NORTHERN UTILITIES, INC.

DIRECT TESTIMONY OF

PAUL M. NORMAND

(Depreciation Accrual Rate Study)

Exhibit PMN-1

The State of New Hampshire
Public Utilities Commission
Docket No. DG 17-070

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LIST OF DEPRECIATION SCHEDULES

I. INTRODUCTION

Q. Would you please state your name, address and business affiliation?

A. My name is Paul M. Normand. I am a Principal with Management Applications Consulting, Inc. ("MAC"), 1103 Rocky Drive, Suite 201, Reading, Pennsylvania 19609.

Q. Please describe MAC.

A. MAC is a management consulting firm which provides rate and regulatory assistance including depreciation services for electric, gas and water utilities.

Q. Would you please summarize your education and business experience?

A. This information is contained in Depreciation Schedule PMN-1.

Q. What are your responsibilities in this proceeding?

A. I am responsible for the preparation of the depreciation study for Northern Utilities, Inc. New Hampshire Division ("Northern" or "the Company").

I have also prepared additional testimony relating to cost of service and rate design which has been filed under separate cover.

II. PURPOSE OF TESTIMONY

Q. Please discuss the purpose of your testimony.

A. Our consulting firm was retained by the Company in the first quarter of 2017 to conduct a new depreciation rate study for its Northern Utilities, Inc. New Hampshire Division gas properties. At the same time we were also retained to conduct a new depreciation study for the Maine division, and to conduct accounting and marginal cost studies and

completed rate design for both jurisdictions. My testimony on the rate design studies and proposals is provided separately in this proceeding.

Q. What are your responsibilities in connection with the depreciation study for filing?

A. I am responsible for planning the depreciation study, delineating and coordinating data collection, ensuring the accuracy of the data and properly reflecting any accounting adjustments in the depreciation rate study database. Beyond data collection, I am also responsible for the performance and interpretation of statistical analyses and the preparation of appropriate schedules to reflect the results of the depreciation studies as presented in Depreciation Schedule PMN-2.

Q. Could you please briefly describe the Depreciation Study attached as Depreciation Schedule PMN-2 to this direct testimony?

A. In addition to my Qualifications presented in Depreciation Schedule PMN-1, I have prepared a detailed depreciation study which analyzes the Company's depreciable gas plant and derives appropriate accrual rates to be utilized for each plant account. The accrual schedules included in Depreciation Schedule PMN-2 calculate the annual depreciation expense for the respective plant balances on a going-forwards basis.

Q. Are the depreciation results presented in your study and your recommended accrual rate schedules contained therein reasonable and applicable to the respective plant balances as of 12/31/2016?

A. Yes, they are. Our life analyses spanned several decades of data, and our findings should be entirely appropriate for use several years beyond the actual date of these studies. The proposed accrual schedules included in Depreciation Schedule PMN-2 are appropriate

and reasonable for calculating the annual depreciation expense for the respective plant balances on a going-forwards basis.

III. DEPRECIATION STUDY

Q. Please explain the overall depreciation model utilized in your Depreciation Study.

A. The Depreciation Study used the overall straight line method, broad group procedure, and whole life technique in arriving at the recommended accrual rates for the Company based on plant balances ending December 31, 2016.

Q. Are the contents of the Depreciation Study true and correct to the best of your knowledge?

A. Yes. The Depreciation Study and the depreciation rates set forth therein are the result of detailed analyses of the Company's investment in plant facilities.

Q. When was the Company's last depreciation study prepared?

A. The Company's last gas depreciation study was prepared using plant data in service at December 31, 2010 in Docket No. DG 11-069.

Q. Are the Company's current accrual rates based on this prior study?

A. No. The current accrual rates are from DG 11-09 Settlement.

Q. How is "depreciation" defined for the purposes of the Depreciation Study?

A. The definition of depreciation adopted by the National Association of Regulatory Utility Commissioners (NARUC) is as follows:

> *"Depreciation", as applied to depreciable utility plant, means the loss in service value not restored by current maintenance incurred in connection*

> *with the consumption or prospective retirement of utility plant in the course of service from causes which are known to be in current operation and against which the utility is not protected by insurance. Among the causes to be given consideration are wear and tear, decay, action of the elements, inadequacy, obsolescence, changes in the art, changes in demand and requirements of public authorities.*

Another commonly referenced definition of depreciation is that of the American Institute of Certified Public Accounts (AICPA):

> *a system of accounting which aims to distribute the cost or other basic value of tangible capital assets, less salvage (if any) over the estimated useful life of the unit (which may be a group of assets) in a systematic and rational manner. It is a process of allocation, not of valuation. Depreciation for the year is the portion of the total charge under such a system that is allocated to the year. Although the allocation may properly take into account occurrences during the year, it is not intended to be a measurement of the effect of all such occurrences.*

NARUC Staff Subcommittee on Depreciation, "Public Utility Depreciation Practices" at pp. 13, 14 (August 1996).

Q. What is the purpose of periodic book depreciation rate studies, such as that which you performed for the Company?

A. The purpose of a depreciation study is to develop depreciation accrual rates reflective of engineering judgment, current industry and specific company experience, and current projections for the future service lives, relative to the particular depreciable assets under study. The objective of including depreciation as an element of the cost of service is to ensure the full recovery of investments in depreciable assets over a life term, less estimated net salvage. Net salvage is defined as the gross salvage value less costs related to the removal or retirement of assets.

Q. What procedures did you employ in compiling your depreciation studies?

A. First, we created a depreciation study database. The Company provided us with the necessary property accounting history, additions, retirements, plant balances, adjustments and transfers to develop a complete database history for each plant account. These data are provided in the depreciation workpapers included with this filing. In addition, the Company also provided recent gross salvage and removal cost history.

Q. Having created the depreciation study database, how did you proceed with your analysis?

A. Next, I analyzed the historical data in the depreciation study database using computerized statistical routines, specifically the Simulated Plant Record Balances (SPR-BAL) life analysis method. The SPR-BAL is a widely used and accepted method employed in depreciation studies. It is used as a tool in the estimation of investment life, and can be performed whenever there is an adequate volume and frequency of additions and retirements.

SPR-BAL life analyses are known as "semi-actuarial life analyses." The SPR-BAL analysis used in the Depreciation Study is an iterative procedure in which certain values (survivor factors) from empirical survivor curves (also known as "Iowa curves") are applied to the Company's actual, recorded annual capital additions to generate theoretical surviving year-end balances. The procedure identifies the empirical curves that best simulate the actual ending balances in a specified band of years. As an example, the bands of balance years simulated in these studies were primarily 30 years (1987 to 2016), 20 years (1997 to 2016), and 10 years (2007 to 2016).

The SPR-BAL life analyses of property history provide us with the historical life of plant investments, and thus a starting point in the life estimation process.

Q. Please explain the Iowa curves used in your analysis.

A. The Iowa curves used in our analyses were developed in the 1930s at Iowa State University. They are empirical curves whose equations are published, along with tables of various values, e.g., survivor factors at various ages. Iowa curves are widely accepted in the industry as a common and convenient means of communicating and calculating technical depreciation parameters for utility assets. These survivor curves graphically depict the amount of property existing at each age over the life of an asset class under review.

Q. Did you provide the output from your analyses of the Depreciation Study (Depreciation Schedule PMN-2)?

A. Yes, I did. The detailed analyses of each account or subaccount that was analyzed were provided and categorized as part of the workpapers. This detail includes the database used and the SPR analyses developed from these data, which analyses identify and rank the various service lives and associated Iowa curve types along with the respective "fit" statistics.

Q. What other considerations, referenced above, factored into your analysis?

A. In preparing our life analyses of the Company's depreciable assets, we also considered input from Company personnel, the character of the depreciable assets, knowledge gained during property inspections, my experience with like assets, and engineering knowledge and judgment.

Q. What type of input from Company personnel did you consider?

A. I conferred with Company personnel to determine if there were any occurrences, changes in policy, procedure, equipment, or practices which might impact service life, salvage, or removal cost associated with depreciable assets. The major consideration was to determine whether past experience would likely be representative of the near-term future. To this end, I made an adjustment to my remaining life calculations for Account 376.30, Bare Steel, Account 376.50, Joint Seals, and Account 376.80, Distribution Mains (cast iron), to reflect the Company's projected cast iron and unprotected steel replacement program to be completed in the year 2017.

Q. Why is the use of judgment and experience a necessary part of a depreciation study?

A. The accounting industry and regulators have long recognized that judgment is an important aspect of determining proper accrual rates in any depreciation study. For example, the NARUC Manual of Public Utility Depreciation Practices explains:

> *Informed judgment is a term used to define the subjective portion of the depreciation study process. It is based on a combination of general experience, knowledge of the properties and a physical inspection, information gathered throughout the industry, and other factors which assist the analyst in making a knowledgeable estimate....*
>
> *The analyst's role in performing the study is to review the results and determine if they represent the mortality characteristics of the property. Using judgment, the analyst considers such things as personal experience, maintenance policies, past company studies, and other company owned equipment to determine if the stub curve represents this class of property.*

NARUC Manual of Public Utility Depreciation Practices at 126. More specifically, the developer of the SPR-BAL method of life analysis cited the need for exercising judgment in his paper introducing the SPR-BAL to the industry:

> *The method reads the past and not the future, and has no way of telling which patterns will be followed in the future. Neither the actuarial or any*

> *other statistical process can eliminate this dilemma. Only by the exercise of reasonable judgment, or by the passage of time, can a selection be made.*

Bauhan, A., "Methods of Estimating Utility Plant Life" at 61, Edison Electric Institute Publication No. 51-23 (1952); see also N.Y. State Dept. of Public Service, "Computer Supported Property Mortality Studies" at I.1 (1972) ("Under no circumstances should it be construed that a specific indicated service life and life table developed by [a] computer process must necessarily be used as the life table and average service life in arriving at a final estimate of annual and accrued depreciation. . . . [T]he selected life table and average service life finally used . . . must be the engineer's best estimate for the property under study.").

In summary, life estimates consider many factors, including the importance of informed judgment. This is especially important with utility gas infrastructure as forecasts for most Companies continue to emphasize accelerated improvements by utilities, which actions are typically greatly encouraged by Commissions.

Q. What is the next step in your analysis?

A. Once a determination was made as to the appropriate average service life (ASL) with Iowa curve and net salvage, the final calculations were then made to develop the recommended remaining life accrual rates for each category of plant as shown in Schedule A of the Depreciation Study (Depreciation Schedule PMN-2).

Q. What technique did you use in developing your proposed accrual rates?

A. The accrual rates were derived by using a straight line method, broad group average service life procedure, and a whole life depreciation technique for each plant account as follows:

$$\text{Whole Life Accrual Rate} = \frac{\text{100\% - Net Salvage (NS\%)}}{\text{Average Service Life}}$$

Q. What are the Net Salvage (NS) values used in determining your proposed accrual rates?

A. Net salvage (NS) is one of several factors used in the derivation of each of the proposed accrual rates presented in the Depreciation Study of Depreciation Schedule PMN-2.

Our proposed NS factors have changed from those of the Company's current authorized rates, which are detailed on Schedule B, columns (3) and (7) of Schedule PMN-2.

Q. Is Net Salvage an important aspect to establishing reasonable and equitable depreciation accrual rates?

A. Yes it is. Net salvage is an important cost that must be recovered in an equitable manner over the useful life of an asset from those customers who benefit from the use and service of an asset. To defer the proper recovery of these costs until retirement will introduce a subsidy to existing customers by deferring the recovery of these end-of-life costs to future customers.

Q. What are the total composite annual accrual rates which result from your Depreciation Study?

A. The final composite accrual rate results of the proposed whole life analyses as detailed in the Depreciation Study are as follows:

Table 1
Rates (%)

	Study Results (Depreciation Schedule PMN-2)	Current Accrual Rates
Total Depreciable Gas Plant (excluding Mains Replacement Program)	3.42	3.11

The recommended composite rate reflects a dollar-weighted average of the individual account Plant Balance results taken from Schedule B – Comparison of Current and Proposed [Net Salvage] Gas Accrual Rates.

Q. Do the depreciation accrual rates you propose result in higher total depreciation expense than that derived using the existing authorized depreciation accrual rates?

A. Yes. The accrual rates that I am proposing result in an overall total plant increase when totaling all estimated accruals of the individual accounts for plant balances on December 31, 2016 from Schedule B as follows:

Table 2

	Existing Accruals	Proposed Accruals	Proposed Change
Depreciable Gas Plant (excluding Mains Replacement Program)	$6,377,173	$6,996,962	$619,789

Q. Have you presented the net salvage impact in your depreciation study?

A. The net salvage percent has been detailed for each account and subaccount in columns 7 and 8 of Schedule A, presented in Depreciation Schedule PMN-2. In order to provide additional information with respect to the cost of removal component included in the

proposed Accrual Rates, Schedule A, column (8) use the calculation presented in column (14).

IV. CONCLUSION

Q. Does this complete your testimony?

A. Yes.