STATE OF NEW HAMPSHIRE

BEFORE THE

NEW HAMPSHIRE PUBLIC UTILITIES COMMISSION

DOCKET NO. DE 24-070

REQUEST FOR CHANGE IN RATES

DIRECT TESTIMONY OF

Amparo Nieto

Allocated Cost of Service Study

On behalf of Public Service Company of New Hampshire

d/b/a Eversource Energy

June 11, 2024

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Attachments

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PETITION OF PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE d/b/a EVERSOURCE ENERGY

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I. INTRODUCTION AND QUALIFICATIONS

Q. Please state your name and current position.

A. My name is Amparo Nieto. My current position is Principal at the Energy Practice of Charles River Associates (CRA).

Q. Please summarize your qualifications and experience.

A. I have over 25 years of experience providing advisory services and analyses on behalf of utilities, independent firms and energy regulatory commissions, in the context of energy regulatory policy design, electricity and natural gas rates, and wholesale markets. I have advised extensively on the development of electricity cost studies for use in the design of more efficient rates and programs, for utilities in California, Arizona, Maine, Minnesota, Oregon, New York, North Dakota, South Dakota and other states, as well as in provinces of Canada such as in British Columbia, Manitoba and Newfoundland. I have reviewed and

developed more efficient utility electricity rate structures, recommended changes to utility demand response and interruptible rates, reviewed the impact of net metering rates on cost shifting among customers and designed improved compensation schemes for Distributed Energy Resources (DER). I have published energy papers and extensively participated as a panelist on industry and academic forums in the U.S. I hold a Master's degree in Economic Analysis and Public Finance from the Madrid Institute for Fiscal Studies, in Madrid, Spain, and a B.A. in Economics from the University of Carlos III of Madrid. My curriculum vitae is set forth in Attachment ES-ACOSS-1.

Q. On whose behalf are you testifying?

A. I am testifying on behalf of Public Service Company of New Hampshire d/b/a Eversource Energy ("PSNH" or the "Company").

Q. What is your experience working with PSNH as it pertains to these proceedings?

A. I have developed an allocated cost of service (ACOS) study and an electricity marginal cost of service (MCOS) study, for PSNH. Both studies are an update to the studies I previously developed in the context of the Company's 2019 GRC (Docket No. DE 19-057). The ACOS study provides information that is useful for class revenue requirements and the MCOS study informs of the floor revenues, marginal cost contributions, and basis for rate design. I also advised PSNH on the best manner to apply these results in a rate design. The updated ACOS and MCOS studies were submitted in this proceeding and are included as Attachment ES-ACOSS-2, Attachment ACOSS-3, and Attachment ES-MCOSS-1.

Q. Have you testified in other regulatory proceedings?

A. Yes. I have submitted expert testimony in the Company's 2019 GRC regarding the ACOS and MCOS studies and rate design. I have also testified before the state commissions across the country, including in Nevada, New York, Maine, Wyoming, Illinois, North Carolina, Minnesota and North Dakota, in the context of electricity marginal cost studies, electricity rate designs, net metering, and contracts with independent power producers. I have also provided expert testimony as part of the Salt River Project's price review process before its Board of Directors, with regard to SRP's proposal to revamp their net energy metering rates. Overseas, I supported regulatory proceedings involving rate reforms in Spain, Ireland, Brazil, Kenya and Barbados.

Q. How is your testimony organized?

A. My testimony is organized as follows.

- In Section II, I summarize my testimony.
- In Section III, I discuss the methods to estimate the components of the ACOS.
- In Section IV, I describe the resulting revenue targets by rate class and how they compare with revenues for the test year.
- In Section V, I discuss the main conclusions.

II. SUMMARY OF TESTIMONY

Q. Please summarize your direct testimony.

A. PSNH's ACOS study is intended to identify the relative responsibility of each rate classification for the recovery of the overall costs of distribution service in a particular test

year, which in this case is the 12-month period ending December 31, 2023. The ACOS study determines the rate of return overall and by rate class and the degree of over/under recovery of allocated costs under existing tariffs. Thus, it indicates the changes to present rates that would be necessary to result in equal rates of return on rate base for each class. Any rate class contributing less than the average rate or return on rate base is assumed to be cross-subsidized by other classes from the point of view of the ACOS study. In practice, the Company uses the ACOS results as a guide, but in a manner that recognizes customer impact considerations.

The 2024 ACOS study begins with the review of the Company's proposed distribution revenue requirement (operating expenses, net plant, taxes, depreciation, etc.) for test-year ending December 31, 2023. Two versions were computed; an adjusted "per books" test year, and a proforma test year. The study develops cost allocation factors for the different components of plant and expenses using the respective rate-class share of various measures of demand from load research provided by the Company and test-year customer numbers, as well as from weighting factors as applicable to meter costs, and customer-related expenses. Under the ACOS method, customers are assumed to be responsible for a share of the sunk, historical demand-related costs in proportion to kW of coincident and non-coincident demand by class, customer numbers, weighted expenses by class and other cost drivers. A discussion of these results is provided in Section IV.

III. METHODS USED IN THE PSNH ACOS STUDY

Q. How are the various distribution plant costs classified in the ACOS study?

A. The ACOS study distinguishes between demand-related and customer-related costs. Distribution station plant (Account 362) is considered in its entirety as demand-related. Poles, transformers, underground and overhead circuits (Accounts 364, 365, 366, 367 and 368), are considered to have both a demand and a customer-related component. The split of these accounts is based on the results of the Company's Minimum System (MS) study. The meters, service drops and installations on customer premises, are considered to be entirely customer-related and allocated on the basis of relative differences in installed costs and customer numbers.

Q. Could you describe the minimum system study and the resulting classification factors?

A. Yes. The MS study is consistent with the methodology in NARUC manual. It starts by determining the installed cost for a minimum sized pole, conductor, and transformer on the Company's distribution system, including material costs, labor costs and equipment costs. This cost per unit of the minimum sized plant is multiplied by the total existing inventory of each plant type. The total cost of the minimum sized plant is divided by the total cost (all in today's dollars) of the actual sized distribution plant in the field. This ratio represents the customer-related portion of distribution plant investment, with the balance being the capacity-related portion.

Table 1 below indicates the percent of distribution plant classified as customer and demand-related as per the results of the MS method.

Table 1. Minimum system study classification factors

Account Number		Demand	Customer
364	POLES - PRIMARY	20.3%	79.7%
364	POLES - SECONDARY	18.0%	82.0%
365	PRIMARY OH LINES	69.0%	31.0%
365	SECONDARY OH LINES (1ph)	63.4%	36.6%
366, 367	PRIMARY UG LINES 1-PH	84.7%	15.3%
366, 367	PRIMARY UG LINES 3-PH	93.7%	6.3%
366, 367	SECONDARY UG LINES -1ph	69.0%	31.0%
368	OH TRANSFORMERS	58.5%	41.5%
368	UG TRANSFORMERS	88.3%	11.7%

Q. Have you used the same allocation methods for the demand-related share of these costs as those used in the Company's ACOS study filed in the 2019 rate case?

A. Yes. The 2019 ACOS study recognized that investments that are driven by less diversified demands, such as conductors and transformers in Accounts 365 – 368, which include, to a large degree, local distribution facilities. The traditional manner to allocate the demand-related costs of these accounts in an ACOS study is to rely on the relative class non-coincident demands (NCPs). PSNH's 2024 ACOS study uses class NCP. Class NCP allocators include some diversification at the rate class level.

Q. What allocation approach did you apply to station plant?

A. The ACOS study distinguishes between the elements of distribution plant that are installed to meet loads during the highest system peak hours in the year, such as the case of bulk distribution substations and non-bulk distribution stations, all in Account 362, from lower voltage levels. The 2024 ACOS study continues to use a hybrid allocator for the allocation

of distribution substation plant Account 362, which takes into account both the class contribution to the top 20 distribution system coincident peak hours in the test year, and class NCP demands. The 20CP/NCP allocator takes into account that distribution substations must have sufficient capacity to meet the distribution station coincident peak demands, which may include more than one rate class. At the same time, a portion of the lower voltage distribution substations may serve loads that do not peak at the time of the distribution peak. The hybrid allocator does a better job at reflecting cost causation compared to just relying on class NCP as the traditional ACOS studies.

Q. How did you determine the hybrid class allocator for station plant?

A. The first step was to determine what portion of the substation plant account represents bulk stations versus lower voltage distribution substations. Although both types of distribution substations may peak at the time of (or close to) the distribution system coincident peak, the bulk stations are more likely to do so, according to my review of hourly loads at individual bulk stations. I was not provided with hourly load data at the lower voltage substations to be able to determine their coincidence factors. In order to recognize that there is more than one coincident peak hour that the utility considers for planning purposes, the allocator uses the highest 20 coincident station peak hours as opposed to the single annual coincident peak and allocates 53 percent of Station plant (Account 360) to customer classes on the basis of their contribution to the average of the 20 hours of maximum system demand, and the remaining share based on class NCP. The 20 CP hours are consistent with assuming five summer days of four sustained critical peak hours on average in each day.

A pure 20CP allocator would assign zero cost responsibility to rate classes that only contribute to the winter peak, such as streetlighting. A class NCP allocation approach is maintained since some portion of the stations peak outside of the system-coincident peak hours. The study weights were based on the relative total replacement costs of bulk stations vs. non-bulk substations, using an assumption that only the transformer is replaced and no other work or land purchase is needed. Overall, the method is more aligned with cost causation for these rates than a NCP-only method.

Q. Does the ACOS study introduce granularity in the allocation of Accounts 365-367?

A. Yes. Just like in the 2019 ACOS Study that I conducted for the Company, the current ACOS study utilizes the results of the MS study to differentiate plant and for some accounts, it differentiates by the phase level. The 2024 ACOS study uses separate classification factors for single phase versus three-phase to avoid allocating costs to three-phase customers of equipment that they do not use. I relied on the split on miles of single-phase and multi-phase distribution plant and their associated replacement cost (in dollars per mile) from the MS study to establish a separation of underground primary lines (Accounts 366 and 367) by phase and developed cost allocators to account for the use of the single-phase portions of the system by customer classes, based on the information provided by the Company regarding the share of 3-phase customers within the General Service Rate. All GV and LG customers are three-phase customers. This separation was possible only for Accounts 366 and 367, since the inventory in other accounts was not detailed enough to identify the phase of the conductor.

Q. How did you account for the fact that large commercial customers own their own transformers?

A. The allocation of demand-related costs in Account 368 uses an adjusted class NCP allocation factor to exclude the share of NCP associated with customers in GV and LG rates who are served from customer-owned transformers. All other customers in classes GV and LG rent a transformer from the Company or provide their own. This adjustment is based on transformer ratings for transformers owned by these customer classes, compared to the rating of the total transformers (customer-owned plus rented transformer) in the class. The share of customer-owned transformer ratings was assumed to represent the share of the class NCP associated with the customer-owned transformers. The revenue from rental of transformers (Account 454) was applied to the classes GV and LG as corresponds based on the test-year rental payments by these classes. An adjustment was also made for customers who own their own transformers, using the information on customer-owned transformer provided by the Company in the prior case and assuming it continues to be the same share of overall customers in the class, given the lack of updated data.

Q. Do you see any limitations in the allocation factors for distribution plant and expenses?

A. There are limitations inherent to any ACOS study that relies on accounting cost records. For example, the transformer plant, in Account 368, does not distinguish between the primary step transformers, which convert power voltage down to a lower level but do not directly connect customers' premises to the grid, and the service line or secondary transformers, which directly connect customer premises to the grid. The former are built

based on more diversified demands and could arguably be allocated on the basis of the hybrid allocator, just like for the distribution substation costs, if plant was disaggregated. Given the aggregated plant accounting data, there is also not enough detail to isolate the costs of trunkline, upstream or backbone primary feeders from the rest of plant in Accounts 365-367. Upstream feeders are driven by coincident peak demands at the substation. The study allocates all demand-related costs of Accounts 365-367 on the basis of class NCP. Lastly the accounting records do not distinguish plant by voltage level, other than by primary and secondary so customers served at the 34.5 kV voltage level are allocated line cost on the same basis (NCP) as other customers. Again, this is a common limitation in any ACOS study because only aggregated plant balance account records are available.

Q. How does the ACOSS allocate customer-related plant and expenses?

A. Customer-related costs vary with the number and type of customers. When customers are added, the Company faces higher costs for customer service expenses such as meter reading, collection and inspection, billing, and bad debts. New meter and service drops are also installed. Relative weights were estimated to reflect differences in the effort required and the cost incurred to provide customer services to individual customers in each rate class. Examples of customer allocators are as follows:

- Meter reading allocation factors were based on number of meter reads and average cost per read, by class, as provided by the Company;
- Allocation factors for the meter plant were based on the relative ratios of the average installed meter cost within a class; with the relative weight of a residential customer set equal to one, each of the other classes is assigned weighting factors.

The ratios of the weighted customer counts for each class to the total weighted number of customers provides the customer allocation factor.

- Collection expenses were allocated to residential and general service based on the number of customers in these categories and average per-customer cost by class.
- Bad debts and other customer accounts expenses were allocated based on a review of accounts by the Company on the relative amount of these expenses by class.

The specific costs associated with streetlights (such as luminaries, ballast, light bulbs and other equipment necessary for street lighting, including an allocated share of general plant and directly assigned O&M expenses) were allocated directly to the streetlight class OL.

Q. How does the ACOS study treat standby customers in rate B?

A. Standby rate customers should pay the same as full requirements customers in the otherwise applicable rate as long as they require the same capacity in the system when their onsite generation is unavailable. The ACOS study uses for rate GV-B and LG-B the same allocator type as the rest of the classes, i.e., the 20CP/NCP allocator for station plant and class NCP for other demand-related costs, using the back-up demands of these customers, since the rate B is assessed on customers' back-up demands.

IV. RESULTS OF REVENUE TARGETS BY CLASS

Q. What does the ACOS study determine in terms of the adequacy of current distribution rates in the proforma test year?

A. PSNH is requesting an overall revenue requirement increase from distribution rates of approximately 43.5 percent, which would allow the Company to realize a return on rate base of 7.44 percent, in the proforma test-year scenario. The results of the 2024 ACOS study reveal that all PSNH's existing distribution rates are inadequate to allow the

Company to recover the test-year target rate of return on rate base, with the exception of rate EOL. The overall earned rate of return that the Company currently obtains at existing distribution rates is 0.29 percent. Table a provides a summary of the Proforma test year ACOSS target revenue requirement results at the class level and percent rate changes needed to achieve the Company target rate of return of 7.44 percent. The two major rate classes that would need to experience a significantly larger than average percent increase to bring all rate classes to parity (after netting out other revenues) are the Residential rates RPL+TOD (59.68 percent increase, which exceeds average revenue requirement increase), followed by the LG rate (35.9 percent). All the small rates (LCS, water heating, and General service LCS) would need to increase by more than twice their current level to provide equal return on allocated rate base of 7.44 percent. The ACOS proforma results show very divergent class rates of return at current rates, with many classes either paying significantly less or significantly more than their proportional share of allocated costs. The Residential class, as well as the LCS and Water heater rate classes all provide a negative return on allocated rate base. It is important to note that these are small loads and an "add on" service to regular whole house usage and small commercial rates. The key take away is that the study demonstrates that the Company rates are currently insufficient to provide an adequate overall rate of return, and class revenues are misaligned with regards to parity of return by class. Thus, class results would need to be rebalanced taking into account avoidance of rate shock, after considering the weight of the distribution rate in the overall

customer bill. More detail in the 2024 ACOSS results is included in Attachment ES-ACOSS-2.

Table 1. Distribution Rate Required Change by Class, Proforma Test Year 2023

Rate Class	Current Distribution Revenue	Existing Earned Return	ACOS Revenue Target at 7.44%	ACOS Revenue Difference	ACOS Required Percent Change
	(000$)	%	(000$)	(000$)	%
R PL+TOD	$244,615	-1.32%	$390,612	$145,997	59.68%
R LCS	$646	-8.41%	$1,962	$1,316	203.56%
RWH	$4,203	-4.04%	$7,768	$3,564	84.80%
GS + GS TOD	$96,493	4.30%	$111,118	$14,625	15.16%
G SH	$181	2.58%	$227	$46	25.26%
G LCS	$50	-9.60%	$178	$128	256.37%
G-WH	$136	-2.67%	$223	$87	64.07%
GV	$43,045	3.65%	$51,608	$8,563	19.89%
LG	$21,077	1.43%	$28,551	$7,474	35.46%
RATE B	$1,558	1.22%	$2,078	$520	33.39%
OL	$4,277	6.62%	$4,386	$110	2.57%
EOL	$2,062	10.93%	$1,913	($150)	-7.25%
Total	**$418,343**	**0.29%**	**$600,624**	**$182,281**	**43.57%**

V. CONCLUSIONS ON ACOS STUDY APPLICATION FOR RATE PROPOSALS

Q. Please summarize the key ACOS study result.

A. I have developed updates to the Company's allocated cost of service study that rely on best practice methods introducing more granularity of plant accounting costs where possible, and keeping in mind that the higher up the facility is in the system, the more diversified the loads served by the facility are (e.g., bulk substation), and the less the drivers of the

investment are related to customer classes' maximum demand, since a substation serves more than one customer class.

Q. Is the ACOSS the right basis for rate design?

A. An ACOS study is based on a top-down allocation of accounting costs and not on each customer class's contribution to forward-looking marginal costs of service. Thus, an ACOS study is more commonly relied upon as a guide to set revenue targets as opposed to determining individual rate components. I provide a broader discussion about the appropriate rate design changes to meet efficiency and intra-class equity rate objectives in my direct testimony on marginal costs of service, also filed in this, including the apportionment of cost recovery in per-kWh or per-kW charges and the fixed charge among other rate design elements.

Q. Does this conclude your testimony?

A. Yes, it does.