**STATE OF ALASKA**

**BEFORE THE REGULATORY COMMISSION OF ALASKA**

Before Commissioners: Robert M. Pickett, Chairman
Stephen A. McAlpine
Rebecca L. Pauli
Norman Rokeberg
Janis W. Wilson

| | |
|---|---|
| In the Matter of the Tariff Revision Designated as TA285-4 Filed by ENSTAR NATURAL GAS COMPANY, A DIVISION OF SEMCO ENERGY, INC. | U-16-066 |

# PREFILED DIRECT TESTIMONY OF JOSHUA C. NOWAK AS ADOPTED BY TIMOTHY S. LYONS

## INTRODUCTION AND QUALIFICATIONS

**Q. State your name, title and current employer.**

A. My name is Timothy S. Lyons. I am partner at the consulting firm of ScottMadden, Inc. ("ScottMadden"). Prior to that, I was a partner at Sussex Economic Advisers, LLC ("Sussex"). In June 2016, ScottMadden acquired Sussex.

**Q. Describe your professional experience.**

A. A copy of my current résumé is attached as Exhibit TSL-1. I have over 30 years of experience in the energy industry. I started my career in 1985 at Boston Gas Company (now part of National Grid), eventually becoming Director of Rates and Revenue Analysis. In 1993, I moved to Providence Gas Company, eventually becoming Vice President of Marketing and Regulatory Affairs. Starting in 2001, I held a number of management consulting positions in the energy industry first at KEMA and then at

Quantec, LLC. In 2005, I became Vice President of Sales and Marketing at Vermont Gas Systems, Inc. In 2013, I joined Sussex Economic Advisors, LLC ("Sussex"). Sussex was acquired by ScottMadden on June 1, 2016. I hold a Bachelor's degree from St. Anselm College, a Master's degree in Economics from The Pennsylvania State University, and a Master's degree in Business Administration from Babson College.

**Q. Have you reviewed the prefiled testimony of Joshua C. Nowak filed in this docket in June 2016?**

A. Yes.

**Q. Have you had access to and reviewed the backing materials Mr. Nowak used to conduct his lead-lag study and prepare his testimony?**

A. Yes.

**Q. Are you familiar with the topics and issues addressed in his testimony?**

A. Yes. I have extensive experience with utility ratemaking that includes lead-lag and cash working capital studies, including a recent study filed on behalf of Elizabethtown Gas Company in New Jersey.

**Q. Do you agree with his testimony?**

A. Yes.

**Q. Do you adopt the testimony as your own?**

A. Yes.

**Q. Have you reviewed the exhibits Mr. Nowak sponsored?**

A. Yes. I am replacing his resume (which was JCN-1) with mine. I have reviewed and adopt Exhibit JCN-2, the Lead-Lag Study, and Exhibit JCN-3, the Revenue and Expense Lag Details. For the sake of good order, these exhibits are renamed here TSL-2 and

TSL-3.

## ADOPTED TESTIMONY

## I. INTRODUCTION

**Q. Was this testimony prepared by you or under your direction?**

A. Yes, it was.

**Q. Have you prepared any exhibits in connection with your testimony?**

A. Yes, I have prepared and sponsor the exhibits JCN-1 to JCN-3.

**Q. Were these exhibits prepared by you or under your direction?**

A. Yes, they were.

**Q. What is the purpose of your testimony?**

A. I have been retained by ENSTAR Natural Gas Company and Alaska Pipeline Company (collectively, "ENSTAR") to conduct and sponsor a lead-lag study, the results of which will form the basis for the CWC allowance to be included in ENSTAR's rate base. My analyses and conclusions are supported by the data presented in Exhibits JCN-2 and JCN-3.

**Q. Please define the term "cash working capital."**

A. The term "cash working capital" or "CWC" refers to the net funds required by a utility to finance goods and services between the time they are paid for by a utility and the time revenues are received from customers. CWC forms part of a utility's rate base and may be either a positive or a negative amount. For ENSTAR, the cost of goods and services includes: (1) purchased gas expenses; (2) operations and maintenance ("O&M") expenses, including labor expenses and non-labor expenses; (3) federal and state income taxes; and (4) taxes other than income taxes, which consist primarily of property taxes.

**Q. How did you derive the CWC requirement?**

A. I determined ENSTAR's CWC requirement using the results of a "lead-lag study," which compares the net difference between the "revenue lag" and the "expense lag."

**Q. Please define revenue and expense lag.**

Revenue lag represents the number of days between the time customers receive service and the time customer payments are available to the utility. The longer the revenue lag, the more cash the utility needs to fund its day-to-day operations. The expense lag, on the other hand, represents the number of days between the time the utility receives goods and services used to serve its customers, and the time payment for those goods and services is rendered (*i.e.*, when those funds are no longer available to the utility). The longer the expense lag, the less cash the utility needs to fund its day-to-day operations. Together, the revenue lag and expense lag are used to measure the net lead/lag to determine the CWC requirement, which becomes a component of rate base.

**Q. In simple terms, how is this net lead/lag used to calculate CWC?**

A. For each major expense category, the amount requested in revenue requirements is divided by 365 to determine the average daily amount. This daily amount is then multiplied by the net of the revenue lag and the expense lag to determine the CWC needed for ENSTAR's operations.

**Q. Over what period did you perform the lead-lag study for ENSTAR?**

A. I analyzed ENSTAR's cash transactions and invoices for the test year, which is January 1, 2015 through December 31, 2015.

**Q. Is the lead-lag approach to determining the CWC requirement consistent with ENSTAR's prior rate cases?**

A. No, it is not. I have been advised that in the past ENSTAR calculated its CWC allowance using the conventional one-eighth (or 45 days) formula. As part of the "Stipulation By All Parties" agreed to in Docket U-14-111, however, ENSTAR agreed to conduct a lead-lag study in this case. As such, the CWC requirement in the current case is based on the results of my lead-lag study.

**Q. Are the results of your lead-lag study an accurate calculation of ENSTAR's CWC requirement?**

A. Yes. The methods I used to conduct my lead-lag study are industry standard and consistent with those performed in other jurisdictions.

## II. LEAD-LAG STUDY APPROACH

**Q. Please summarize the results and the approach of the lead-lag study you conducted for ENSTAR.**

A. The lead-lag study is summarized in Exhibit JCN-2 and shows a CWC requirement of negative $834,672. A negative result indicates that ENSTAR receives customer payments in less time than it takes to pay for its expenses and results in a net reduction to rate base. The CWC calculation is based on the results of my lead-lag study, which are then applied to the requested amounts for O&M expenses, income taxes, and taxes other than income taxes, as described above. I relied on data supplied by ENSTAR to prepare my lead-lag study, including financial and accounting data to determine revenue lags, a sample of invoices to determine expense lags—ENSTAR pays thousands of invoices each year, and it is not feasible or necessary to examine all of them—and various other supporting documents, such as policies and contracts.

**Q. Please describe the specific data you relied on to conduct your lead-lag study for ENSTAR.**

A. I obtained data related to the timing and amount of payments made by, or to, ENSTAR with regard to customer billing, O&M expenses, and taxes. I reviewed the data and followed up with ENSTAR personnel, as needed, to gain clarification or obtain additional data for inclusion in my lead-lag study.

**Q. What did this data consist of?**

A. This data included accounting reports and spreadsheets, invoices for expenses, gas purchase contracts, affiliate agreements, and bank records.

**Q. How did you develop the net lead/lag days in your study?**

A. The revenue lag is measured in days from the time service is provided to customers until the time payment is received from customers and available to ENSTAR. Expense lags are measured in days from the time a service is provided to ENSTAR until the time ENSTAR makes payment for that service. The difference between the revenue lag and the expense lag (as measured for each expense component of the study) determines if there is a net revenue lag (revenue lag days are greater than the expense lag days) or a net expense lead (revenue lag days are less than the expense lag days).

**Q. Please describe the results of your lead-lag study.**

A. Exhibit JCN-2 provides the calculations and results of the lead-lag study. It shows that during the test year, ENSTAR's total revenue lag was 40.10 days. The expense lag varied by the category of expense, as described in detail below. For each expense category, I multiplied the net difference between the 40.10 revenue lag days and expense lag days by the average daily expense (*i.e.*, the amount requested divided by 365) to calculate the net cash working capital required by ENSTAR for each expense category.

For example, the expense lag for payroll expenses was 32.86 days. Given the revenue lag of 40.10 days, this yields a net lag of 7.42 days (40.10 – 32.68). ENSTAR's requested payroll expenses are $13,310,663, which yields an average daily expense of $36,468 ($13,310,663 / 365). The working capital requirement for payroll expenses is therefore $270,627 ($36,468 x 7.42).

By comparison, the expense lag for purchased gas costs, including storage expenses, was 42.28 days. Given the revenue lag of 40.10 days, this yields a net lead (that is, a *negative* net lag), of 2.18 days (40.10 – 42.28). The total 2016-2017 expenses for purchased gas costs are $218,608,089, which yields an average daily expense of

$598,926 ($218,608,089 / 365). The working capital requirement for purchased gas costs is therefore negative $1,303,096 ($598,926 x -2.18). This same calculation is applied to the remaining expense components. The working capital requirements for each category of expense were then summed to determine ENSTAR's total CWC requirement.

A. **Revenue Lag**

**Q. Please describe the components of the revenue lag.**

A. Revenue lag consists of three components: (1) the service lag; (2) the billing lag; and (3) the collection lag. The total number of days produced by the three components represents the amount of time between providing gas utility service to customers and the receipt of the related revenues for such service. Together, these revenue lag components comprise the total revenue lag days.

**Q. What is the service lag?**

A. The service lag represents the midpoint of the service period, which is the time between the start of the billing month and the end of the billing month. I relied on the midpoint of the service period (*i.e.*, one-half of one month), which assumes that service will be provided evenly over the service period. This is a typical approach in the industry; therefore, virtually all utilities have a service lag of one-half of an average month, or 15.21 days.

**Q. What is the billing lag?**

A. The billing lag is the time between the meter reading date, and the date bills are recorded and sent to customers. ENSTAR's meters are read electronically from a van or using a hand-held instrument based on predetermined billing schedules. Accounts with missing reads are dispatched for a manual read to be obtained and entered prior to billing. Missing meter reads are replaced automatically with estimated reads during cycle billing.

Bills are calculated by ENSTAR and then uploaded to a secure FTP site to enable a third-party to provide bill printing and mailing services. For the purpose of determining the billing lag, the billing process begins the day the meter reading process begins, and ends with the recording and authorization to print and mail the customer bill.

**Q. Have you measured the billing lag for ENSTAR during the test year?**

A. Yes, I have. The billing lag would typically be one day, but weekends and holidays cause this to vary. To account for weekends and holidays, I reviewed ENSTAR's meter reading and billing schedule for the test year. I measured the billing lag based on the meter reading and billing schedule provided by ENSTAR. The billing lag is 1.57 days as shown in Exhibit JCN-3.

**Q. What is the collection lag?**

A. Collection lag reflects the time between ENSTAR's recording of amounts owed and bill mailing for the services rendered and the receipt of payment from customers for the revenues billed. I determined the collection lag by the "accounts receivable turnover ratio method." This method employs a calculation that takes the average monthly accounts receivable balances divided by the average daily billing revenues for the test year. The collection lag is 23.32 days as shown in Exhibit JCN-3.

**Q. What is the total revenue lag component for the lead-lag calculation?**

A. Each of these revenue lag components was added together to arrive at a total revenue lag of 40.10 days. These calculations are shown in Exhibit JCN-3.

## B. Expense Lag

**Q. Please describe the components of the expense lag**

A. As is typical in the industry, I used the following breakdown: (1) O&M expenses; (2) income tax expenses; (3) taxes other than income taxes; and (4) other adjustments, such as regulatory charges. I did not include non-cash items.

### 1. Operation and Maintenance Expenses

**Q. How did you determine the expense lag days for O&M expenses?**

A. I separated ENSTAR's O&M expenses into four groups: (1) purchased gas costs; (2) payroll costs; (3) affiliate charges; and (4) third-party O&M expenses. I measured the expense lag days for each of these groups independently. Separating system expenses in this way is the typical practice in conducting lead-lag studies.

**Q. How did you determine the lag days associated with purchased gas expenses?**

A. I analyzed the costs and subsequent payments of purchased gas and gas storage during each month in the test year. The expense lag was determined based on the difference between the payment date and the midpoint of the service period (*i.e.*, one-half of one month). ENSTAR paid the purchased gas and gas storage expenses for each month after it received the gas to provide service to customers.

**Q. How did you determine the lag days for payroll expenses?**

A. I based the expense lag days for payroll on ENSTAR's wage payment process, which pays employees on a bi-weekly basis. I calculated the expense lag days for payroll costs by determining the average days of service paid and adding the midpoint of the service period to the number of days between the end of each service period and the date of payment to employees. This calculation produces the number of total days between the middle of the period for which employees' costs are recorded, and the date on which

payments are disbursed. These calculations were based on actual historical ENSTAR data for the test year. Holidays are also based on actual historical data for the test year.

**Q. Did you make any adjustment to the payroll lag days?**

A. Yes, I made an adjustment for vacation pay, which recognizes that vacation pay is earned before it is actually taken. The vacation pay adjustment is calculated based on the average payroll lag days as described in the previous response and the midpoint of the days in the year. In addition, I made an adjustment for the annual bonus payment. ENSTAR's performance bonus is paid annually in March for the preceding calendar year. The lag days were determined based on the midpoint of the performance period (*i.e.* the middle of the preceding calendar year), and the date bonuses were paid. I also made an adjustment for payroll taxes. The payment lags for payroll taxes were calculated from the midpoints of the applicable work periods to the respective payment dates of the taxes.

**Q. How did you derive the lag days associated with affiliate transactions?**

A. I reviewed SEMCO's Affiliate Transactions Policy Manual to determine the payment procedure for affiliate transactions. Billing for affiliate services is rendered on a monthly basis. In speaking with ENSTAR personnel, cash transactions for these services are made on an ongoing, daily basis throughout the test year. The agreement, however, allows for payments to be made as late as 30 days from the date of invoice. For the calculation of the payment lag, I applied the terms of the affiliate agreement, which is a conservative assumption. Therefore, the service period is calculated as the number of days from mid-month to the due date in the following month.

**Q. How did you determine the lag days for third-party O&M expenses?**

A. ENSTAR's third-party O&M expenses include items such as rental equipment, hardware supplies, utility services, and maintenance services. As noted above, because ENSTAR pays thousands of these types of invoices over the course of a year, it is necessary to rely on sampling to measure expense lags. The study estimates the midpoint of the service period independently for each invoice in the sample. I then identified the service period and the payment date for each of the sample items to calculate the expense lag for third-party O&M expenses.

**Q. What was the expense lag for each category of O&M Expense?**

A. As shown in Exhibit JCN-3, the expense lags during the test year averaged: (1) 42.28 days for purchased gas costs; (2) 32.68 days for payroll costs; (3) 45.21 days for affiliate charges; and (4) 23.47 days for third-party O&M expenses.

**2. Current Federal and State Income Tax Expense**

**Q. What are the lag days for federal and state income taxes?**

A. I calculated the lag days for federal and state income taxes using the calendar year as the service period because income taxes are accrued throughout the year. The midpoint of the service period here would be July 2. Payment of estimated tax for the year is made in quarterly payments on April 15, June 15, September 15, and December 15. If the scheduled payment date falls on a Saturday, Sunday, or legal holiday, the payment is due on the next regular business day. The end result was a lag of 36.00 days.

**3. Taxes Other than Income Taxes**

**Q. What taxes are included in the taxes other than income taxes?**

A. This group of taxes consists of: (1) property taxes paid by ENSTAR, and (2) property taxes allocated to ENSTAR from affiliates.

**Q. How were the lag days calculated for each of those taxes?**

A. The payment lag for ad valorem taxes paid by ENSTAR was calculated from the midpoint of the period for which the tax was assessed to the payment dates, which equates to an expense lag of 72.17 days. The same expense lag calculated for O&M expenses from affiliates of 45.21 days was used for ad valorem taxes allocated from affiliates.

### 4. Adjustments for Other Taxes and Charges

**Q. What other taxes and expenses are collected in customer bills?**

A. This group of taxes consists of: (1) revenue-related taxes (Sales Tax); (2) Regulatory Cost Charge Payments.

**Q. How were the lag days calculated for each of these taxes and charges?**

A. The payment lag for these charges was calculated from the midpoint of the period for which the tax was assessed to the payment date. These charges are not recovered through base rates, however, but rather through on-bill recovery charges. As such, these expenses are not included in ENSTAR's revenue requirement. Nonetheless, these charges represent funds required by ENSTAR to pay for services between the time they are paid and the time revenues are recovered from customers. Therefore, these charges are calculated as adjustments to the CWC requirement based on a lag of 64.57 days for Sales Tax and 74.69 days for Regulatory Cost Charge payments.

### 5. Non-Cash Items

**Q. Please explain why you excluded non-cash items from your lead-lag study.**

A. This study uses the cash method and, therefore, excludes non-cash items. As such, non-cash items, including depreciation, amortization, deferred income taxes, and return

(including return on equity and interest on long-term debt), have not been included in my lead-lag study.

**Q. Why did you use the cash method in this case?**

A. With the objective of representing the total investor-supplied capital required to pay operating expenses for the purpose of providing utility service, using the cash method ensures that only the items necessary to fund day-to-day operations are included. While non-cash items are appropriate considerations in other elements of a rate case, they do not represent a day-to-day funding requirement.

## III. CONCLUSION

**Q. What were the results of the lead-lag study?**

A. Applying the net revenue and expense lags developed above for the various categories of expense to the respective amounts requested by ENSTAR for inclusion in revenue requirements results in a CWC requirement for ENSTAR of negative $834,672 as shown in Exhibit JCN-2.

**Q. Are the results of the lead-lag study reasonable?**

A. Yes, the results of the lead-lag study reflect ENSTAR's practices, actual data from the test year, and are fair and reasonable. In addition, the methods used in the study are industry standard and consistent with studies performed in other jurisdictions. Accordingly, the results of my lead-lag study produce a reasonable calculation of ENSTAR's CWC requirement and are properly included in its rate base.

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

A. Yes, it does.

scottmadden
MANAGEMENT CONSULTANTS


***Summary***

Tim Lyons is a partner with ScottMadden and has over 30 years of experience in the energy industry. Tim has held senior positions at several gas utilities and energy consulting firms. His experience includes rate and regulatory support, sales and marketing, customer service and strategy development. Prior to joining ScottMadden, Tim was Vice President of Sales and Marketing for Vermont Gas, where he was responsible for all customer-related functions, including sales and marketing, call center and field service operations. He has also served as Vice President of Marketing and Regulatory Affairs for Providence Gas (now part of National Grid), Director of Rates at Boston Gas (also part of National Grid), and Project Director at Quantec, LLC, an energy consulting firm.

Tim has sponsored testimony before several public utilities commissions, including Connecticut, Maine, Massachusetts, Rhode Island and Vermont. Tim received a B.A. from St. Anselm College, an M.A. in Economics from The Pennsylvania State University, and an M.B.A. from Babson College.


***Areas of Specialization***

- Regulation and Rates
- Retail Energy
- Utilities
- Natural Gas
- Corporate and Shared Services

***Capabilities***

- Regulatory Strategy and Rate Case Support
- Strategic and Business Planning
- Capital Project Planning
- Process Improvements

***Recent Articles and Speeches***

- "Country Strong: Vermont Gas shares its comprehensive effort to expand natural gas service into rural communities." ***American Gas Association***, June 2011 (with Don Gilbert).
- "Talking Safety With Vermont Gas." ***American Gas Association***, February 2009 (with Dave Attig).
- "Consumers Say 'Act Now' To Stabilize Prices." ***Power & Gas Marketing***, September/ October 2001 (with Jim DeMetro and Gerry Yurkevicz).
- "Rate Reclassification: Who Buys What and When." ***Public Utilities Fortnightly***, October 15, 1991 (with John Martin).

***Recent Assignments***

- Sponsored lead-lag testimony for a Mid-Atlantic gas utility.
- Sponsored cost of service/rate design testimony for a Mid-Atlantic gas utility. Testimony included a proposal for new residential and commercial rate classes and introduction of a block break rate design.
- Sponsored cost of service/rate design testimony for a Midwest gas utility. Testimony included a proposal for new commercial rate classes and a decoupling mechanism.
- Sponsored rate design testimony for a Northeast gas utility. The testimony included: a proposal for zonal rates to promote expansion of natural gas service in the state; market analysis; and financial modeling.
- Led a study for the Massachusetts Department of Energy Resources to evaluate the benefits, costs and policies options associated with natural gas expansion by Massachusetts gas utilities. The study included: (a) research on state regulatory policies; (b) financial modeling and analysis of the economic and environmental impacts of pursuing various policy options; and (c) a survey of Massachusetts homeowners on their opinion of home heating fuels.
- Assisted in the review and evaluation of cost of service studies for an electric utility. The assignment included review of proposed rate designs that address cost shifting concerns with serving residential distribution generation customers through introduction of higher customer charges, a demand charge and time-of-use energy charges.
- Assisted in the development of an electric portfolio of cost of service, rate design, and rate planning tools. The tools were used to evaluate the impact of future rate filings and resource portfolio decisions on individual rate classes.
- Prepared a market analysis for a utility to evaluate natural gas expansion into new areas, including: (a) survey of homes and businesses; (b) estimate of construction and operating costs; (c) analysis of alternative supply options (including pipeline, LNG and CNG); and (d) financial modeling.

scottmadden
MANAGEMENT CONSULTANTS

- Directed a process review of natural gas expansion projects for a gas utility. The assignment included a review, evaluation and recommendations related to: (a) policies and procedures; (b) process steps and personnel; (c) financial models and analysis; (d) project decisions and schedules; and (e) post-construction review and evaluation.

scottmadden
MANAGEMENT CONSULTANTS

| Sponsor | Date | Docket No. | Subject |
|---|---|---|---|
| ***Connecticut Public Utilities Regulatory Authority*** | | | |
| Yankee Gas Company | 06/13 | Docket No. 13-06-02 | Filed report and witness for review and evaluation of Hurdle Rate analysis. |
| ***Illinois Commerce Commission*** | | | |
| Liberty Utilities (Midstates Natural Gas) | 07/15 | Docket No. 16-0401 | Filed testimony and witness for cost of service, rate design and bill impact studies for a general rate case proceeding. The testimony includes proposal for new commercial classes and a decoupling mechanism. |
| ***Iowa Utilities Board*** | | | |
| Liberty Utilities (Midstates Natural Gas) | 07/15 | Docket No. RPU-2016-0003 | Filed testimony and witness for cost of service, rate design and bill impact studies for a general rate case proceeding. The testimony includes proposal for new commercial classes. |
| ***Maine Public Utilities Commission*** | | | |
| Northern Utilities, Inc. d/b/a Unitil Gas Limited | 06/15 | Case No. 2015-00146 | Filed testimony and witness for proposed gas expansion program, including a zone area surcharge. |
| ***Maryland Public Service Commission*** | | | |
| Sandpiper Energy, Inc. | 12/15 | Case No. 9410 | Filed testimony and witness for cost of service, rate design and bill impact studies for a general rate case proceeding. The testimony includes proposal for new residential and commercial classes. |
| ***Massachusetts Department of Public Utilities*** | | | |
| Boston Gas | 03/88 | Docket No. DPU 88-67-II | Filed testimony and witness for rate reclassification of commercial and industrial customers for rate design proceeding. |
| Boston Gas | 03/90 | DPU 90-55 | Filed testimony and witness for weather and other cost of service adjustments, rate design and customer bill impact studies for general rate case proceeding. |
| Boston Gas | 10/93 | DPU 92-230 | Filed testimony describing the Company's position regarding rate treatment of vehicular natural gas investments and expenses. |
| ***New Jersey Board of Public Utilities*** | | | |
| Pivotal Utility Holdings, Inc. d/b/a Elizabethtown Gas Company | 8/16 | GR16090826 | Filed testimony and witness for lead-lag study |
| ***Rhode Island Public Utilities Commission*** | | | |
| Providence Gas Company | 01/96 | Docket No. 2076 | Filed testimony and witness for rate reclassification of customers into new rate classes, rate design (including introduction of demand charges), and customer bill impact studies for rate design proceeding. |
| Providence Gas Company | 11/92 | Docket No. 2025 | Filed report and witness supporting the Integrated Resource Plan filing, including a performance-based incentive mechanism. |
| Providence Gas Company | 02/96 | Docket No. 2374 | Filed testimony and witness for rate design, customer bill impact studies and retail access tariffs for largest commercial and industrial customers for rate design |

scottmadden

| Sponsor | Date | Docket No. | Subject |
|---|---|---|---|
| | | | proceeding. |
| Providence Gas Company | 04/97 | Docket No. 2552 | Filed testimony and witness for rate design, customer bill impact studies and retail access tariffs for commercial and industrial customers, including redesign of cost of gas adjustment clause, for rate design proceeding. |
| Providence Gas Company | 08/01<br>09/00<br>08/96 | Docket No. 1673 | Filed testimony and witness for changes in cost of gas adjustment factor related to projected under-recovery of gas costs; Filed testimony and witness for pilot hedging program to mitigate price risks to customers; Filed testimony and witness for changes in cost of gas adjustment factor related to extension of rate plan. |
| Providence Gas Company | 06/97 | Docket No. 2581 | Filed testimony and witness for rate plan that fixed rates for three-year period; included funding for critical infrastructure investments in accelerated replacement of mains and services, digitized records system, and economic development projects. |
| Providence Gas Company | 08/00 | Docket No. 2581 | Filed testimony and witness for extension of rate plan that began in 1997 and included certain modifications, including a weather normalization clause. |
| Providence Gas Company | 03/00 | Docket No. 3100 | Filed testimony and witness for de-tariff and deregulation of appliance repair service, enabling the Company to have needed pricing flexibility. |
| ***Vermont Public Service Board*** | | | |
| Vermont Gas Systems | 02/11 | Docket No. 7712 | Filed testimony and witness for market evaluation and analysis to support establishment of system expansion and reliability fund. |
| Vermont Gas Systems | 12/12 | Docket No. 7970 | Filed testimony describing the customers to be served by a $90 million natural gas expansion project to Addison County, Vermont; also describing the benefits of the project as well as the Company's programs and service offerings. |

ENSTAR Natural Gas Company and Alaska Pipeline Company
Lead-Lag Study
Cash Working Capital Requirement

| Line | Description | Test Year Amount | Average Daily Amount | Revenue Lag | Ref | Expense Lag | Ref | Net (Lead)/Lag Days | Working Capital Requirement |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Operations and Maintenance Expenses | | | | | | | | |
| 2 | Purchased Gas Costs | $ 218,608,089 | $ 598,928 | 40.10 | JCN-3 pg 1 | (42.28) | JCN-3 pg 2 | (2.18) | $ (1,303,096) |
| 3 | Non-Gas Operation and Maintenance Expenses | | | | | | | | |
| 4 | Payroll Expenses | 13,310,883 | 36,468 | 40.10 | JCN-3 pg 1 | (32.68) | JCN-3 pg 3 | 7.42 | 270,627 |
| 5 | Affiliate Charges | 4,760,886 | 13,044 | 40.10 | JCN-3 pg 1 | (45.21) | JCN-3 pg 3 | (5.11) | (66,617) |
| 6 | Other Third-Party O&M Expenses | 16,734,298 | 51,327 | 40.10 | JCN-3 pg 1 | (23.47) | JCN-3 pg 3 | 16.63 | 853,388 |
| 7 | Total O&M Expenses | $ 255,413,946 | $ 699,764 | | | | | | $ (245,718) |
| 8 | Income Taxes | | | | | | | | |
| 9 | Current Federal Income Taxes | $ 9,227,002 | $ 25,279 | 40.10 | JCN-3 pg 1 | (36.00) | JCN-3 pg 4 | 4.10 | $ 103,672 |
| 10 | Deferred Federal Income Taxes | 778,460 | 2,133 | 0.00 | | 0.00 | | 0.00 | - |
| 11 | State Income Tax | 2,965,990 | 8,126 | 40.10 | JCN-3 pg 1 | (36.00) | JCN-3 pg 4 | 4.10 | 33,325 |
| 12 | Total Federal Income Taxes | $ 12,971,472 | $ 35,538 | | | | | | $ 136,997 |
| 13 | Taxes Other Than Income Taxes | | | | | | | | |
| 14 | Ad Valorem Taxes | $ 3,915,884 | $ 10,728 | 40.10 | JCN-3 pg 1 | (72.17) | JCN-3 pg 5 | (32.07) | $ (344,058) |
| 15 | Other Taxes | 148,476 | 407 | 40.10 | JCN-3 pg 1 | (45.21) | JCN-3 pg 5 | (5.11) | (2,078) |
| 16 | Total Taxes Other Than Income Taxes | $ 4,064,140 | $ 11,135 | | | | | | $ (346,136) |
| 17 | Depreciation Expense | $ 16,858,126 | $ 46,187 | 0.00 | | 0.00 | | 0.00 | $ - |
| 18 | Return | $ 25,545,171 | $ 69,987 | 0.00 | | 0.00 | | 0.00 | $ - |
| 19 | Subtotal | $ 314,852,857 | | | | | | | $ (454,857) |
| 20 | Other Adjustments | | | | | | | | |
| 21 | Local Sales Tax | | | | | | JCN-3 pg 6 | (84.57) | (197,933) |
| 22 | Regulatory Charge | | | | | | JCN-3 pg 6 | (74.89) | (181,683) |
| 23 | Total Other Adjustments | | | | | | | | $ (379,616) |
| 24 | Total Cash Working Capital Requirement | | | | | | | | $ (834,672) |

ENSTAR Natural Gas Company and Alaska Pipeline Company
Lead-Lag Study
Revenue Lag

| Line | Description | Revenue Lag | Reference |
|---|---|---|---|
| 1 | Service Lag | 15.21 | |
| 2 | Billing Lag | 1.57 | WP A-1 |
| 3 | Collection Lag | 23.32 | WP A-2 |
| 4 | Composite Revenue Lag | 40.10 | |

ENSTAR Natural Gas Company and Alaska Pipeline Company
Lead-Lag Study
Purchased Gas

| Line | Month | From | To | | Expense | Total Days | Midpoint | Days Paid from End-of-Month | (Lead)/Lag Days | Dollar Days | Composite (Lead)/Lag Days |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | January 2015 | 01/01/15 | 01/31/15 | $ | 24,369,175 | 31.00 | 15.50 | 28.55 | (44.05) | $ (1,073,481,911) | |
| 2 | February 2015 | 02/01/15 | 02/28/15 | $ | 22,381,707 | 28.00 | 14.00 | 27.94 | (41.94) | (938,700,703) | |
| 3 | March 2015 | 03/01/15 | 03/31/15 | $ | 22,626,793 | 31.00 | 15.50 | 27.35 | (42.85) | (969,484,101) | |
| 4 | April 2015 | 04/01/15 | 04/30/15 | $ | 16,597,005 | 30.00 | 15.00 | 27.60 | (42.60) | (706,958,081) | |
| 5 | May 2015 | 05/01/15 | 05/31/15 | $ | 12,908,662 | 31.00 | 15.50 | 26.43 | (41.93) | (541,261,697) | |
| 6 | June 2015 | 06/01/15 | 06/30/15 | $ | 11,478,314 | 30.00 | 15.00 | 22.25 | (37.25) | (427,477,516) | |
| 7 | July 2015 | 07/01/15 | 07/31/15 | $ | 11,368,186 | 31.00 | 15.50 | 28.22 | (43.72) | (497,009,123) | |
| 8 | August 2015 | 08/01/15 | 08/31/15 | $ | 11,454,789 | 31.00 | 15.50 | 29.28 | (44.78) | (512,902,090) | |
| 9 | September 2015 | 09/01/15 | 09/30/15 | $ | 13,696,129 | 30.00 | 15.00 | 29.32 | (44.32) | (607,073,890) | |
| 10 | October 2015 | 10/01/15 | 10/31/15 | $ | 19,845,680 | 31.00 | 15.50 | 25.64 | (41.14) | (816,542,469) | |
| 11 | November 2015 | 11/01/15 | 11/30/15 | $ | 27,865,564 | 30.00 | 15.00 | 26.17 | (41.17) | (1,147,273,859) | |
| 12 | December 2015 | 12/01/15 | 12/31/15 | $ | 31,271,513 | 31.00 | 15.50 | 26.41 | (41.91) | (1,310,536,244) | |
| 13 | | | Total | $ | 225,861,715.99 | | | | | $ (9,546,699,685) | (42.26) |

ENSTAR Natural Gas Company and Alaska Pipeline Company
Lead-Lag Study
O&M Expenses

| Line | Description | | Expense | (Lead)/Lag Days | Reference | | Dollar Days |
|---|---|---|---|---|---|---|---|
| 1 | Payroll Expenses | $ | 13,310,663 | (32.68) | WP C-1 | $ | (434,992,473) |
| 2 | Affiliate Charges | | 4,760,898 | (45.21) | WP C-7 | | (215,232,264) |
| 3 | Other Third-Party O&M Expenses | | 18,734,298 | (23.47) | WP C-8 | | (439,785,333) |
| 4 | Total O&M Expenses | $ | 32,044,961 | (27.30) | | $ | (874,777,806) |

ENSTAR Natural Gas Company and Alaska Pipeline Company
Lead-Lag Study
Income Tax

Federal Income Tax

| Line | Quarter | Service Period Start | Service Period End | Midpoint of Service Period | Payment Date | Percent of Taxes Due | Days from Midpoint to Payment Date | (Lead)/Lag Days (Lead)/Lag Days |
|---|---|---|---|---|---|---|---|---|
| 1 | First Quarter | 1/1/2015 | 12/31/2015 | 7/2/2015 | 4/15/2015 | 25.00% | 78.50 | 19.63 |
| 2 | Second Quarter | 1/1/2015 | 12/31/2015 | 7/2/2015 | 6/15/2015 | 25.00% | 17.50 | 4.38 |
| 3 | Third Quarter | 1/1/2015 | 12/31/2015 | 7/2/2015 | 9/15/2015 | 25.00% | (74.50) | (18.63) |
| 4 | Fourth Quarter | 1/1/2015 | 12/31/2015 | 7/2/2015 | 12/15/2015 | 25.00% | (165.50) | (41.38) |
| 5 | Federal Income Tax (Lead)/Lag Days | | | | | | | (36.00) |

State Income Tax

| Line | Quarter | Service Period Start | Service Period End | Midpoint of Service Period | Payment Date | Percent of Taxes Due | Days from Midpoint to Payment Date | (Lead)/Lag Days (Lead)/Lag Days |
|---|---|---|---|---|---|---|---|---|
| 6 | First Quarter | 1/1/2015 | 12/31/2015 | 7/2/2015 | 4/15/2015 | 25.00% | 78.50 | 19.63 |
| 7 | Second Quarter | 1/1/2015 | 12/31/2015 | 7/2/2015 | 6/15/2015 | 25.00% | 17.50 | 4.38 |
| 8 | Third Quarter | 1/1/2015 | 12/31/2015 | 7/2/2015 | 9/15/2015 | 25.00% | (74.50) | (18.63) |
| 9 | Fourth Quarter | 1/1/2015 | 12/31/2015 | 7/2/2015 | 12/15/2015 | 25.00% | (165.50) | (41.38) |
| 10 | State Income Tax (Lead)/Lag Days | | | | | | | (36.00) |

ENSTAR Natural Gas Company and Alaska Pipeline Company
Lead-Lag Study
Taxes Other Than Income Tax

| Line | Description | Amount | (Lead)/Lag Days | Reference | Dollar Days | Composite (Lead)/Lag Days |
|---|---|---|---|---|---|---|
| 1 | Property Taxes | 3,915,664 | (72.17) | WP E-1 | (282,603,354) | |
| 2 | Other Taxes | 148,476 | (45.21) | WP C-7 | (6,712,351) | |
| 3 | Total | $ 4,064,140 | | | $ (289,315,705) | (71.19) |

ENSTAR Natural Gas Company and Alaska Pipeline Company
Lead-Lag Study
Other Adjustments

| Line | Description | (Lead)/Lag Days | Amount | Reference |
|---|---|---|---|---|
| 1 | Local Sales Tax | (64.57) | (197,933) | WP F-1 |
| 2 | Regulatory Cost Charge Payments | (74.69) | (181,883) | WP F-2 |
| 3 | Total | | $ (379,815) | |