



CITY OF LEBANON  
51 North Park Street  
Lebanon, NH 03766  
(603) 448-4220

February 20, 2020

**Via Electronic Mail and Hand Delivery**

Debra A. Howland, Executive Director  
NH Public Utilities Commission  
21 S. Fruit Street, Suite 10  
Concord, NH 03301-2429

RE: IR 20-004, ELECTRIC DISTRIBUTION UTILITIES: Investigation into Rate Design Standards for Electric Vehicle Charging Stations and Electric Vehicle Time of Day Rates; Comments for the City of Lebanon

Dear Ms. Howland,

On behalf of the City of Lebanon I offer the following comments on the list of issues identified by Staff in its memorandum and in response to the Commission's Order of Notice in this investigation regarding At the outset, let me say that the City strongly supports beneficial electrification of transportation and has already installed its first charging station for its first electric vehicle. As a general matter the existing electric customers should not be prohibited from charging electric vehicles under existing rates and tariffs. However, a specific tariff for new commercial charging stations based on time varying rates (TVR) may be appropriate and existing residential and commercial customers should be able to opt-in to such TVR tariffs.

Following are comments on specific items in Staff's memorandum starting with (3) under "Rate Design Standards for Electric Vehicle Charging Stations."

(3) **Alignment with Principles.** Alignment of the above-described standards with the Commission's rate design principles of efficiency, equity, simplicity, continuity, and revenue sufficiency.

First, I would note that these so called rate design "principles" were characterized as ratemaking "objectives" in Order No. 20,504 and in fact date back to 1979, long before electric utility restructuring. In summarizing PSNH's position in the that Order at 278 the Commission wrote:

PSNH, in DR 79-187, adopted and continues to support the objectives of rate continuity, revenue stability, and practicality of rates. By rate continuity, PSNH refers to the consistency of rates and their gradual adjustments. Revenue stability reflects matching the Company's revenues with its costs. PSNH believes feasibility, understandability,

simplicity and customer acceptance are all part of the practicality of rates. . . . PSNH continues to support the principle agreed to by the Parties in DR 79-187, and endorsed and applied in DR 82-333, that marginal costs are the appropriate basis for retail pricing policy even though no definitive agreement on marginal cost methodology has ever been reached.

In their analysis the Commission wrote at 285:

We are cognizant of, and endorse, many of the ratemaking objectives, such as revenue stability, rate continuity, simplicity and understandability outlined by PSNH in its filing. . . . We believe efficiency is enhanced by sending customers proper price signals and marginal cost of service pricing sends better long-term price signals than prices based on embedded cost of service studies.

This statement about price signals based on marginal costs goes to the core of the principles for rate design expressed by Bonbright in his *Principles of Public Utility Rates* and remains true today. Some of the other objectives are less relevant and to some extent superseded by more recent legislative and Commission determinations. Specifically, rate “continuity” and “simplicity” are not particularly relevant to electric vehicle charging at the rapidly growing scale expected in coming years, which in its nature is a fundamentally disruptive and a discontinuous change in how we power transportation and use electricity. If electric customers want continuity and simplicity, then stick with current rates.

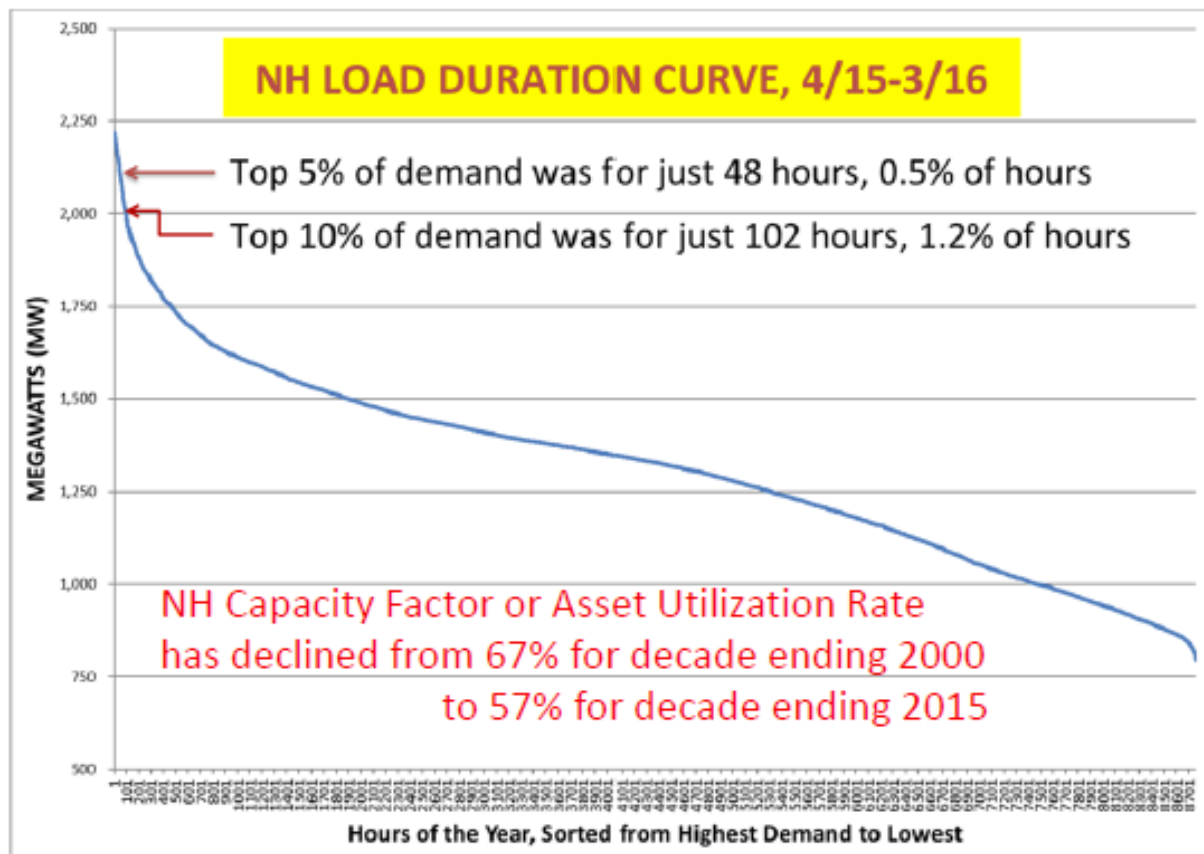
Staff in its memorandum states that “New Hampshire does not have a standard regarding the appropriateness of TVR structures.” That’s not really true as both the General Court through statute and this Commission have adopted policies indicating that we should move forward to enable access to TVR structures. NH law at RSA 374-F:1 speaks of “harnessing the power of competitive markets” and states that “[i]ncreased customer choice and the development of competitive markets for wholesale and retail electricity services are key elements in a restructured industry that will require unbundling of prices” and goes on to state that “Competitive markets should . . . provide electricity buyers and sellers with appropriate price signals.” Appropriate price signals is not defined but from the context it should be clear that customers should have access to the time-varying prices in a similar manner that generators and sellers of electric power experience. For competitive electricity markets to operate efficiently with good price formation buyers need access and exposure to similar temporal price signals that generators see. Supply and demand need to respond to similar price signals. RSA 374-F:3, II goes on to make such a principle more explicit: “Customers should be able to choose among options such as . . . real time pricing”. Real time pricing is of course a rather pure marginal cost price signal. Time-of-use (TOU) rates are an intermediate step between pure RTP and traditional flat rates with little to no time variation.

16 USC §2621(d)(3) and (4) establishes federal standards calling for electric utilities to provide electric service “on a time-of-day basis” with seasonal variation “to the extent that such costs vary seasonally for such utility.” As part of the Energy Policy Act of 2005 Congress further directed state commissions to consider adopting standards to require, upon customer request, time-based rates such as TOU and RTP “to enable the electric consumer to manage energy use and cost through advanced metering and communication technology.” This Commission opened DE 06-061 to consider the adoption of such a standard and concluded in Order No. 24,763 (6/22/07) that the Commission should move in the direction of mandating TOU rates with voluntary options for RTP and critical peak pricing. Specifically, the Commission embraced the ISO-NE recommendation of having a TOU rate “structure that includes a minimum of three periods: peak, shoulder and off-peak.” (at 24), noting that a more narrow peak period with an

adjoining shoulder period would “provide customers with a much greater incentive . . . to shift load out of the peak period because the shorter peak period produces a higher cost-based peak rate, while the shoulder period provides a convenient home for the load shifted out of the peak period.” The Commission suspended that order upon a motion for rehearing and after hearing adjudicated testimony concluded in Order No. 24,819 (1/22/08) “that as a general policy matter it is appropriate to implement some form of smart metering and time-based rates as set forth in the federal standard in the instant docket” and ordered “that it is appropriate to implement time-based metering standards” but deferred implementation and details to utility specific proceedings. And here we are 12 years later still awaiting such implementation.

(4) **Costs and Benefits.** Costs and benefits foreseeably associated with adopting any of the above-described standards.

Commercial charging stations that offer level 3 and DC fast charging can create a high demand for electric capacity and are geared to the long-distance traveler that needs a fast charge. If such demand occurs at times of coincident peak and is not paid for by the customer, there is a risk of increasing costs for other customers. On the other hand if the design of the tariff incentivizes charging during off peak periods and the use of on-site storage/generation to shave contributions to coincident peak demand then there could be benefits to all customers by improving system load factors or asset utilization rates. Most of the costs in generation, transmission and distribution are for the infrastructure of capacity to meet coincident peak demands, plus a margin of safety. New Hampshire has trended towards lower load factors, which means we pay more per kWh than if we had better load factors:



Rate design for electric vehicle charging should provide appropriate price signals to reflect the lower cost and value of adding electric loads off-peak versus on peak. If we can fill the

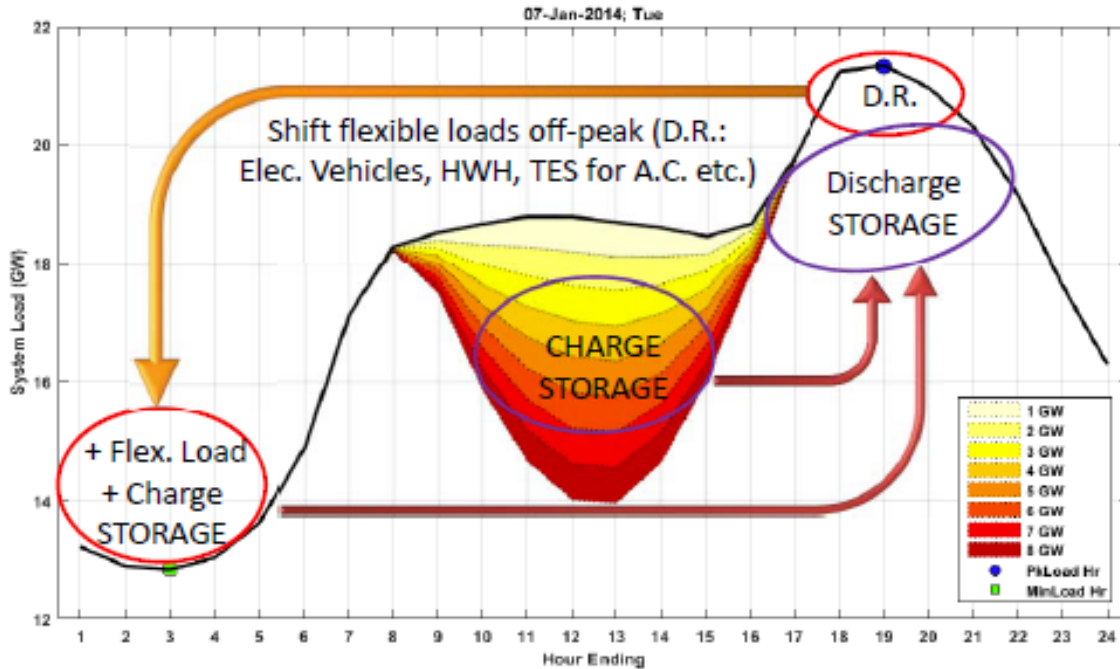
valleys a bit and shave the peaks a bit, that will lower overall costs per kWh while still providing revenue to cover embedded costs:

### The Need for TVR

Illustrative Winter Impact of Solar at Different Levels of Dev. (from ISO-NE)

from: <https://www.iso-ne.com/about/what-we-do/in-depth/solar-power-in-new-england-locations-and-impact>

### New England's Duck Curve



Much of the charging for people who live and work in New Hampshire will be of a flexible nature as to when and eventually even where (such as at home, work, or play) and at what rate charging occurs.

### Residential and Commercial Time of Day Rates for Electric Vehicle Charging

(1) **Alignment with Principles.** Whether implementation of electric vehicle time of day rates for residential and commercial customers would align with the Commission's rate design principles of efficiency, equity, simplicity, continuity, and revenue sufficiency; and relatedly, whether such rates would encourage energy conservation, the optimal and efficient use of facilities and resources by an electric distribution company, and equitable rates for electric customers;

See discussion above. TOU and other TVR will encourage more optimal and efficient use of facilities and resources and ultimately be more equitable and rates will better align with cost causation. Electric vehicles use less energy than fossil fueled vehicles so appropriate TVR will encourage energy conservation.

(2) **Distribution, Energy, and/or Transmission.** Whether electric vehicle time of day rates for residential and commercial customer should apply to distribution rates, transmission rates, and/or energy rates, and how benefits would accrue to ratepayers through an electric distribution utility for time-varying transmission and distribution rates.

TOU rates should be developed for all three rate components. Competitive energy markets provide both short term marginal cost price signals in form of day ahead and real time prices as well as long term marginal cost price signals in form of the forward capacity market that is an entirely marginal cost price signal based on share of a single hour of co-incident peak demand. Customer should be able to access and respond to such price signals directly, helping to optimally balance supply and demand. Energy TOU can reflect the patterns of these price signals by time of day, day of week and seasonally. Customers should be able to opt-in to other competitive options, such as DAP or RTP, through electricity suppliers, as the advanced metering needed for TOU should also enable dynamic rate options such as RTP.

Transmission rates at the wholesale rate level are a strong marginal cost price signal, recovering a revenue requirement for mostly sunk capacity costs, by allocating those costs on each month's single hour of coincident peak demand. These price signals can be translated to retail through a probability-based allocation of these coincident peak hours into TOU tiers as was done for the Liberty Battery pilot.

Distribution is similar to transmission in that the revenue requirement is dominated by sunk or embedded costs in infrastructure capacity. Like transmission new increments of capacity to meet coincident peak demand tends to raise the average cost per kW of capacity or kWh of energy delivered. Marginal cost price signals can be realized through a 3 tier TOU allocation of those costs based on the amount of capacity used in various time periods, much as was done for the Liberty Battery pilot in DE 17-189. Please see the Technical Statement Regarding TOU Rate Model as referenced by the OCA.

**(3) Adequacy of Current and Proposed Rate Offerings.** Whether any of the existing or proposed electric distribution company rate offerings identified above adequately encourage electric vehicle charging in a manner which limits peak load growth, and if not, rate design which might limit peak load growth, as well as encourage conservation, optimal and efficient use of facilities and resources by the electric distribution company;

Existing rate offerings are inadequate to promote optimal vehicle charging and cost allocation. Any demand charges for commercial charging stations should be largely based on coincident peak demands, not off-peak demand, which has little impact on most aspects of capacity in the system.

**(4) Metering, Communication, and Billing Costs.** Whether implementation of electric vehicle time of day rates for residential and commercial customers requires incremental ratepayer-funded investments in metering, communication, and/or billing systems, and if so, the magnitude of those investments;

There may be some needed investments to enable customer opt-in for AMI, as called for by most stakeholders and staff in the Commission investigation into Grid Modernization. Utilities should invest in the billing capacity for at least 3 tier and seasonal TOU rates.

**(5) Potential Load Factor Improvements.** Whether potential load factor improvements associated with flexible load requirements might offset incremental costs associated with time of day rate offerings for electric vehicle charging at residential and commercial premises;

This is most likely to be true if all three rate components are aligned to provide marginal cost price signals that it is very expensive to use electricity at fairly narrow peak periods, around the same during shoulders and much cheaper during true low demands off-peak periods.

(5) **Customer Engagement Strategies.** Customer engagement strategies that may supplement time of day rate offerings in a manner which limits costs associated with proliferation of electric vehicles on the distribution system (e.g. – targeted marketing of offerings to electric vehicle owners through load-based analysis or partnerships with manufacturers, dealerships, trade associations, or state government);

The City concurs with the OCA’s comment on this issue.

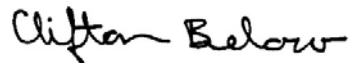
(6) **Venue.** The appropriate venue (e.g., during a rate case, during a state-wide docket for all utilities regarding electric vehicle charging rates, etc.) for proposal and approval of residential and/or commercial time of day rates for electric vehicle charging;

(7) **Role of the Utility.** The role of the utility in deployment of electric vehicle supply equipment, including, but not limited to identification of locations which might host electric charging stations without requiring distribution system upgrades and the utilities role in the ownership of and payment for the equipment associated with electric charging stations; and

The City concurs with the OCA’s comment on this issue.

Thank you for the opportunity to provide these comments and your consideration of same.

Yours truly,



Clifton Below,  
Assistant Mayor, City of Lebanon