2019

STATE OF NEW HAMPSHIRE

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**PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE D/B/A EVERSOURCE
ENERGY**

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1 **I. Introduction**

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

3 A. My name is Kevin George Miller. My business address is 254 E. Hacienda Avenue,
4 Campbell, CA 95008. My personal residence is in New York.

5

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

7 A. I am employed by ChargePoint, Inc. as Director of Public Policy.

8

9 **Q. Please describe your background, experience, and expertise.**

10 A. In my role at ChargePoint, I have overseen engagement in over twenty proceedings
11 before public utility commissions. I have supported and developed transportation
12 electrification legislation and policy across North America and in Australia. I previously
13 served as Acting Chief Financial Officer and Director of Capital and Federal Finance for

1 the Massachusetts Executive Office of Energy and Environmental Affairs. I hold a
2 Master of Public Policy from the Harvard Kennedy School and a Bachelor of Arts from
3 Tufts University, and was appointed by Governor Sununu to the Electric Vehicles
4 Charging Station Infrastructure Commission. My CV is entered as Exhibit CP-KGM-1.

5

6 **Q. Have you previously testified before the New Hampshire Public Utilities**
7 **Commission?**

8 A. No. However, I have testified before the Massachusetts Department of Public Utilities
9 (Docket No. 18-150), the New York Public Service Commission (Case Nos. 19-065 and
10 19-E-0378), and the Rhode Island Public Utility Commission (Docket No. 4780).

11

12 **Q. On whose behalf are you testifying?**

13 A. I am testifying on behalf of ChargePoint, Inc. and Clean Energy New Hampshire.

14

15 **Q. Please describe ChargePoint.**

16 A. ChargePoint is the nation's leading electric vehicle ("EV") charging network, with
17 charging solutions for every charging need and all the places EV drivers go: at home,
18 work, around town and on the road. With over 105,000 places to charge, ChargePoint
19 drivers have completed more than 69 million charging sessions, saving upwards of 83
20 million gallons of gasoline and driving more than 1.9 billion gas-free miles.

1 ChargePoint designs, develops, and sells residential and commercial Level 2 (“L2”) and
2 DC fast charging (“DCFC”) electric vehicle charging stations directly to our customers,
3 or “site hosts,” who own and operate the charging stations on their premises.

4 ChargePoint also provides network services and cloud-enabled capabilities that enable
5 site hosts to manage their charging assets and optimize services. Network capabilities
6 provide visibility into charging station utilization, frequency, and duration, and allow site
7 hosts to set access controls and pricing for charging services. In addition, ChargePoint
8 has designed our network to allow other parties, such as electric utilities, the ability to
9 access charging data and conduct load management to enable the most efficient load
10 integration with the grid.

11
12 **Q. What is the purpose of your testimony?**

13 A. The purpose of my testimony is to evaluate the capital investment proposed by Public
14 Service Company of New Hampshire doing business as Eversource Energy
15 (“Eversource”, or “the Company”) to support the deployment of Direct Current (“DC”)
16 fast chargers (“DCFC”) through a public-private partnership.

17
18 **II. Program Summary**

19 **Q. What investments are proposed by the Company?**

20 A. Eversource proposes to invest \$2 million in distribution facilities for EV charging stations
21 as a component of a public-private partnership (“Program”) to deploy DCFC throughout

1 New Hampshire. Witness Quinlan states that the proposed base capital investment is
2 intended to “construct distribution facilities, primarily service drops.”¹

3
4 This proposal is consistent with a “make ready” program design, which typically refers to
5 the line extension on the distribution side of the meter, as well as wiring, conduit, and
6 sub-panels that are often needed to provide power to EV chargers located on the
7 customer’s side of the meter. Installation costs downstream from the customer of record’s
8 utility meter necessary to complete make ready construction include trenching or boring,
9 conduit, wiring, labor, mounting, site reconditioning and landscaping along with signage.
10 Make ready costs are unlikely to experience significant reductions over time.

11
12 **III. Program Evaluation**

13 **Q. What is your overall impression of the Company’s proposal?**

14 A. The proposal is generally consistent with emerging best practices in utility EV charging
15 programs. If approved by the Commission, the program will appropriately lower market
16 barriers while leveraging significant matching investment, lead to the creation of
17 widespread benefits for all ratepayers, and support State goals.

18
19 In order to ensure long-term success of the Program, the Commission, consistent with
20 guidance provided by the New Hampshire Legislature in Senate Bill 575, should require

¹ Direct Testimony of William J. Quinlan at 35.

1 that the Company file one or more alternatives to traditional, demand-based electricity
2 rates for DCFC within 180 days of approving the Company's program.

3
4 **Q. What is evaluation of the Company's specific program design?**

5 A. Make ready programs are among the most efficient and effective ways for utilities to
6 support transportation electrification. Site hosts that make a financial contribution to the
7 charging station are far more likely to actively support the successful installation and
8 ongoing preventive maintenance of the charging station because they have "skin in the
9 game."

10
11 Leveraging site host contributions stretches the value of ratepayer dollars by increasing
12 the net funds available for equipment and services and ensures that choice of qualified
13 equipment and services are responsive to customer needs. Utility investments can
14 catalyze growth in the EV and EV charging markets when programs are designed to
15 support competition, leverage private capital, and balance the costs and benefits to
16 ratepayers.

17
18 **Q. Why do third parties invest in EV charging stations?**

19 A. ChargePoint's customers, or "site hosts," typically find that providing EV charging
20 services aligns with and augments their operations or business goals. Site hosts can
21 realize both direct and indirect revenue through the provision of EV charging services,

1 including but not limited to attracting new customers and providing a valuable benefit to
2 employees.

3

4 **Q. Do all EV drivers primarily charge at highway DC fast chargers?**

5 A. Over 90% of EV charging takes place at home and the workplace, which is generally
6 supported by Level 2 EV charging stations over longer periods of time. The new load
7 associated with most EV charging can be shaped to support the grid and reduce costs for
8 ratepayers.

9

10 DC fast chargers are also vitally important and complement longer-term charging without
11 replacing it. Faster charging can increase “range confidence” for individual EV drivers
12 and enable the electrification of municipal, state, and private vehicle fleets.

13

14 **Q. Will the Program only create value for the utility, site hosts, and EV drivers?**

15 A. No, the Program has the potential to create value for all ratepayers. Several studies
16 highlight that the expected long-term energy revenues from incremental EV load
17 generally exceeds the costs for the grid to support that load.² In effect, prudent
18 investments in EV supply equipment (“EVSE”) with increases in energy use exert a
19 downward pressure on unit energy costs that can benefit all utility customers regardless
20 of EV ownership.

21

² See, e.g., E3, *Cost-Benefit Analysis of Plug-in Electric Vehicle Adoption in the AEP Ohio Service Territory*, April 2017. https://www.ethree.com/wp-content/uploads/2017/10/E3-AEP-EV-Final-Report-4_28.pdf.

1 **Q. Will the Company's Program support the achievement of state goals?**

2 A. Yes. The Company's Program supports the achievement of state goals related to New
3 Hampshire's Environmental Beneficiary Mitigation Plan ("BMP"), the Electric Vehicle
4 Charging Station Infrastructure Commission as established by Senate Bill 517 of 2018
5 ("SB 517 Commission"), and grid modernization efforts already underway at the
6 Commission in Docket IR 15-296.

7

8 **Q. Please elaborate on how the Program would meet BMP-related goals.**

9 A. As proposed, the Company's Program complements an investment of \$4.6 million from
10 New Hampshire's allocation of \$30.9 million in Environmental Mitigation Trust funding
11 from the Volkswagen "Dieselgate" settlement.³ The BMP specifies that investments
12 should "seek to leverage private sector funding and must occur in a manner that will
13 allow for broad access to users and incorporation of technological advances in EV
14 charging infrastructure."⁴ The Company proposes to incentivize EV charging station
15 deployment in a manner that leverages site host contributions and one-time
16 environmental mitigation trust funds, which is consistent with BMP goals.

17

18 **Q. Please elaborate on how the Program will support goals identified by the SB 517**
19 **Commission.**

³ New Hampshire Environmental Beneficiary Mitigation Plan at 13, available at <https://www.nh.gov/osi/energy/programs/documents/beneficiary-mitigation-plan.pdf>.

⁴ *Id.*

1 A. The SB 517 Commission was established to make recommendations related to the use
2 and support for zero-emission vehicles in New Hampshire. In particular, it was ordered to
3 consider “[c]hanges needed to state laws, rules, and practices, including building codes
4 and public utilities commission rules...”⁵

5
6 After nearly a year reviewing best practices and evaluating policy options for New
7 Hampshire, the SB 517 Commission issued the following statement on June 28, 2019:

8 *Recognizing that:*

- 9 • *Adequate electric vehicle supply equipment (EVSE) in New Hampshire, and*
10 *in particular direct current fast chargers (DCFC) along major travel*
11 *corridors in the state, is necessary to enable electric vehicle (EV) travel*
12 *within and through New Hampshire; and*
- 13 • *Availability of adequately spaced EVSE along the State’s major travel*
14 *corridors is essential to overcome “range anxiety” and enable and*
15 *encourage broader adoption of EVs by New Hampshire residents and*
16 *residents throughout the Northeast; and*
- 17 • *Manufacturers continue to introduce a wider variety of EV models which*
18 *will be available to consumers in the coming years and that drivers will be*
19 *best served if New Hampshire’s EV charging market supports multiple*
20 *business models, generates new jobs, and encourages innovation and*
21 *competition in equipment and networks services; and*

⁵ SB 517, available at
http://gencourt.state.nh.us/bill_status/billText.aspx?sy=2018&id=1829&txtFormat=pdf&v=current.

- 1 • *New Hampshire’s Volkswagen Beneficiary Mitigation Plan provides*
2 *funding for the support of EVSE development within the state; and*
- 3 • *Electric utilities have proposed a “make ready” program for New*
4 *Hampshire that could provide streamlined interconnection and behind the*
5 *meter investment by the utilities;*

6

7 *The EV Commission therefore requests that:*

- 8 • *The Office of Strategic Initiatives (OSI), working with the electric utilities*
9 *and the NH Department of Environmental Services (NHDES), develop a*
10 *request for proposals (RFP) utilizing the VW settlement funds to spur*
11 *private sector investment in DCFC, combined with Level 2 charging; and*
- 12 • *The RFP should strive to result in adequate EVSE along the priority travel*
13 *corridors presented by NHDES and the Department of Transportation at the*
14 *Commission’s January 2019 meeting to alleviate range anxiety; and*
- 15 • *The RFP should be released in a timely manner with the goal of having*
16 *EVSE in place on those corridors by the end of 2020; and*
- 17 • *The fully regulated electric utilities work with the Public Utilities*
18 *Commission and EVSE industry stakeholders to design and obtain approval*
19 *for a “make ready” program for New Hampshire that is designed to work*
20 *both in conjunction with the RFP and beyond; and*
- 21 • *OSI, in collaboration with the EV commission and NHDES, and in*
22 *consideration of the results of the pending NH Department of Business and*

1 *Economic Affairs statewide infrastructure plan, work to develop further*
2 *initiatives for the remaining EVSE fund balance, such as: providing EVSE*
3 *for state electric vehicles, a statewide Level 2 charging solicitation, EVSE to*
4 *support fleet electrification, workplace electrification, or other similar*
5 *efforts.*⁶

6 The Company's Program is clearly consistent with the SB 517 Commission's findings
7 and would advance the State's zero-emission vehicle goals.

8
9 **Q. Please elaborate on how the Program will complement grid modernization efforts.**

10 A. The Company's proposal will increase access to EV charging infrastructure throughout
11 Eversource utility franchise territory, which covers the majority of the state. Greater
12 adoption of EVs in New Hampshire will support beneficial load growth that can be
13 incentivized and managed to support an increasingly distributed grid. The Company's
14 proposed investments will increase its ability to effectively incorporate new EV load into
15 the grid in the following ways:

- 16 • Strategic Siting: The NHDES requires all RFP applicants to consult with electric
17 utility providers, which will allow the Company to provide input on siting
18 decisions. In addition, networked charging infrastructure with cloud-enabled data
19 capabilities offer utilities visibility into EV charging load and charging trends,
20 which can inform grid planning.

⁶ June 29, 2019 Notes, available at
<https://www.des.nh.gov/organization/divisions/air/tsb/tps/msp/documents/20190628-meeting-notes.pdf>.

- 1 • Interactive Load Management: Networked EV chargers are advanced
2 communicative, customer-facing, grid-connected equipment. As a data-enabled
3 distribution asset, networked charging stations can be an integral part of a growing
4 and cohesive smart grid.
- 5 • Grid Benefits: Utilities can develop and offer rate designs that incent charging at
6 times that are most beneficial to the grid. This approach is also scalable to future
7 market needs, increasing the value to the grid by creating more beneficial use of
8 electricity as a transportation fuel to put more kilowatt hours through the system
9 and reducing fixed grid costs. This puts downward pressure on rates over the long-
10 term and creates benefits for all ratepayers.

11 The investments proposed by the Company will be an asset no matter what grid
12 modernization policies are adopted by the Commission, and therefore need not be
13 delayed until the Commission issues a final order in its Grid Modernization docket.

14
15 **IV. Recommendations**

16 **Q. Do you have any recommendations related to the Company's proposal?**

17 A. Yes. I recommend that, to ensure successful implement of the Company's proposal, the
18 Company develop one or more alternatives to traditional, demand-based electricity rate
19 structures for DCFC deployed in its service territory. This is consistent with the
20 directives of the New Hampshire Legislature in Senate Bill 575 of 2018, which I will
21 describe later on in my testimony.

1 **Q. Why is it necessary to provide alternatives to demand-based electricity rates for**
2 **DCFC?**

3 A. Public and private entities that invest in DCFC are typically subscribed in a traditional
4 commercial and industrial (“C&I”) electricity rate. Like residential rate structures, C&I
5 electricity rates require customers to pay for the amount of energy used. However, C&I
6 rates often also include fees for the amount of energy that **could** be used, which is
7 collected through a demand charge.

8
9 For traditional C&I customers (e.g., factories), it may be appropriate to allocate
10 electricity costs based on peak demand to let utilities ensure that there is adequate
11 capacity for all customers. However, C&I demand charges were not designed for the type
12 of electricity load profile of a DC fast charger.

13
14 Demand charges are typically based on the highest average 15-minutes of energy use in a
15 monthly billing cycle. DC fast charging stations are currently characterized by having a
16 *low load factor*, with sporadic instances of high energy use. Site hosts can face high
17 demand charges due to the few peak charging sessions that occur each month, which
18 effectively penalizes site hosts for providing charging services in earlier-stage EV
19 markets. In some markets, demand charges can account for as high as 90% of electricity
20 costs.⁷

21

⁷ Rocky Mountain Institute, 2017. “EVgo Fleet and Tariff Analysis.” Available at: https://rmi.org/wp-content/uploads/2017/04/eLab_EVgo_Fleet_and_Tariff_Analysis_2017.pdf

1 **Q. Can DCFC site hosts offset demand charges through load curtailment?**

2 A. Load from DCFC is unpredictable and is ill-suited to being managed through demand
3 response or load curtailment, due to the inherent need of drivers to charge when they
4 need to charge at public stations. DC fast charging along highway corridors, while
5 essential to supporting long-distance travel, represent a fraction of the 10% of the
6 charging that takes place outside of home and work. The DCFC load profile is unlike
7 residential and workplace EV charging loads, which are much more appropriately suited
8 to load management techniques.⁸

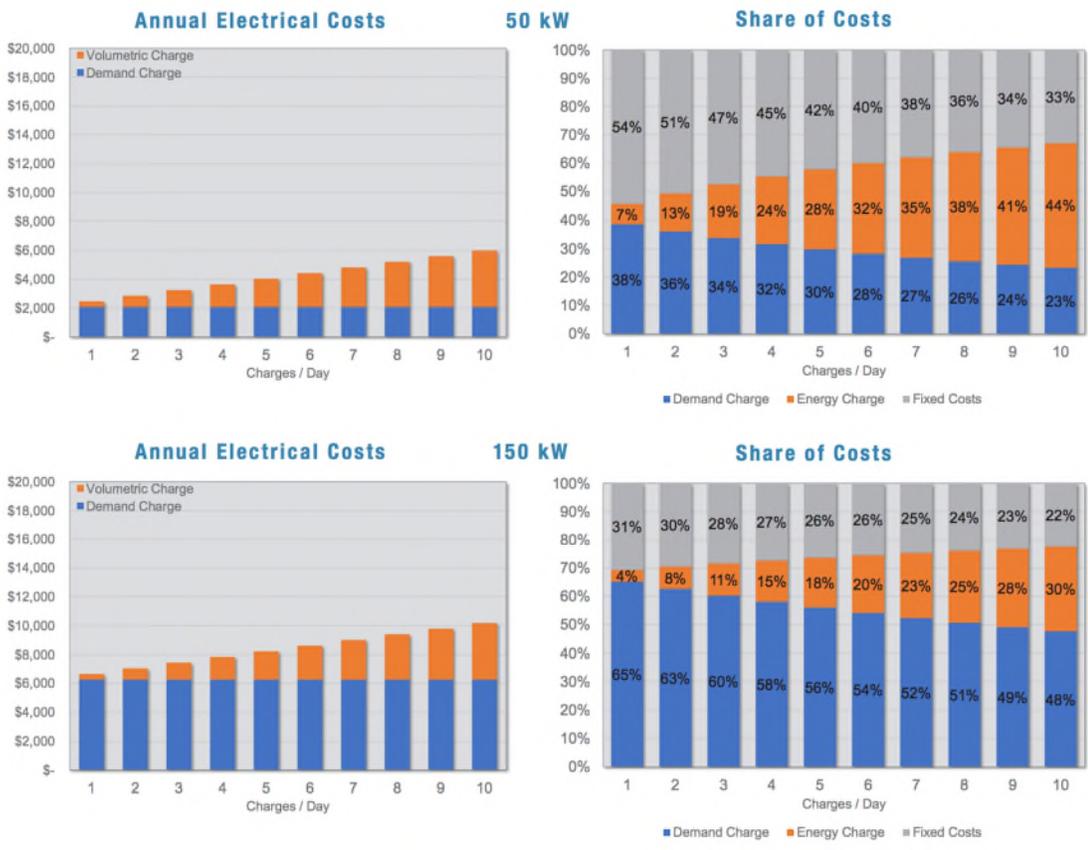
9
10 If a deployment of multiple DC fast chargers experiences an instance where several
11 drivers charge at the same time, that single event can result in charges of several thousand
12 dollars and station operators paying significantly more for electricity than the average
13 commercial electricity customer. Given the limited flexibility for EV charging site hosts
14 to pass on demand charge costs to customers, this dynamic creates the risk of
15 economically unsustainable losses.

16
17 Recently, the Great Plains Institute released an analysis of over five thousand DC fast
18 charging scenarios according to costs from volumetric, demand, customer, and facilities
19 charges across many utility rate schedules. Low-utilization rates were demonstrated to
20 present challenging economics for DCFC operators, driven in large part by the significant

⁸ See, e.g., Electric Power Research Institute. “Duke Energy: Charging Demos Inform PEV Readiness Planning”, 2013; Nexant. “Final Evaluation for San Diego Gas & Electric’s Plug-in Electric Vehicle TOU Pricing and Technology Study, 2014; EPRI. “DTE Energy: Driving the Motor City Toward PEV Readiness”, 2014.

1 share of operating costs attributable to demand charges. Demand charges can account for
2 as high as 38% of electricity costs for a single 50kW DC fast charger, which would
3 increase dramatically to 65% for a deployment of one 150kW charger or multiple 50kW
4 chargers, which is illustrated below. The Great Plains Institute analysis is entered as
5 Exhibit CP-KGM-2.

Figure 7. DCFC station costs by charges per day: 50 kW and 150 kW chargers



6
7 It should also be noted that demand charges present a barrier for electrifying public- and
8 private-sector fleets. Specifically addressing unique fleet charging needs will support EV
9 adoption, as fleet operators are uniquely suited to maximize the operational cost savings
10 of transportation electrification. It is also in the public interest to specifically consider

1 rate-related barriers to electrifying medium- and heavy-duty (“MHD”) fleets. MHD
2 vehicles touch the lives of everyone in New Hampshire, from school and transit buses to
3 municipal service vehicles to delivery trucks. Reducing barriers for MHD fleet operators
4 to electrify their vehicle fleets will create widespread and equitably accessible benefits
5 for ratepayers and the general public across the State.
6

7 **Q. Are there examples from other jurisdictions of alternatives to traditional, demand-**
8 **based rate structures for DC fast charging?**

9 A. Yes. There are many examples of sustainable methods for mitigating demand charges
10 that are being piloted or are already common practice in other jurisdictions:

- 11 • Replacing or pairing demand charges with higher volumetric pricing to provide
12 greater certainty for charging station operators with low utilization, which could be
13 scaled based on utilization or load factor as charging behavior changes over time.⁹
- 14 • A monthly bill credit representing a percentage of the nameplate demand associated
15 with installed charging station’s behind a commercial customer’s metered service.¹⁰
- 16 • Implement a “rate limiter” as EV adoption increases, where the average cost
17 equivalent of a customer’s demand charges would be limited to no more than a fixed
18 cents/kWh value.¹¹
- 19 • Forgive a portion of billed demand when the customer has a low load factor.¹²

⁹ An example of this is Pacific Power’s *Public DC Fast Charger Optional Transitional Rate*.

¹⁰ Such as PECO’s EV-FC Rider, which was recently approved by the Pennsylvania PUC.

¹¹ For example, Ameren Illinois has implemented “rate limiters” during difficult transition periods that were raised over time in steady increments until it was phased out (e.g., rates DS-3 and DS-4).

¹² Examples of this include Xcel Minnesota’s general service rates.

- 1 • Charging stations could be separately-metered with a unique “EV charging” rate.¹³

2

3 **Q. By what process should the Company develop one or more alternative DCFC rates?**

4 A. There is no “one-size-fits-all” alternative to traditional demand-based rates, and the
5 Company should therefore have flexibility in developing appropriate solutions for its
6 New Hampshire customers. In order to ensure long-term success of the Program, the
7 Commission should require that the Company file one or more alternatives to traditional,
8 demand-based electricity rates for DCFC within 180 days of Commission approval of the
9 proposed make ready program.

10

11 Should the Commission prefer a statewide approach to considering DCFC electricity
12 rates, I recommend that the Commission expand the order to require all investor-owned
13 utilities to develop and file one or more alternative DCFC rates within 180 days of
14 issuing an order in this proceeding.

15

16 **Q. Is there state policy to support your recommendation that the Commission require**
17 **investor-owned utilities to file alternative DCFC rates?**

18 A. Yes, there is. Among other things, Section V of Senate Bill No. 575 of 2018 directs the
19 Commission consider and determine the appropriateness of such measures. That
20 provision reads as follows:

¹³ Alternative rate structures have been recently proposed by Pacific Gas & Electric (“PG&E”) and Southern California Edison (“SCE”) to the California Public Utilities Commission.

1 (a) *Within 2 years, consider and determine whether it is appropriate to*
2 *implement any of the following rate design standards for electric*
3 *companies and public service companies:*

4 (1) *Cost of service;*

5 (2) *Prohibition of declining block rates;*

6 (3) *Time of day rates;*

7 (4) *Seasonal rates;*

8 (5) *Interruptible rates;*

9 (6) *Load management techniques; and*

10 (7) *Demand charges.*

11 (b) *Consider and determine whether it is appropriate to implement*
12 *electric vehicle time of day rates for residential and commercial*
13 *customers. The standards for determination of such implementation shall*
14 *include consideration whether such implementation would encourage*
15 *energy conservation, optimal and efficient use of facilities and resources*
16 *by an electric company, and equitable rates for electric consumers.*¹⁴

17
18 **V. Conclusion**

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

20 **A. Yes.**

21

¹⁴ http://gencourt.state.nh.us/bill_Status/billText.aspx?sy=2018&id=1828&txtFormat=pdf&v=current.

Exhibit List

Exhibit CP-KGM-1

Curriculum Vitae

Exhibit CP-KGM-2

Great Plains Institute White Paper