

THE STATE OF NEW HAMPSHIRE

BEFORE THE

PUBLIC UTILITIES COMMISSION

DG 11-069

NORTHERN UTILITIES, INC. d/b/a UNITIL

DIRECT TESTIMONY OF PAUL M. NORMAND

LEAD LAG STUDY

EXHIBIT PMN-2

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PMN-LL-1: Pro Forma Lead-Lag Summary

PMN-LL-2: Impact of Lead-Lag Study on Filed Revenue Requirements

I. INTRODUCTION

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

A. My name is Paul M. Normand, and I am the same Paul Normand who has previously submitted testimony in this proceeding. My education and business experience is summarized in that testimony.

II. PURPOSE OF TESTIMONY

Q. Please discuss the purpose of your testimony.

A. Our consulting firm was retained by Unitil Service Corp. in 2010 to conduct a lead-lag study for the New Hampshire Division of Northern Utilities, Inc. d/b/a Unitil (“Northern” or “the Company”).

The purpose of my direct testimony is to present and sponsor the cash working capital (“CWC”) requirements of Northern for its delivery services. Northern has identified its revenue requirements for each service area on a pro forma basis, and we have computed the CWC for that adjusted test year.

On a pro forma basis, the total CWC requirement for Northern’s New Hampshire Division is \$108,006. This CWC requirement represents the funds that are needed due to the lag between the time that payments are made by the Company and when the recovery of those funds is obtained from customers. This CWC requirement is included in the Company’s overall revenue requirements calculation by means of the cash working capital allowance included in rate base.

1 In addition to presenting and sponsoring the CWC requirements for delivery service, we
2 have also calculated the working capital percentage on Purchased Gas. The results of this
3 study will be used to calculate the purchased gas working capital costs to be recovered
4 through the Cost of Gas Adjustment. This change would become effective on the same
5 date as the base rate change in this proceeding.

6 **Q. Can you summarize the net impact of your lead-lag study on the Company's overall**
7 **revenue requirements calculation?**

8 A. Yes. The lead-lag study results in a decrease in the Company's overall revenue
9 requirements as filed in this proceeding. As is shown on Attachment PMN-LL-2, the
10 results of the lead-lag study cause a downward adjustment in the Company's revenue
11 requirements of approximately \$132,875.

12 **Q. How is your testimony organized?**

13 My testimony consists of four sections. Section I is introductory information. Section II
14 describes the purpose and organization of my testimony. Section III presents results of
15 the lead-lag study we prepared on behalf of Northern to determine the pro forma CWC
16 for its New Hampshire Division. Lastly, Section IV of my direct testimony summarizes
17 my conclusions and recommendations for CWC on a pro forma basis.

III. CASH WORKING CAPITAL

Definition of CWC

Q. Please define cash working capital.

A. CWC is the amount of investor-supplied capital required to fund the day-to-day operations of a company after accounting for the timing differences between booked and actual revenues and expenses. CWC represents amounts funded by investors to provide service prior to receipt of payment for such service by customers. As such, CWC is typically an addition to a company's rate base.

Q. Did you perform analyses to estimate the CWC of Northern for the adjusted test year?

A. Yes. Attachment PMN-LL-1 summarizes the results of the lead-lag study conducted for Northern's New Hampshire Division using the pro forma revenue requirements for the test year ending December 31, 2010. As shown in these attachments, the rate base addition for CWC is \$108,006. The cash working capital percent for Purchased Gas was also summarized in Attachment PMN-LL-1, Page 4 of 4, and is 2.5334% or a net lag of 9.25 days.

Q. What is a lead-lag study?

A. A lead-lag study is an analysis designed to determine the funding required to operate a company on a day-to-day basis. A lead-lag study compares (1) the timing difference between the receipt of service by customers and their subsequent payment for these services and (2) the timing difference between the incurrence of costs by Northern's New

1 Hampshire Division and its subsequent payment of these costs. Therefore, a lead-lag
2 study must compute both a revenue lag (or lead) and an expense (lead) or lag.
3 Attachment PMN-LL-1, page 1 of 4, summarizes the lead-lag study results for Northern.
4 The CWC was developed using systematic reviews of cash flows for Northern's revenues
5 and operating expenses. The lead-lag study we performed measured the base revenue
6 requirement CWC needed for Northern's day-to-day natural gas operations for the 12-
7 month pro forma period ending December 31, 2010.

8 **Q. Please define the terms "lag days" and "lead days" as used in your testimony.**

9 A. Revenue lag days are the number of days between delivery of service to Northern's
10 customers and the subsequent receipt by the Company of payment for the service
11 (revenue lag). Expense lag days are the number of days between the receipt of goods or
12 services provided to Northern by vendors and the payment by the Company for those
13 goods and services.

14 Because Northern's natural gas customers receive service prior to paying for it, the
15 Company experiences a revenue lag in its daily operations. This revenue lag is computed
16 based upon analyses of the time lag between the date when customers receive service and
17 the date when the customers pay for such service. The longer the revenue lag, the greater
18 the length of time that investor capital is employed to fund the Company's day-to-day
19 operations. The revenue lag for the New Hampshire Division is 46.40 days as developed
20 in Attachment PMN-LL-1, page 2 of 4, line 29.

1 Generally, expenses are paid by Northern after vendors have provided their goods or
2 services, which results in an expense lag. On occasion, the Company pays for services
3 before they are provided. In these instances, the expenses lead their service period. The
4 expense lag is calculated as the number of days between the date when Northern receives
5 goods or services from a vendor and the date when the Company pays for such goods or
6 services. If the expenses are paid before the services are provided, then the expense lag is
7 expressed as a negative amount. Consequently, any increase in the number of expense
8 lag days results in a reduction of the amount of working capital required for ongoing New
9 Hampshire Division operations.

10 The arithmetic difference between the computed revenue lag and the computed expense
11 lag is the number of days that stockholders must provide funding for the utility's daily
12 operations.

13 As shown on Attachment PMN-LL-1, page 1 of 4, line 26, column 4, the New Hampshire
14 Division's net lag days are 2.72 days.

15 **Lead-Lag Study General Approach**

16 **Q. Please describe the approach you used in preparing your lead-lag study.**

17 A. I began the lead-lag study with the selection of the per-books revenues and expenses for
18 the 12-month period ended December 31, 2010 for the New Hampshire Division to form
19 the basis for my analysis. I then determined the lag days in the recovery of revenue by
20 type of revenue (i.e., sales and other revenues). For operation and maintenance ("O&M")
21 expenses, I developed lag days for each of several types of expenses (i.e., labor,

1 employee benefits, Regulatory Commission expenses, leases, and other O&M expenses).
2 In addition, I developed lag days for property taxes, other taxes, income taxes, and
3 interest expense. Once the lag days for the test year are established on a per-books basis,
4 they are applied to the test year pro forma revenue requirements. The lead or lag days for
5 each of the items described above are then multiplied by the test year pro forma amounts
6 to determine the dollar-days of CWC. The net dollar-days of revenue less expenses and
7 taxes may then be divided by 365 days to obtain the average daily CWC.

8 **Methods of Computation**

9 **Q. Please describe your calculation of revenue lags.**

10 A. The calculation of the revenue lags is summarized on page 2 of Attachment PMN-LL-1.
11 As previously described, “revenue lag” is the length of time that occurs between the
12 Company’s provision of service to its customers and the subsequent receipt of payment
13 for those services. The existence of a revenue lag makes it necessary for investors to
14 provide the funding for the Company to pay its operating costs during the lag period.

15 The measurement of revenue lag days typically consists of four components: (1) service
16 lag, (2) billing lag, (3) collection lag and (4) revenue float. Since the time periods for
17 these four components are mutually exclusive, revenue lag is computed by adding
18 together the total number of days associated with each of the four revenue lag
19 components. This total number of lag days represents the amount of time between the
20 recorded delivery of service to customers and the receipt of the related revenues from
21 customers.

1 **Q. Please describe how you calculate service lag.**

2 A. The service lag is the average time span between the mid-point of the customer's
3 consumption interval, also known as the usage period, and the time that such usage is
4 recorded by the Company for billing purposes. This service period determines the
5 average length of time over which the billed services are provided and establishes a
6 common point in time from which to measure (1) the time of reimbursement for the
7 billed services, and (2) the time at which the accrued costs for the service period are
8 actually paid. For virtually all utilities, the service lag is one-half of an average month or
9 15.21 days.

10 **Q. Please describe your calculation of billing lag.**

11 A. The billing lag is the time required to process and send out customer bills. The billing lag
12 begins at the end of the service period when customer consumption is metered, and it
13 ends when the bills are rendered and billings are posted to accounts receivable. The
14 billing lag may be influenced by factors such as whether automated or manual meter
15 reading systems are employed, the generation of invoices from metering data and other
16 processes affecting the time to post billings to accounts receivable. Northern utilizes an
17 automated meter reading system and has installed ERTS devices on its gas meters. It
18 posts its meter reading daily for billing the next day, and it is recorded into accounts
19 receivable the day following the Bill date. The New Hampshire Division billing lag was
20 approximately 2.38 days after considering the delay for weekends and holidays and the
21 posting to accounts receivable.

1 **Q. Please describe your calculation of collection lag.**

2 A. The collection lag identifies the time delay between the posting of customer bills to
3 accounts receivable and the receipt of the billed revenues. Collection lag begins with the
4 posting of bills and ends with the receipt of payment. Collection lag may be influenced
5 by payment arrangements, contract terms, postal delivery delays, customer inquiries,
6 delinquent accounts, service termination practices, and other factors. I have employed
7 the accounts receivable turnover ratio method to determine the collection lags. Using this
8 approach, the average monthly accounts receivable balances were divided by the average
9 daily revenues for the 12 months ended December 31, 2010. Using the accounts
10 receivable turnover method, a collection lag of 28.95 days was computed.

11 **Q. Please describe the final component of revenue lag, revenue float.**

12 A. Revenue float is the time difference between when funds are received from customers
13 until customer payments clear the banks and are available to the Company. To clarify,
14 there are two periods of float. The first is associated with the Company's payment of
15 services from vendors. Expense float, or lag, is discussed later in my direct testimony.
16 The second period of float is the delay in receipt of cash from customer payments. In this
17 latter instance, Northern's cash requirements are reduced by the delay in check
18 processing. Many lead-lag studies assume that revenue float and check float are equal
19 and offsetting and, therefore, can be removed. A closer examination reveals that the
20 issue is much more complex. The majority of Northern's larger payments are made by
21 wire transfer with a much shorter lag than a conventional mailed check. On the revenue
22 side, only a small portion of customer payments are made by cash, credit card or bank

1 transfer. Again, these payments have smaller lag times to clear than conventional checks.
2 Since the dollar volume of utility payments exceed their receipts made by cash, credit
3 card and bank transfer, the inclusion of check float in the lead-lag study should slightly
4 increase CWC requirements. I have chosen to avoid this level of complexity with the
5 knowledge that our simplifying assumption will slightly understate CWC and will not
6 disadvantage customers. The inclusion of float would logically cause a slight increase to
7 total net lag and a commensurate increase in cash working capital requirements, albeit
8 with a significant level of additional complexity to quantify the actual impact. Therefore,
9 I have chosen not to quantify float for revenues or expenses in this study.

10 **Q. How is the lag for labor expense determined?**

11 A. The Company's payroll stems from weekly or semi-monthly payroll disbursements.
12 Using sample data, we measured the lag between the mid-point of the pay period and the
13 pay date. However, not all labor costs earned by employees in the pay period are paid
14 out as salary, the difference being payroll withholdings. In order to make an accurate
15 calculation of total labor costs, we identified all labor-related costs and identified when
16 the Company actually expended the cash. These labor-related costs include all salary
17 including incentive compensation, payroll taxes including withholding taxes, and a wide
18 range of benefits. Regular weekly payroll costs are the largest component of labor costs
19 and have the shortest payment lag. However, other components of labor costs have
20 relatively longer delays. For example, incentive compensation pay was earned from
21 January 2009 to December 2009 and was paid in February 2010, resulting in a much
22 longer expense lag. In addition to direct labor expense, we examined other labor-related

costs to the Company, including Payroll Taxes, and Pensions and Benefits as discussed below.

Q. Please describe how the lag is calculated for Pensions and Benefits.

A. The method for calculating expense lags for Pensions and Benefits follows the same approach used for all other lag calculations. For each expense, the service period and its mid-point were determined. Then the payment date was established. The lag was then computed as the difference between the payment date and the mid-point of the service period. Next, a weighted average of each expense was computed to determine the overall average for this category.

Q. Were other categories of O&M expense analyzed separately and included in the expense lag?

A. Yes. Regulatory Commission expenses, Account 928, and Lease expenses were analyzed separately and included in the calculations of the expense lag. Again, the lags for each expense item were computed as the difference between the payment date and the mid-point of the service period.

Q. How was the expense lag calculated for expenses allocated from the Service Companies?

A. The expenses allocated from the Service Companies consisted of Labor and Other O&M expenses that are charged to O&M accounts. The expense lag of 33.29 days that is assigned to this expense was computed as the difference between the Cash Pool date,

1 which is the payment date for Service Company charges, and the mid-point of the service
2 period, which is the mid-point of the calendar month being billed.

3 **Q. How is Uncollectible Accounts expense included in the lead-lag study?**

4 A. Uncollectible Accounts expense for base revenues was not assigned lead or lag days in
5 the study because it is a non-cash item. The lag for uncollectible accounts has been
6 recognized in the calculation of the collection lag. The accounts receivable balance is
7 reduced when uncollectible accounts are written off, and therefore, the collection lag is
8 reduced.

9 **Q. Are there Other O&M expenses that were included in the calculation of expense lag?**

10 A. Yes. There are Other O&M expenses directly paid by the Northern. Because these
11 expenses are made up of thousands of vouchers processed throughout the course of the
12 test year, a sample was used to estimate the lags for each Operating Company. The
13 sample produced a lag of 31.64 days for these Other O&M direct expenses.

14 **Q. Did you include any other expenses besides O&M expenses in the calculation of the**
15 **expense lag?**

16 A. Yes. Since Property Taxes, Other Taxes, Federal and State Income Taxes, and Interest
17 on Long Term and Short Term Debt represent cash outlays, they were included in the
18 fiscal 2010 period in the calculation of CWC. All property tax payments made during
19 2010 were analyzed, and the expense lags computed. Other Taxes consist mostly of
20 Payroll Taxes, Unemployment Taxes, and Other Taxes. Each type of tax was analyzed
21 separately and assigned a lag based on the service periods and payments dates. Federal

1 and State Income Taxes were assigned lags based on the statutory required fiscal tax year
2 equal tax payments. Interest on Long Term Debt was assigned lags based on the actual
3 interest payments for the 2010 fiscal period. Interest on Short Term Debt is paid on the
4 first of the month for the prior month's interest so a lag of 15.21 days was used. This lag
5 is based on the number of days from the mid-point of the month to the first of the
6 following month.

7 **Q. Did you compute the cash working capital requirements on any expenses not**
8 **recovered in base rates?**

9 A. Yes, I did. The cash working capital percent was calculated for Purchased Gas expenses.
10 The purchased gas expenses were analyzed for 2010 for each supplier. The lags for each
11 supplier payment were computed as the difference between the payment date and the
12 mid-point of the service period. This produced a Purchased Gas expense lag of 37.29
13 days, as shown on page 4 of Attachment PMN-LL-1. This page also computes the net of
14 the revenue lag from Page 2 and the Purchased Gas expense lag of 9.25 days to produce
15 the working capital percent of 2.5334%.

16 **Results of the Northern New Hampshire Division Lead-Lag Study**

17 **Q. Where have you presented the results of the CWC calculations for the pro forma**
18 **test year?**

19 A. The results of the lead-lag study are summarized on page 1 of Attachment PMN-LL-1.
20 This page summarizes the revenue lags from page 2 and the expense lags from page 3

1 and presents the Company's CWC for the test year on a pro forma basis. Attachment
2 PMN-LL-1, page 4, summarizes the Purchased Gas cash working capital percent.

3 **Q. Have you identified the net lag days between revenue and expense for Northern for**
4 **the twelve months ending December 31, 2010 on a pro forma basis?**

5 A. Yes. As indicated by the data on page 1 of Attachment PMN-LL-1, the net lag for CWC
6 is 2.72 days (line 34). The positive lag indicates that cash working capital is required to
7 compensate for the fact that the lag in the recovery of revenues is greater than the lag in
8 the payment of expenses.

9 On a pro forma basis, Northern's New Hampshire Division CWC requirement for the
10 December 31, 2010 test year is \$108,006, or 0.75%, as shown on page 1, line 34, of the
11 above noted schedule. This CWC requirement represents the capital that must be
12 provided and included as an addition to rate base.

13 **Q. Please explain how the CWC requirement impacts the Company's revenue**
14 **requirement as described in Mr. Chong's testimony and in the RevReq schedules.**

15 A. Mr. Chong's RevReq schedule included a Cash Working Capital requirement of
16 \$1,156,936 (Schedule RevReq-5 and RevReq-5-2). This amount was based on a net lag
17 of 45 days. As Mr. Chong indicated in his testimony, the RevReq schedules will be
18 updated to incorporate the results of this lead lag study with a CWC requirement of
19 \$108,006 and a net lag of 2.72 days.

1 **Q. Referring to Attachment PMN-LL-1, could you discuss the structure of your pro**
2 **forma lead-lag study summary?**

3 A. The summary of the New Hampshire Division lead-lag study consists of three sections.
4 Line 1 summarizes the revenue lag from page 2. Lines 3 through 23 detail the expense
5 lag data. Lines 26 to 36 show the net lag and Cash Working Capital requirements and
6 Working Capital percent.

7 In order to compute subtotals and totals, the rightmost working column, labeled “Day
8 Weighted Amount,” is shown. For those categories with known lag days, this column is
9 the product of the annual expense and the net lag days. For rows displaying subtotals,
10 this column will be computed and then used along with the appropriate figure from the
11 Annual Expense column to compute the average net lag.

12
13 **IV. SUMMARY**

14 **Q. Please summarize your testimony.**

15 A. We have prepared a lead-lag study for the New Hampshire Division to compute the lag
16 days associated with revenues and expenses. These revenue and expense lag days are
17 offset to determine the net lags. We then used these net lag days to compute the pro
18 forma CWC requirement for the Company.

19 The results of the Purchased Gas working capital study will be used to calculate the
20 purchased gas working capital costs to be recovered through the Cost of Gas Adjustment.

1 This change would become effective on the same date as the base rate change in this
2 proceeding.

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

4 **A. Yes, it does.**