THE STATE OF NEW HAMPSHIRE

BEFORE THE

PUBLIC UTILITIES COMMISSION

DG 11-069

NORTHERN UTILITIES, INC

DIRECT TESTIMONY OF

PAUL M. NORMAND

DEPRECIATION ACCRUAL RATE STUDY

EXHIBIT PMND-1

TABLE OF CONTENTS

Page

I. INTRODUCTION 1

II. PURPOSE OF TESTIMONY 2

III. DEPRECIATION STUDY 2

IV. CONCLUSION 12

LIST OF ATTACHMENTS

Attachment PMN-1: Qualifications

Attachment PMN-2: Depreciation Accrual Rate Study

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 Attachment 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 ("the Company"), which includes coordinating data collection, ensuring the reasonableness of the data and properly reflecting any accounting adjustments. Beyond data collection, I am responsible for the performance and interpretation of statistical analyses and the preparation of appropriate schedules to reflect the results of the study.

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

I am currently preparing a lead-lag analysis for this filing which will be provided as an update as soon as it is completed.

II. PURPOSE OF TESTIMONY

Q. Please discuss the purpose of your testimony.

A. Our consulting firm was retained by Unitil Services Corp. to conduct a depreciation accrual rate study.

III. DEPRECIATION STUDY

Q. What is the definition of depreciation?

A. The National Association of Regulatory Utility Commissioners (NARUC) has adopted the following definition of depreciation:

> *"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):

> *Depreciation accounting is 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.*

The two foregoing citations are found on Pages 13 and 14, respectively, of "Public Utility Depreciation Practices," August 1996, by the NARUC Staff Subcommittee on Depreciation.

The AICPA definition helps clarify the NARUC definition in that it brings to the description the process of allocation of cost.

Q. What is the purpose of periodic book depreciation rate study?

A. Consistent with the definitions above, 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, relative to the particular depreciable assets under study. In other words, these accrual rates are prospective in nature. The importance of judgment and projections, as to the future cannot be over emphasized as the accrual rates developed are for the near-term future, not the past. The objective of depreciation as an element of the cost of service is to provide for the appropriate and equitable recovery of the investments in depreciable assets over a life term that assures the full recovery of the investments less estimated net salvage.

Q. Have you prepared a depreciation study for Northern Utilities' New Hampshire Division?

A. Yes. The results of this study are shown in a report entitled, "Depreciation Accrual Rate Study – Depreciation Accrual Rates Based on Gas Plant in Service at December 31, 2010" ("the Depreciation Study") identified as Attachment PMN-2.

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

A. First, the depreciation study database was created. The Company provided MAC with available property accounting history to develop databases for each relevant account to December 31, 2010. Recent plant account level gross salvage and removal cost history was available only for the years 2007 to 2010; therefore, it was necessary to rely upon total depreciable plant salvage and removal cost available (1996-2010) in the annual P.U.C. reports. In addition, I inspected the actual physical plant facilities in New Hampshire and held discussions with Company personnel concerning matters relevant to this depreciation study.

The historical data was analyzed using computerized statistical routines and the output was evaluated in light of the data from the Company, the character of the depreciable assets, knowledge gained during property inspections, MAC's experience with like assets, and engineering knowledge and judgment. Final calculations were then made to develop the recommended accrual rates for each category of plant as shown in the Depreciation Study (Attachment PMN-2) section entitled "Accrual Rate Schedule."

Q. You previously referred to "statistical analyses." Please explain what is meant by this term.

A. This term refers to Simulated Plant Record ("SPR") life analysis, a well known and well accepted method employed in depreciation studies. Its purpose is as a tool that can assist in estimating the average life of an asset. An SPR life analysis can be performed whenever there is an adequate volume and frequency of additions and retirements.

SPR life analyses are known by some as "semi-actuarial life analyses." The SPR-Balances analysis used in these studies is an iterative procedure in which certain values (survivor factors) from empirical survivor curves (Iowa curves) are applied to a company's actual, recorded annual 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 23 years (1988 to 2010), 15 years (1996 to 2010), and 10 years (2001 to 2010).

The Iowa survivor 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.

As mentioned previously, the SPR life analyses of property history can be helpful in estimating the life of some historical investments, a starting point in the life

estimation process; however, it must be noted that life analysis is not life estimation. Unfortunately, life analysis can only provide an indication as to what has happened in the past. In performing a depreciation study such as the one in this case, the goal is to estimate what will occur in the future, not merely measure the past.

Q. Did you employ any other analyses other than SPR to assist in the life estimation process?

A. Yes. The pattern of annual additions to and retirements from each plant accounts were also reviewed to determine the relative volumes of capital activity. These volume changes can often assist in explaining why life and/or curve changes appear in the mortality analyses.

Q. In evaluating the SPR life analyses, you previously stated that you also considered input from the Company. What type of information did you consider?

A. MAC also conferred with the Company to determine if there were any occurrences, changes in policy, procedure, equipment, or practices which might affect service life, salvage, or removal cost associated with depreciable assets. The major consideration was to determine whether indications of the past would likely be representative of the near-term future.

Q. Can you give any examples of specific input provided to you by the Company which influenced your life estimates?

A. Yes. For example, the Company expects to replace and retire a much greater level of mains and services in the foreseeable future as compared to historical experience.

Q. Your answers to previous questions indicate judgment and experience are significant elements in life estimation and in the interpretation of statistical analyses. Do other depreciation experts and authoritative sources concur?

A. Yes, the literature is unambiguous on this point. For example, on page I.1 of the New York State Department of Public Service publication, "Computer Supported Property Mortality Studies," published in 1971, states:

> *The purpose of an actuarial mortality study of public utility property is to make a statistical determination of a representative life table and average service life. The method used to derive these quantities in this report is that of smoothing and extending the retirement ratios.*
>
> *It must be clearly understood that the computer procedure explained in Section II accomplishes electronically only those computations which have had to be done manually, and nothing else. Because of the computer's large storage capacity and extremely fast running time, it is able to calculate a great deal more than has ever been obtained manually in the past.*
>
> *The computer exercises no judgment, reflects no opinions or company policies and does not forecast the future. The computer programs are merely the results of applying certain mathematical formulae to a set of statistics obtained from accounting records – and, based on these data and formulae give an indication of what has been the retirement experience of the past and what would be the future life pattern if the same experience were constant over the entire life of the surviving property under study.*
>
> *Under no circumstances should it be construed that a specific indicated service life and life table developed by this 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. Stress is placed on the fact that the selected life*

table and average service life finally used, whether or not developed by program PSU-2 or PSU-2A must be the engineer's best estimate for the property under study.

Q. Can you provide other citations?

A. Mr. Alex E. Bauhan, the person who developed the SPR-Balances Method of life analysis, cites the need for exercising judgment in his paper in which the method was introduced to the industry. In his paper, given in April 1947, to the National Conference of Electric and Gas Utility Accountants of the American Gas Association (AGA) and Edison Electric Institute (EEI), under the heading, "Multiple Indications," he states:

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.

In discussing the Retirement Experience Index, regarding the situation where the index is "poor or valueless," Mr. Bauhan states:

In all such cases, for estimating purposes, the result of the analysis should be discarded and a judgment figure should be substituted in place of it. In those cases where the experience index is only fair, the result should be examined critically, and if it is not supported by reasoned judgment, it should be accordingly modified.

Mr. Bauhan's paper is found in the Edison Electric Institute Publication No. 51-23, titled, "Methods of Estimating Utility Plant Life" published in 1952; the foregoing citations are found on Pages 61 and 63, titled respectively.

The Retirement Experience Index (REI) is the percentage of the accumulated retirements with the given Iowa curve from the oldest capital addition, e.g., if the oldest addition was 1930, by convention it would be 70.5 years old at year-end

2000. If the Iowa curve in question was a 35-year L 1.0, the REI would be 96; that is, the 35-year L 1.0 Iowa curve shows 4 percent surviving at age 70.5 years, and 100 percent less 4 percent equals 96 percent.

In summary, life estimates consider many factors, including the importance of informed judgment.

Q. Have you employed your judgment in this depreciation study?

A. Yes. In the course of the depreciation study, MAC has conferred with Company management and operating personnel, conducted property inspections, reviewed and considered the types of property in the various primary plant accounts, and performed life analyses of the history of the property. MAC also relied upon its experience in doing similar studies as engineers and consultants in evaluating, interpreting and estimating the life analysis of utility property.

Q. What was the purpose of the property inspections that you conducted?

A. The inspections were intended to accomplish several functions. First and foremost, the inspections verified that the assets identified on the Company's books actually exist. Second, the inspections verified that the assets continue to be maintained and are useable. In addition, inspections facilitate discussions regarding the existing facilities with the Company personnel; these discussions provide a better understanding of the overall system, the equipment, and ongoing changes and improvements to the facilities.

Q. What is the total composite annual accrual rate which results from your depreciation study?

A. The composite of the proposed straight line, whole life individual account rates detailed in the depreciation study is 3.52% as shown in Schedule A, column 8 of the report along with the details for each account. These proposed accrual rates do not include any amortization of the depreciation reserve variance.

The accrual rate Schedule A, the "Schedule of Depreciation Accrual Rates, Whole Life Schedule with Amortization of Reserve Variance," also presents the differences (variances) between the actual book depreciation reserves and our computed (theoretical) reserves. In addition, these differences were amortized on an annual basis which will eliminate any reserve variances over the average remaining life of the various accounts. The composite accrual rates with remaining life amortization are shown in column 17 of Schedule A with the composite overall rate of 3.48%.

Q. Can the Company utilize remaining life as an appropriate technique to recover the undepreciated capital investments of the Company?

A. Yes, it can. The report presents an analysis of the Company's depreciable assets showing whole life and remaining life accrual rates on Schedule A. The average remaining life technique shown in columns 16 and 17 of Schedule A incorporates all of the Company's cost elements unique to each account and calculates an appropriate accrual rate that will assure full recovery of all of the relevant costs – no more, no less. The remaining life technique factors in the average service life with the survival characteristics, net salvage for each account, along with recognizing the level of accrued depreciation in arriving at the final recommended accrual rate.

Q. Is the average remaining life technique a well recognized approach to use in developing appropriate accrual rates?

A. Yes, it is. The remaining life technique is used extensively in the industry today. In fact, the NARUC manual on page 65 correctly addresses the proper use of the remaining life technique as follows:

> *The desirability of using the remaining life technique is that any necessary adjustments of depreciation reserves, because of changes to the estimates of life on net salvage, are accrued automatically over the remaining life of the property.*

Q. What plant accounts did you consider in your proposed net salvage (NS) calculations?

A. The net salvage factors incorporated into the proposed accrual rates were consistent with those included in the Company's existing accrual rates as exemplified by the following:

Plant Account	Proposed NS	Existing NS
375.20 Structures – City Gate	(5)%	(5)%
375.70 Structures & Improvements - Other	(5)%	0%
376 Mains	(25)%	(25)%
378.20 Meas. & Reg. Station Equipment	(5)%	(5)%
380 Services	(75)%	(85)%
381 Meters	0%	0%
382 Meter Installations	(10)%	(10)%

As I mentioned earlier, certain NS factors were only adjusted slightly from existing levels based on our calculations in order to be very conservative and yet move in the proper direction of cost recovery.

IV. CONCLUSION

Q. Does this complete your testimony?

A. Yes.

PAUL M. NORMAND
Principal

Experience in the electric, gas, and water industry includes project management of various cost analyses, engineering system planning and design functions, and detailed electric power loss analyses. Also, experienced in the analysis and preparation of economic and plant data, revenue requirements and presentation before state and federal regulatory agencies. Presented expert testimony on behalf of utilities in over 30 applications before regulatory commissions.

EXPERIENCE:

1984 - Present **MANAGEMENT APPLICATIONS CONSULTING, INC.**
Principal consultant providing consulting services to industry in planning, pricing, and regulation. Extensive experience in analyzing power systems for power loss studies and regulatory issues.

- Assist in gathering and updating property accounting data for depreciation studies.
- Review and analyze life analyses relating to simulated plant balances and actuarial data.
- Perform property inspections to aid in service life estimation and salvage and removal cost estimations.

1983 - 1984 **P. M. NORMAND ASSOCIATES**
Independent consultant providing services to the utility industry in cost analyses, regulatory services and expert testimony.

1976 - 1983 **GILBERT/COMMONWEALTH**, Reading, Pa.
Director, Rate Regulatory Services - Administrative and fiscal responsibility for rate and regulatory services nationally for electric, gas, and water utilities. Additional responsibilities included all marketing, research and development efforts, and contract negotiations for all studies performed by the Regulatory Service Department. Provided consulting service to utilities in project management, personnel staffing, and future development efforts.

Manager, Austin, Texas Office - Responsibility for the overall administrative and business aspects for the department in the Southwest.

Senior Management Consultant - Responsibilities included project management of various electric and gas cost-of-service studies.

Consulting Engineer - Prepared class and time-differentiated cost-of- service studies, revenue requirements exhibits, and expert testimony for formal rate proceedings before regulatory agencies. Performed forecasted ten-year cost-of-service studies by customer classes. Analyzed and prepared transmission (wheeling) rates based on cost-of-service.

Engineer - Derived system demand and energy loss factors and customer load characteristics required for cost-of-service results and related rate schedules.

1975 - 1976 **WESTINGHOUSE ELECTRIC CORPORATION,** Pittsburgh, PA
Responsible for the procurement of electrical/electronic control equipment and power cables for the nuclear reactor control system. Assisted in the development of procedures for the seismic testing of various electronic equipment related to reactor control.

1971 - 1974 **NEW ENGLAND ELECTRIC SYSTEM,** Westborough, Massachusetts
Experience from various system assignments in conjunction with formal education. Assigned to the Transmission and Distribution Department with responsibilities in several voltage conversion efforts and system planning. Development of network modeling techniques, load flow, and fault study analyses for the system planning department.

1966 - 1970 **U.S. NAVY**
Aviation electronic technician with responsibilities for maintenance and trouble-shooting of electronic communication equipment.

EDUCATION:

B.S.E.E., Electrical Engineering, Northeastern University, 1975
M.S.E.E., Electrical Power Systems, Northeastern University, 1975

Graduate Studies - MBA Program, Lehigh University and Albright College, 1977 to 1980

SOCIETIES:

Institute of Electrical and Electronic Engineers
Society of Depreciation Professionals

APPEARANCES AS EXPERT WITNESS:

Federal Energy Regulatory Commission
Arkansas Public Service Commission
Delaware Public Service Commission
Indiana Utility Regulatory Commission
Illinois Commerce Commission
Kansas Corporation Commission
Kentucky Public Service Commission
Louisiana Public Service Commission
New Hampshire Public Utilities Commission
Maryland Public Service Commission
Massachusetts Department of Public Utilities
Missouri Public Service Commission
New Hampshire Public Utilities Commission
New Jersey Board of Public Utilities
New York Public Service Commission
North Carolina Utilities Commission
Ohio Public Utilities Commission
Pennsylvania Public Utility Commission
Texas, Public Utilities Commission of

PAPERS AND PRESENTATIONS:

"Probability of Dispatch Costing Method for Electric Utility Cost-of-Service Analysis." Co-authored with P. S. Hurley, presented to Edison Electric Institute Rate Research Committee May 4, 1982.

"Costing Strategies under Changing Marketing Goals and Long Term Investment Growth." Presented to Missouri Valley Electric Association (MVEA), Kansas City, MO, November 13, 1991.

DEPRECIATION STUDIES PARTICIPATION:

Central New Hampshire Power
Chesapeake Utilities Corporation
Corning Natural Gas Corporation
Dairyland Power Cooperative
Dayton Power & Light Company
EnergyNorth Natural Gas /National Grid NH
Great River Energy
Green Mountain Power
KeySpan Energy Delivery – New York
KeySpan Gas East Corporation/LILCO
Midwest Energy Inc.
Minnkota Power Cooperative
New England Gas Co./Fall River
Public Service of New Mexico – Southern New Mexico Division
St. Lawrence Gas Company, Inc.
Texas-New Mexico Power Company – Texas Division & General Office
Vectren Corporation
Unitil Energy Systems, Inc.