July 15, 2013

VIA ELECTRONIC FILING AND FIRST CLASS MAIL

Public Utility Commission of Oregon
550 Capitol Street, NE, Suite 215
Post Office Box 2148
Salem, Oregon 97308-2148

Attention: Filing Center

Re: UM 1654 – Investigation of Interstate Storage and Optimization Sharing

Northwest Natural Gas Company, dba NW Natural (“NW Natural” or “Company”), files herewith its Direct Testimony in the above-captioned docket. Enclosed are an original and five copies.

A copy of this filing has been served on all parties to this proceeding as included on the enclosed Certificate of Service.

Please call me if you have questions.

Sincerely,

/s/ Mark R. Thompson

Mark R. Thompson
Manager, Rates & Regulatory Affairs

Enclosure

cc: Service List
CERTIFICATE OF SERVICE

I hereby certify that I have this day served the foregoing DIRECT TESTIMONY OF NW NATURAL, upon all parties of record in the UM 1654 proceeding by electronic mail.

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DATED at Portland, Oregon, this 15th day of July 2013.

/s/ Kelley C. Miller
Kelley C. Miller
Rates & Regulatory Affairs
NW NATURAL
BEFORE THE
PUBLIC UTILITY COMMISSION OF OREGON

UM 1654

NW Natural

Direct Testimony of Keith White

July 15, 2013
EXHIBIT 100 – DIRECT TESTIMONY – INTERSTATE STORAGE AND OPTIMIZATION

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I. INTRODUCTION AND SUMMARY

Q. Please state your name and position with Northwest Natural Gas Company (“NW Natural” or “the Company”).
A. My name is Keith White. I am Vice President of Business Development and Energy Supply, and the Company’s Chief Strategic Officer.

Q. Please summarize your educational background and business experience.
A. I joined NW Natural in 1996 and I have served in my current position since 2007. Prior to joining NW Natural, I was employed for 20 years at Portland General Electric. I have an undergraduate degree in Business from Oregon State University.

Q. What is the purpose of this docket?
A. The Public Utility Commission of Oregon (“Commission” or “OPUC”) opened this docket in accordance with the Commission-approved stipulation filed in the Company’s last general rate case. In that case, UG 221, several of the parties questioned the sharing arrangements applied to the Company’s Mist storage services (“Storage Services”) and to resource optimization activities (“Optimization Activities”) under the Company’s Schedule 185 and Schedule 186. Rather than litigating the issues in UG 221, the parties reached a settlement that extended the current sharing arrangement for another year and called for a separate docket to evaluate the Schedule 185 and 186 sharing arrangements with a decision to be issued in the docket by the end of 2013.

Q. What is the purpose of your testimony?
A. The purpose of my testimony is to describe the activities that are conducted under Schedules 185 and 186, and the market and other conditions that gave rise to their

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development. I will also discuss the sharing arrangement prescribed in those schedules, and will provide and justify NW Natural’s recommendation that the Commission affirm the current sharing arrangements in both Schedule 185 and 186. Randy Friedman, who is also providing testimony on behalf of the Company in this docket, will provide more detailed explanations of the Company’s Storage Services and Optimization Activities.

Q. Please summarize your testimony.

A. NW Natural first became involved in the activities conducted under Schedule 185 and 186 as a means to expand and optimize utility resources beyond what would otherwise occur in the normal course of business. Initially, the Company invested shareholder dollars to expand the then existing Mist storage capacity, as a means of creating value for its investors while at the same time benefiting utility customers through sharing and the ability to recall pre-built capacity on an as-needed basis and at depreciated cost. The Company next developed its optimization activities – through contracting with third-party wholesale traders - in order to create further value from resources in its gas supply portfolio.

The sharing arrangements for the revenues flowing from NW Natural’s Storage Services and Optimization Activities were agreed to by Staff and the Company as fairly compensating NW Natural’s shareholders and customers for their respective contributions. In particular, the sharing for NW Natural’s Mist Storage Services - which is set at 20% customers/80% Company - is intended to recognize the fact that the incremental investment to provide these services was provided by shareholders, while providing customers with benefits to reflect the shared use of certain rate-based investments. The sharing for the Optimization Activities - which is set at 67%
customers/33% Company on resources in customer rates and 20% customers/80%

Company on resources not in customer rates - is intended to compensate the Company
for the increased complexity and risks these more speculative activities impose on
shareholders, while at the same time recognizing the fact that most of the resources
relied upon are paid for in customer rates.

Customers have benefitted significantly from NW Natural’s Storage Services and
Optimization Activities. First, since 2000, customers have received a total of $80 million
in credits under Schedules 185 and 186. In addition, customers have received a very
substantial benefit provided by the ability to recall the portions of the expanded Mist
storage in increments as needed, and at a depreciated book cost. And importantly,
customers have received all of these benefits with no additional cost or risk.

The Company believes the current sharing arrangements are fair to all parties
and should be continued. Customers have benefitted while at the same time the sharing
has provided the Company with sufficient incentive to take on the complexity and risks
associated with this discretionary activity. Moreover, the Company’s research suggests
that the sharing percentages are consistent with comparable arrangements adopted for
other LDCs. For these reasons, the Company requests that the Commission make no
changes to the existing sharing under Schedules 185 and 186.

II. NW NATURAL’S MIST STORAGE AND PIPELINE OPTIMIZATION ACTIVITIES

A. NW Natural’s Development of Storage Services and Optimization Activities
Q. Please explain the circumstances under which the Company first became engaged in the Storage Services and Optimization Activities that are the subject of Schedules 185 and 186.

A. As historical context, I would like to first note that Mist storage was originally developed from within the utility and was initially fully dedicated to serving core utility customers (our utility customers who purchase firm sales service). Mist storage utilizes depleted gas reservoirs located near Mist, Oregon. The original utility storage and related pipeline development went into service in 1989. The Company completed subsequent Mist expansions for utility customers in 1991, 1997 and 1999. All of these expansions were for the sole purpose of serving core customers, and accordingly, the capital costs of these pre-2000 expansions were included in utility rate base.

In the late 1990’s, the Company began to perceive that there was a potential business opportunity to develop additional Mist storage for the purpose of serving the broader Pacific Northwest regional market. We talked with prospective regional wholesale customers as well as companies in the storage business in other parts of North America. This early exploration supported our view that a need existed in the market for which the Company could compete to serve on a non-utility basis.

In considering how to proceed, the Company identified two fundamentally different options. It could either 1) develop an entirely new set of storage facilities outside of the utility through a subsidiary under full FERC jurisdiction; or 2) develop incremental capacity from within the utility, with FERC review limited to the interstate storage services being provided. After discussions with OPUC staff, the Company decided to pursue the second course of action. By taking the incremental investment approach, NW Natural was able to leverage sunk costs and avoid construction of
unnecessarily duplicative facilities. The Company’s view was that the new potential non-
utility revenues could be used to not only cover its incremental investment and operating
costs, but also could be partially shared with core utility customers to help offset some of
the sunk costs already imbedded in their rates. Moreover, core utility customers would
benefit from the Company’s early development of additional Mist storage capacity by
having the ability to recall the storage capacity in the future at a depreciated cost, when
it is needed to serve them.

To realize this plan, the Company first reached agreement on how the new non-
utility margin revenues would be shared with core utility customers with the OPUC staff
and other parties. It then sought and was granted regulatory authority from the Federal
Energy Regulatory Commission (“FERC”) under Part 284.224 of the Federal Code to
utilize new, non-rate base assets to provide storage services in interstate commerce
(also referred to as “interstate storage service”). With these regulatory approvals in
place, the Company then invested shareholder dollars to add capacity at Mist in 2001,
with subsequent shareholder investments for additional expansions in 2004, 2005 and
2007. To date, these non-rate base investments have totaled over $65 million (original
investments before depreciation and any recall by the utility).¹ More recently, Rate
Schedule 80 was approved by the Commission to provide Mist storage services to
customers that desire to receive such service wholly within the state of Oregon (also
referred to as “intrastate storage service”).

Q. How did the Company become involved in Optimization Activities?

¹ To date seven reservoirs have been developed for storage use with total working gas of 16 billion cubic
feet (Bcf), of which only 10 Bcf needs to be reserved for core utility requirements.
From discussions with other companies already in the storage business, the Company learned that “optimization” was important to the storage business activity in order to maximize storage value. Thus, in order to take full advantage of its existing and planned investments the Company decided to optimize its storage capacity through wholesale trading. In the early years, these Optimization Activities included the sale and trading of excess gas, existing Mist storage, and excess capacity on upstream pipeline contracts on the Northwest Pipeline (“NWP”) and other upstream pipeline systems. Later, as opportunities arose, we added new wholesale trading activities such as the exchange of gas commodity contract purchases at different trading locations (“portfolio” optimization), the use of off-system underground storage contracts at Jackson Prairie and in Alberta, and the extraction of natural gas liquids (“NGLs” or just “liquids”).

Q. Did the Company have the in-house expertise necessary to successfully undertake these Optimization Activities?

A. No, we did not. As a Local Distribution Company (“LDC”), our focus and expertise was and still is dedicated to acquiring gas and meeting the more direct needs of our customers. While these typical gas utility activities require very significant knowledge and skill, they are qualitatively different from the much more complicated and speculative Optimization Activities which will be discussed in more detail in Mr. Friedman’s testimony. For this reason, the Company decided to contract with a third-party wholesale natural gas trading company to partner with on these new Optimization Activities. The specific third-party entity used by the Company has changed over the

2 At this point in time the Company established a separate business segment for SEC reporting to conduct the Storage Services and Optimization activities—in recognition of the fact that they are different in nature from the typical activities undertaken by the utility.
years, but is currently Tenaska Marketing Ventures. The Company has found it important to work with a national marketing/trading company because they have the capability and expertise required to maximize the value of these Optimization Activities, as well as the regulatory understanding to avoid potential pitfalls. However it is important to note that prior to making resources available to the third-party, the Company first optimizes what it can by itself and passes any savings to customers through the normal PGA sharing mechanism. Beginning in 2010 the Company has effectuated the third party optimization agreement through an Asset Management Agreement ("AMA") structure, an arrangement that some other natural gas LDCs have similarly begun to employ.

B. The Development of the Current Sharing Arrangements

Q. How did the Commission determine the allocation of profits from the Storage Services and Optimization Activities?

A. NW Natural met with Staff and the customer groups and presented several alternative sharing arrangements. After discussion, the parties agreed to the sharing allocations reflected in Schedules 185 and 186, and upon Staff’s recommendation they were approved by the Commission.

Q. What sharing arrangement was agreed to for the expanded interstate and intrastate storage service at Mist, which is provided using primarily shareholder-funded assets?

The parties agreed that the sharing should be set on a 20/80 basis, with 20 percent of net margin shared with customers, and 80 percent retained by the Company. The parties agreed that these sharing percentages were reasonable to compensate...
customers for the use of certain assets that were in rate base in order to accomplish what was otherwise an entirely shareholder funded endeavor. The Company was pleased with the opportunity to expand its non-utility business, and Staff and stakeholders were pleased with an arrangement that allowed them to benefit without incurring cost or risk.

Q. What sharing was agreed to for the Optimization Activities using resources that are included in customer rates?

A. Initially, the parties agreed to the same 20/80 sharing for Optimization Activities as those applicable to Storage Services. This was because when the Company first began this activity in 2000 it expected any margin from its Optimization Activities to be small and to come primarily from Mist storage. However, after the first year of experience, the Company discovered that the opportunity for optimization of other resources was greater than expected. This fact highlighted an important issue for the Company; unlike the interstate and intrastate Mist storage services, which were funded with shareholder dollars, the majority of the Company’s Optimization Activities leverage resources that are included in customer rates. In light of this fact, the Company felt that it was inappropriate for shareholders to retain the majority of income from Optimization Activities. Consequently, NW Natural approached Commission Staff and the consumer groups about amending the sharing agreement to increase customers’ share for optimization of resources in customer rates from 20% (20/80) to 67% (67/33). This adjustment was intended to significantly increase the benefits to customers while maintaining an appropriate and necessary incentive for NW Natural to continue these optimization activities and seek new opportunities, and thus ensure that the “win/win” sharing arrangement remained fair and durable over time.
In addressing the increase, the Company specifically requested that customers receive 67% because, at that time, that allocation matched the weighted average cost of gas ("WACOG") sharing percentage adopted for the Purchased Gas Adjustment arrangement ("PGA") for its internal normal utility optimization of gas supply resources. Matching the 67% WACOG sharing was important because the Optimization Activities were at their infancy, and the Company felt by using the PGA sharing percentage, it could eliminate any concerns of potential gamesmanship regarding classification of activities as Optimization Activities versus normal utility gas supply WACOG savings. The Company also felt that the 33% retention by shareholders still provided a sufficient incentive. Today, it is well established which activities fall within each category (Optimization Activities vs. normal WACOG savings), primarily because the Optimization Activities are conducted under the AMA; nevertheless, the increase of the customer sharing up to 67% has remained in place as a significant customer benefit.

Q. Please describe how these sharing arrangements are reflected in the Company's tariff schedules.

A. The two relevant tariff schedules are Schedule 185 and Schedule 186. Schedule 185, which I will address first, is titled “Special Annual Interstate and Intrastate Storage and Transportation Credit," and applies to the Company's firm sales service customers whose rates include costs related to the Mist Storage facility. Under Schedule 185, customers receive a credit for the Oregon share of net margins received by the Company for (a) interstate storage and related transportation services provided under FERC jurisdiction; (b) intrastate storage activities and related transportation services under Rate Schedule 80; and (c) optimization of total Mist storage capacity (core and non-utility allocated in accordance with the schedule).
Q. **How are these revenues allocated under Schedule 185?**

A. Schedule 185 provides that NW Natural will share with eligible customers the net margin received from non-utility interstate and intrastate storage services on a 20/80 basis, with 20 percent to be credited to customers, and 80 percent to be retained by NW Natural. In addition, Schedule 185 provides that NW Natural will also share with eligible customers the net margin that is attributable to optimization of Mist storage capacity (i.e., deliverability). Net margins from Mist storage optimization are shared (a) 20/80 for the proportion of non-utility Mist capacity not included in the rates and, (b) 67/33 for the proportion of core Mist capacity that is included in the rates, with 67 percent being credited to customers and 33 percent being retained by NW Natural.

Q. **Please describe Schedule 186.**

A. Schedule 186, which is titled “Special Annual Core Pipeline Capacity Optimization Credit,” applies to firm and interruptible sales service customers whose rates include costs related to upstream pipeline capacity. The purpose of Schedule 186 is to credit eligible customers with the Oregon share of net margins received by NW Natural for the optimization of core customer pipeline capacity, which includes all off-system pipeline capacity, commodity, liquids extraction, and storage capacity. Schedule 186 does not apply to optimization of those portions of Mist storage that is included in customer rates.

Q. **How are revenues allocated under Schedule 186?**

A. Schedule 186 provides that NW Natural will share with eligible customers the net margin attributable to this third party optimization for the entire portfolio of upstream capacity contracts. Specifically, under Schedule 186 the Company will share net revenues with its firm and interruptible sales customers on a 67/33 basis, with 67 percent to be credited to customers 33 percent to be retained by NW Natural.
Q. Can you summarize the activities that are governed by Schedules 185 and 186?
A. Yes. The following figure depicts how the various activities relate to Schedule 185 and Schedule 186:

**Schedule 185 and 186 Activities**

The above figure shows that Mist storage is the source for all of the Schedule 185 credits while the other gas resources in the Company’s portfolio (supply, pipeline and storage contracts) are the source for the Schedule 186 credits.

Q. Are the sharing percentages reflected in current Schedules 185 and 186 the same sharing percentages initially approved by the Commission?
A. Yes.

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C. Risks Borne by Shareholders Associated with the Mist Storage Services and Optimization Activities

Q. What risks are borne by shareholders with the Mist Storage Services and Optimization Activities?

A. In addition to the normal business risks associated with any venture, there are several risks that are unique to these more complex and speculative activities. One major risk specific to Optimization Activities is regulatory risk. To discourage anticompetitive behavior by market participants, FERC has enacted a complex framework of policies and regulations governing the types of optimization activities that the Company is engaged in. Of course NW Natural intends and endeavors at all times to comply with FERC’s mandates. However, the rules - like the activities to which they apply - are extremely complex, and their application by FERC is not always predictable. Accordingly, the risk of compliance is always a concern.

Q. Are there other risks specifically related to the Storage Service activities?

A. Yes. First, there is a price risk associated with the Company’s interstate storage contracts for Mist. Contrary to previous claims made by Staff in UG 221, the interstate storage contracts the Company currently has, or has had in the past, are not priced at the full FERC cost-based rate. All of these contracts, without exception, have had to be discounted from the FERC-approved maximum rate in order to meet the market price. The market discounted price varies from year-to-year and contract-to-contract. Further, the contract terms that the Company is able to enter into have ranged between one year
and ten years. Consequently, in most years there is a roll-over of capacity that needs to be re-contracted at whatever the new prevailing market price is at the time.  

Because the Company has always been required to discount its FERC cost-based rate to meet market prices, the difficulty is not in whether the capacity can be sold, but rather at what price. This fact, which significantly affects the profitability of this business activity, is illustrated in my Exhibit NWN/101, White/1 CONFIDENTIAL, which is taken from the 2011 Interstate Storage report filed with the Commission. As shown, in 2011, the Company had capacity that it was forced to re-contract at a significant discount. My Exhibit NWN/102, White/1 CONFIDENTIAL shows how steep this discount had to be relative to the average price of its prior year contracts.

Further compounding these risks is the fact that the intrinsic and extrinsic trading values related to gas storage have declined dramatically over the last few years. This precipitous drop in storage values is due to the shale gas supply that has swept throughout the country. This abundant supply has not only lowered gas commodity prices, but, more importantly to storage values, has also depressed market volatility. In addition, the national recession has slowed economic growth and, with the possible exception of electric generation fuel switching, forestalled any hope for a tightening in the supply/demand balance over the next few years. As a result, new storage

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3 Staggered and short-term contract durations are an essential component to the Company’s ability to “recall” Mist capacity when needed for core customer load growth. Even if longer-term contracts at a particular point in time could yield better rates, the Company needs to forego some of that opportunity in order to preserve the recall option. Accordingly, some amount of rate discounting is unavoidable.
development has slowed drastically and re-contracting risk on existing projects has increased.

In addition to these current and ongoing risks, Mist Storage Service had historical risks associated with the development of the storage reservoirs. These risks included permitting delays and variations in construction costs.

Q. **How has NW Natural managed risks associated with Optimization?**

A. The Company has managed these risks by balancing a willingness to engage in innovative transactions with a commitment to do so only when the transactions present reasonable and manageable risks. As I discussed above, NW Natural has chosen to manage the trading risks inherent in this activity by using an AMA structure with a third party gas marketer. This arrangement has also broadened the opportunities available to the Company.

 Specifically, with respect to FERC compliance risks, the Company maintains a number of governance and oversight mechanisms, coupled with annual training to reinforce what forms of transaction structures are acceptable.

### III. **BENEFITS TO CUSTOMERS AND SHAREHOLDERS UNDER CURRENT SHARING ARRANGEMENTS**

Q. **What have been the results for shareholders and customers under the Schedule 185 and Schedule 186 sharing arrangements?**

A. In Northwest Natural’s view, the sharing arrangements have worked well and as intended. For Storage Services covered by Schedule 185, the sharing arrangement was intended to provide a sufficient profit opportunity to justify the Company’s at-risk,
discretionary, investment of over $65 million to expand the Mist facilities. While returns have varied from year-to-year depending on market conditions, so far it has been a good investment for shareholders. In addition, customers have received 20 percent of the net pre-tax income from investments and activities funded exclusively by shareholders and customers have been able to recall this pre-built Mist capacity when needed at a depreciated value, sized in the amounts needed, and without any of the risks typically associated with storage development.

For Optimization under Schedule 185 and Schedule 186, the sharing arrangement was intended to provide a sufficient profit opportunity to justify the Company taking on the more speculative Optimization Activities and their associated incremental costs and risks. The majority of margin is derived from optimizing resource contracts, which are not included in rate base. Because the costs of these contracts are passed through to customers and do not earn a return, sharing is necessary to incent shareholders to take on the added risks associated with the discretionary Optimization Activities. Under the existing sharing arrangement, Customers receive the majority of the optimization margin without any exposure to additional risk or incremental costs, and the Company is incented to continue these activities.

Q. **Specifically, how have customers benefitted?**

A. Customers have received a cumulative $80 million in credits since 2000.

For Mist Storage Services, there is an additional and significant customer benefit because the Company has been and will continue to be able to recall Mist storage to meet customers’ actual demand needs in smaller capacity increments as the need arises. By recalling smaller portions of storage that the Company has pre-built, customers avoid paying for excess capacity that is not needed. In addition, because the
expanded storage has already been constructed, customers are not exposed to the
permitting and development costs and risks. And once the storage resource is recalled
for customer use, the resource goes into rates at depreciated book cost, not the actual
costs to construct.

Q. **Has Staff recognized these benefits in the past?**

A. Yes. When the Commission approved Schedule 185, Staff’s public meeting
memorandum stated that Schedule 185’s sharing arrangement “reasonably
compensated customers for costs incurred for the use of utility facilities for non-regulated
activities.” Staff also identified several customer benefits, including:

> At the time the storage asset is added to rate base, it is at
> a depreciated cost, subject to Commission review and
> approval. Therefore, core customers are charged less for
> the asset than they otherwise would be.

> * * *

> Core customers get the benefit of greater future storage
> resource certainty. The reservoirs at Mist that have been
> produced out, but are not yet used for storage, suffer from
> water encroachment, which reduces such reservoirs’
> available working gas inventory capability. Earlier storage
> development of such reservoirs will help mitigate
> degradation of these reservoirs’ potential capacity.

> * * *

> If there is no net margin for a year, core customers do not
> have a negative credit, but instead have a zero adjustment
> to rates; NW Natural’s shareholders would realize no gain
> or take a loss. Even though the core customers do not
directly benefit by way of the credit if there is no net margin
> to share, these customers still benefit because of the other
> benefits discussed above. If the net margin is positive,
core customers are credited 20 percent of the net margin
> before income taxes.⁵

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⁴ Staff Memorandum dated April 18, 2000 from April 25, 2000 public meeting.
⁵ Id..
IV. REASONABLENESS OF CURRENT SHARING PERCENTAGES

Q. Do you believe that the overall sharing arrangements for Mist Storage Services and Optimization Activities - together as a package - are reasonable?

A. Yes. Overall, and together, the sharing arrangements are reasonable.

Q. Specifically with regard to Storage Services, do you believe that the current sharing arrangement is reasonable?

A. The sharing percentages themselves are reasonable; however, customers receive significantly more benefit from the Storage Services than their share of the operating margins alone. In addition to the revenue sharing benefit customers have received significant benefits from having flexible Mist recall. This arrangement has allowed them the unique opportunity of paying for storage only in small increments, as it is needed, and at a depreciated price. Consequently, looking at the arrangement in hindsight, one could conclude that the 20 percent customer sharing on Mist Storage Services - together with the benefits of recall - may actually over-compensate customers for the value they have provided.

Q. Is the Company requesting a change to the sharing arrangement related to Storage Services?

A. No. The current sharing arrangement was in place when the shareholders invested over $65 million and the Company expectations were that these terms would remain in place. A deal is a deal, and the Company feels it is appropriate to continue the arrangement that was negotiated. However, if the Commission were inclined to revisit the sharing arrangements on Optimization Activities, the Company believes that it would also need to consider whether the Company percentage for Storage Services should be adjusted
to recognize the benefit to customers associated with flexible recall - which we believe is undervalued in the current sharing percentage.

Q. **Do you believe that the 67/33 sharing arrangement related to Optimization Activities of resources included in customer rates is balanced and reasonable?**

A. Yes. From the Company's perspective the current sharing structure provides sufficient incentive for the Company's shareholders to assume the complexity and risks associated with these activities while at the same time the sharing provides that the majority of the benefit goes back to customers.

In addition, the majority of net revenues generated by the Company's Optimization Activities derive from the optimization of resource contracts on which the Company does not earn a return. Therefore, a results-based incentive structure, such as the current sharing arrangement, is the only way for the Company to justify to its shareholders that the discretionary risks and costs that the Optimization Activities entail are worthwhile. Indeed, the only Optimization Activity related to a resource that is included in the Company's rate base is the Mist storage optimization, and only a portion of that investment is in utility rate base, with the remainder associated with interstate/intrastate capacity that is not included in rate base.

Q. **Are there any reference points in Commission precedent that support the Company's view that the current sharing percentages are appropriate?**

A. Yes, there are two available reference points:

- **The PGA**: Under the PGA, the Company has the option of either selecting 80/20 or 90/10 sharing. This sharing is designed to serve two purposes: 1) risk mitigation for Company shareholders for market price volatility and 2) as an
incentive to encourage the Company to secure the lowest prices for customers consistent with its obligation to provide safe and reliable service.

- **Pipeline capacity release**: Under Schedule P, there is an 80/20 sharing of savings (20% retained by the Company). This sharing is intended to serve as an incentive for the Company to release on a short-term seasonal basis capacity that is not required to meet customer load requirements. The Company has found that, in general, little value can be realized from releasing this capacity during periods not needed to serve core utility customers. Instead, NW Natural has found it can realize more value through its AMA optimization agreement through more sophisticated transaction structuring.

Q. **What do you conclude from these two Commission precedents?**

A. That the sharing percentage available to shareholders should, at a minimum, be at least 20% (80/20). In other words, 80/20 sharing sets the lower end of the reasonable range for sharing. Further, sharing above 20% to shareholders can be justified because the Company’s Optimization Activities go beyond normal expectations of what a gas LDC can perform within its normal gas supply activities.

Q. **Are there any additional relevant reference points that could be considered?**

A. Yes. In assessing reasonableness, the incentives available to gas-only LDCs for similar forms of optimization provide additional reference points. Gas-only LDCs are similarly situated to NW Natural in that they are strictly engaged in gas distribution activities and are not part of a larger integrated energy company.

Q. **Has the Company attempted to review the incentives available to other gas LDC companies for similar activities?**

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A. Yes, although it is difficult to decipher from publically-available sources the true breadth of activities that these companies are engaged in that happen to fall under their various gas supply regulatory mechanisms. There is also a diversity of sharing structures that vary from state to state. A summary of the sharing structures identified through this research is included with my testimony as Exhibit 103, White/1.

Q. What observations do you make based upon the regulatory treatment applied to other gas LDCs’ similar activities?

A. While it is hard to draw firm conclusions, several relevant observations can be made. First, there appears to be recognition that meaningful incentives are appropriate. All LDCs engaged in similar optimization and AMA activities appear to be allowed a significant revenue sharing mechanism. There are two prevalent sharing structures evident in these instances – either 75/25 sharing (75% to customers) or a progressive block sharing structure with the tail, or peak, block being 50/50.

A second observation is that only a minority of the gas LDCs included in the sample clearly haveAMA optimization arrangements in place. The majority appear to only have a more limited scope of PGA type activities. These would be equivalent to what the Company has in Oregon for its more traditional gas supply WACOG optimization and Schedule P pipeline capacity release, wherein it may receive up to 80/20 sharing (20% to shareholders).

Q. In UG 221 CUB analogized the Company’s Optimization Activities to the activities of an electric utility, which is expected to sell in the market generation that is not currently needed for customer load. How do you respond to this analogy?

A. There are two reasons why the analogy is a weak one. First, gas and electric utilities are not similarly situated with respect to rate base resources. Electric utilities are
vertically integrated and own their own generation, or production. Thus, the majority of
an electric utility’s return is earned on rate-based power generation. Gas utilities on the
other hand are not vertically integrated and, generally, do not own their own production.
In general, the gas industry is segregated between producers, pipelines, and LDC
segments and not vertically integrated as with electrics.

Second, in the Pacific Northwest, historically much of the power generation came
from hydro power. The region has historically used critical water planning to serve its
customer demand requirements. Consequently, in most years it had excess power from
generation plants whose fixed costs were fully recovered in customer rates. The growth
of electric transmission interties with the Southwest U.S. since the early 1970s to take
advantage of seasonal load diversities further accentuated the scope and reach of these
power marketing activities. This provided an economic rationale for Pacific Northwest
electric utilities to develop and grow their wholesale marketing and trading activities in
order to offset the generation resources’ fixed costs - they needed to become sellers as
well as buyers of power. In contrast, NW Natural has been and continues to be almost
exclusively a buyer of natural gas. It does not have gas production that it needs to
market.

V. SUMMARY

Q. Please summarize NW Natural’s proposal for this docket.

A. NW Natural recommends that no changes be made to the Schedule 185 and
Schedule186 sharing arrangements. These arrangements have worked well for both
customers and shareholders. By maintaining the current sharing percentages, and the
incentives provided by those percentages, the Company can continue to create value for customers while sheltering customers from added risks and costs.

While the Company does not recommend any changes to the sharing arrangements in Schedule 185 and Schedule 186, the Company is not opposed to clarifying the language in either or both of those schedules if that is determined to be necessary to eliminate any confusion between the different types of activities.

The Company also supports informal workshops every 2-3 years to allow the Company to update the Commission and stakeholders regarding the Mist Storage Services and the Company’s Optimization Activities. These regular workshops would keep parties informed in a way that the Company’s annual reports by themselves may not.

Q. Does this conclude your testimony?
A. Yes.
Table 1

Interstate Storage - Storage Services
Firm Sale Agreements and Net Revenues
December 2011

|---------------------------------------------|----------------------|-------------------------|------------------------|--------------|

(Table contents not transcribed due to unavailability)
Comparison of New 2011 Contract Prices to Historic Pre-2011 Contracts in effect during 2011

Source: Table 1 from NW Natural's 2011 Annual Report of Interstate and Intrastate Gas Storage and Optimization Activities.

* FortisBC - D is a multi-year contract with a primary term going through May 31, 2014. It is not a new contract. The contract period is shown as Jun 11- May 12 in Table 1 because there is a one year reduction in contract volume.
SUMMARY OF OPTIMIZATION SHARING ARRANGEMENTS AMONG GAS DISTRIBUTION PEER GROUP

The utilities listed below represent gas LDCs within NW Natural’s peer group. The Company searched for asset management agreements and optimization activities like those in which NW Natural participates. Their sharing arrangements are shown in the table below.

<table>
<thead>
<tr>
<th>Utility and Jurisdiction</th>
<th>Optimization Sharing Arrangement (Customers/Shareholders)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGL Resources (Georgia)</td>
<td>60/40</td>
</tr>
<tr>
<td>AGL Resources (New Jersey)</td>
<td>Block sharing mechanism with the peak block at 50/50 (average of 70/30)</td>
</tr>
<tr>
<td>National Fuel (Pennsylvania)</td>
<td>75/25</td>
</tr>
<tr>
<td>Piedmont Natural Gas (North Carolina)</td>
<td>75/25</td>
</tr>
<tr>
<td>UGI Penn Natural Gas (Pennsylvania)</td>
<td>75/25</td>
</tr>
<tr>
<td>Washington Gas Light (Maryland)</td>
<td>Block sharing mechanism with the tail block at 50/50</td>
</tr>
<tr>
<td>Washington Gas Light (Virginia)</td>
<td>Block sharing mechanism with the tail block at 50/50</td>
</tr>
</tbody>
</table>

Other utilities within the Proxy Statement peer group have sharing arrangements on cost-saving activities that appear to be more similar to those included in the Company’s PGA sharing mechanism. These include:

- Atmos Energy (Texas, Mississippi, Kansas, Tennessee, Louisiana)
- AGL Resources (Illinois, Virginia)
- National Fuel (New York)
- Laclede Gas (Missouri)
- South Jersey Gas (New Jersey)
- Southwest Gas (Nevada, Arizona)

In addition, the Proxy Statement peer group includes several vertically integrated gas companies with pipeline affiliates. They do not appear to be engaged in optimization activities within their gas LDC subsidiaries. These include:

- NiSource
- Oneok
- Questar
- Spectra

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1 The Gas Distribution Peer Group as listed in the Company’s May 15, 2013 Proxy Statement to Shareholders (page 38) was used as the basis for identifying which utilities to review and include in this comparative reference research.

2 For those utilities that operate in multiple jurisdictions, the Company looked specifically for any sharing arrangements in jurisdictions that represent a significant portion of regulated operations (defined as states with more than 200,000 customers).
BEFORE THE
PUBLIC UTILITY COMMISSION OF OREGON

UM 1654

NW Natural

Direct Testimony of Randolph S. Friedman

July 15, 2013
EXHIBIT 200 – DIRECT TESTIMONY – INTERSTATE STORAGE AND OPTIMIZATION

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I. INTRODUCTION AND SUMMARY

Q. Please state your name and position with Northwest Natural Gas Company (“NW Natural” or “the Company”).

A. My name is Randolph S. (Randy) Friedman. I am Director, Gas Supply for NW Natural.

Q. Please summarize your educational background and business experience.

A. I joined NW Natural in March 1989 as Gas Contracts Administrator. In September 1992 I was promoted to the position of Manager, Gas Acquisition and Pipeline Relations. Effective June 1994, I became the Manager of Gas Supply. My title was changed to Director, Gas Supply, in 2005. Prior to joining NW Natural, I was employed for seven years at Southern California Edison Company, where my duties included load and fuel price forecasting, generation and transmission project evaluation, and natural gas procurement. I hold a Bachelor of Science degree in Mechanical and Nuclear Engineering for the University of California, Berkeley. I also hold a Master of Science degree in Management from Purdue University.

Q. What is the purpose of your testimony?

A. The purpose of my testimony is to describe in some detail the natural gas transactions that generate the customer credits under Schedule 185 and Schedule 186.

II. GAS SUPPLY DEPARTMENT FUNCTION AT NW NATURAL

Q. Please describe the duties and responsibilities of your current position as Director of Gas Supply at NW Natural.

A. I direct the activities of the Gas Supply department, whose primary purpose is to purchase the Company's gas supplies to meet sales service customer requirements in a reliable and cost-effective manner. The department transacts physical supply purchases as well as financial derivative contracts (financial hedging). NW Natural spends over...
$300 million each year on gas purchases and interstate pipeline capacity and related contracts.

The Gas Supply department also coordinates all gas flows on NW Natural’s system. This includes the flow of gas to non-residential customers who choose to purchase and transport their own gas supplies, as well as the third parties holding interstate and intrastate storage service agreements at the Company’s Mist underground storage facility.

My own particular responsibilities include development of gas supply strategies, negotiation of contracts, overseeing the implementation of the Company’s gas reserves acquisition agreement, optimization of NW Natural’s gas resource portfolio, and involvement in special projects that are typically cross-departmental in nature.

III. DETAIL ON MIST STORAGE SERVICES

Q. Please describe the nature of the Company's Mist storage services that are subject to Rate Schedule 185?

A. Rate Schedule 185 relates to storage services at Mist (“Storage Services’) that the Company provides to interstate and intrastate markets at negotiated market prices, subject to a FERC-mandated maximum rate cap.

Q. Please describe the Company’s interstate Storage Service?

A. NW Natural’s interstate Storage Service includes the injection, withdrawal, and underground storage of customer-owned gas at Mist, as well as the transportation of customer-owned gas to and from Mist storage using NW Natural’s high pressure pipeline system. Customer-owned gas is delivered to a point at which NW Natural is directly interconnected to an upstream interstate pipeline and then injected into Mist storage. At present, NW Natural is connected to two interstate pipelines—Northwest Pipeline (NWP)
and the small Kelso Beaver Pipeline (KBP). There are two points of connection in use for interstate storage service -- the NWP gate station at Molalla and the NWP gate station at Deer Island. Those points also serve as delivery points when an interstate customer wishes to withdraw its gas from storage. Once customer-owned gas is withdrawn from storage and delivered to the NWP system, the interstate customer is responsible for the future movement of the gas.

Interstate Storage Services are subject to a general tariff and an operating statement filed with and approved by FERC, with updated filings made on a periodic basis. The operating provisions generally follow the same gas day, scheduling cycles and other parameters that mesh with the operations of the upstream interstate pipeline system.

The marketing of interstate storage services was handled initially within NW Natural as a non-utility business activity, but was transferred to NW Natural Gas Storage LLC when that affiliate was created in 2009 in conjunction with the Company’s development of a separate gas storage facility in California (Gill Ranch). Rates and contract volumes for interstate Storage Services are negotiated for contracts of varying durations.

Q. **What services are included in the intrastate Storage Service?**

A. Intrastate Storage Service, which is provided under the Company’s Oregon Tariff, Rate Schedule 80, is similar in all respects to interstate Storage Service except for one distinction: The withdrawn gas does not move on the NWP system, but instead stays within NW Natural’s Oregon service territory. The gas withdrawn from Mist storage is subsequently moved to industrial customer location(s) in accordance with the tariffed Oregon Rate Schedule under which the customer receives transportation service on the
Company’s distribution system. In essence, the withdrawn gas moves to the Molalla or Deer Island gate station but is not scheduled as a delivery to NWP, hence the customer avoids incurring the additional transportation charges that NWP would assess if the gas withdrawn from storage were actually scheduled onto the NWP system. As such, from Molalla or Deer Island, the gas looks like any other delivery of customer-owned gas onto NWN’s system. For this reason, the scope of Rate Schedule 80 is limited to large non-residential customers who are physically able to access gas that is received into NW Natural’s system at either the Molalla or Deer Island gate stations. Rate Schedule 80 is a small component of the Company’s Storage Service revenues.

Q. Mr. White has testified that one of the benefits of the Mist expansion is the ability to recall capacity for core utility customer use when needed. Can you explain how such recall works?

A. Yes. One of our goals in expanding storage at Mist was to provide our core sales service customers with the ability to incrementally add storage capacity only when needed, and in the amounts needed, through capacity recall. To allow for such economic recall, we have negotiated interstate and intrastate storage contracts for terms of varying durations. The Company’s Integrated Resource Plan (“IRP”) analysis considers these contract expiration dates as the Company determines whether more Mist capacity should be “recalled” to meet growing core sales service customer requirements. Expiring capacity that is not recalled can then be re-contracted. Almost all Mist storage service agreements are contracted on a firm basis because firm contracts yield the highest value, but interruptible contract variations are possible and do occur.
Q. Are recall decisions reversible or dependent on the market value of Storage Services?

A. No. Once the capacity is recalled to serve core sales service customers, current regulatory treatment does not allow for a subsequent reversal that would return such capacity for contracting through Storage Services. Hence, recall decisions are evaluated every year, approval is required by a team of Company executives, and the recall quantities are made in the smallest possible increments needed to satisfy core customer load projections for the subsequent planning year as determined through the IRP analysis. Making these decisions one year in advance of need allows time for the effective remarketing of any expiring Storage Services contracts whose capacity is not needed for recall.

Q. How much of the expanded Mist capacity has been recalled for core utility customers to date?

A. From 2004 through 2012, the Company has recalled storage capacity on five separate occasions, in amounts totaling 65,000 Dth/day of peak day deliverability. The portion of Mist now reserved for core customers totals 275,000 Dth/day out of the current total Mist peak day deliverability of 520,000 Dth/day.

Q. What level of involvement does the utility in general, and the Gas Supply department in particular, provide for the interstate and intrastate Storage Services?

A. In the field, the same utility personnel who run the utility storage operations at Mist provide the same support for non-utility Storage Services; for example, 24 hour a day,

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1 Recall decisions are rounded to the closest 5,000 Dth/day for administrative convenience.
seven day a week monitoring of system status, operation of compressors, wellheads and
related equipment, maintenance activities, call-ins after hours and on weekends/holidays
in the event of outages or other problems, and so forth.

In the office, the main role of utility personnel is for the daily (including after-
hours, weekends and holidays) scheduling of gas to meet the needs of Storage Service
customers, which is done in coordination with the utility's usage of Mist gas supplies.
The incremental cost associated with work performed by utility personnel for Mist
Storage Services is allocated to the Gas Storage business segment.

III. DETAIL ON OPTIMIZATION ACTIVITIES

Q. Please describe in more detail the Company’s Optimization Activities?

A. Optimization Activities fall into five general categories: (1) Mist Storage Optimization; (2)
   Liquids Extraction; (3) Commodity Contract (“Portfolio”) Optimization; (4) Pipeline
   Capacity Optimization; and (5) Off-System Storage Optimization. All Optimization
   Activities seek to create additional value for customers and shareholders by engaging in
   more speculative transactions for the resources that are not being fully utilized by sales
   service customers.

Q. Mr. White has explained that the Company has engaged a third-party to provide
   optimization services through an Asset Management Agreement (“AMA”). Can you
   describe how NW Natural works with the third-party to perform the Optimization
   Activities?

A. Gas Supply is responsible for negotiating the terms of the AMA arrangement and
   developing strategies with our optimization partner to maximize value while maintaining
   reliability standards for core utility and Storage Service customers. At least one
   individual in Gas Supply is involved virtually every day in consultations with our

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optimization partner to review current positions, assess available resources, and
determine new opportunities for optimization. Higher values, though, generally are
obtained through strategies that can take many months to unfold, heightening the need
for a close working relationship with our optimization partner so that we can adapt as
needed to changing market conditions and customer requirements. Examples of such
strategies and transactions are described in my testimony below.
The largest involvement outside the Gas Supply department comes from the legal and
Mid Office (financial risk management) groups because they analyze each type of
optimization transaction for regulatory compliance and financial impact. With their
approval, individual transactions then can be pursued by the Front Office, i.e., certain
authorized individuals within the Gas Supply department.
The costs of this utility involvement are not borne by customers, but instead are
allocated to the separate non-utility Gas Storage business segment in which the costs
and revenues of Storage Services and Optimization Activities are recorded.

Q. Why does the Company have gas resources that are not fully utilized by core
customers at all times?
A. As an LDC, NW Natural is obligated to ensure reliable service to its firm sales service
customers under all foreseeable weather conditions—including peak cold weather
conditions. As modeled in the IRP the Company plans its resource portfolio around
“design” weather conditions. Design weather includes criteria for temperatures over the
entire heating season and, perhaps most importantly, the peak cold day. The resulting
load pattern is highly seasonal as shown below.

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The Company uses the IRP process to assemble the most cost-effective gas resource portfolio to serve this pattern of customer load requirements. A combination of pipeline and peaking (primarily storage) resources is the most efficient mix. However, pipelines by their nature are in place every day whether used or not, and so are available for optimization as shown below.
In addition, the projected load requirements are themselves based on an extreme cold weather design, meaning that they are not expected to occur in an average year. This difference between design and average year weather conditions creates the potential for under-utilized resources making more resources available for potential optimization, particularly with storage resources as discussed below.

Q. Please describe Mist Storage Optimization.

A. All Mist storage capacity is reserved either for core firm sales service or interstate/intrastate service customers (the service described above). However, when Mist is not fully utilized by either or both of these groups, the Company has the opportunity to generate additional revenues through optimization. The optimization opportunity is primarily a function of gas injection or withdrawal rates, which in turn have some relationship to the total amount of working gas in Mist storage on any given day. Injection and withdrawal rates are inversely correlated, i.e., the more gas that is being injected for customers, the more optimization capability exists to do withdrawals, and vice versa.

As previously mentioned, NW Natural’s IRP analysis is based on “design” weather conditions. Because cold weather can and has occurred late in the heating season, the Company’s analysis (using the SENDOUT® model as described in the IRP process) indicates that maximum deliverability should be maintained into early February. But, because most winters are not extremely cold, this practice typically results in inventory not being fully withdrawn from Mist. One output from the SENDOUT® analysis is a guideline for how to dispatch (or hold back on dispatching) gas out of each storage resource in order to maintain reliable service. An example of such a guideline is shown in the table below.
From the chart above, note that storage inventory needs to be maintained at a fairly high level into early February, but then can drop quickly once the design peak day condition has passed. By mid-February most of the winter has passed, so it is not unusual to have significant quantities of gas left in storage in a normal winter weather season.

The gas still in inventory after the cold weather has passed represents an opportunity to serve additional load, but usually that load is not to be found on the utility system. Looking for transactional opportunities outside the utility system entails additional risks, as described below, and requires a larger trading “footprint” than NW Natural has in place for meeting base utility service, but these opportunities are well-suited to a company whose strength is based on wholesale natural gas trading capabilities.
An example of a wholesale transaction is the “backdraft” arrangement pictured below. The green line again represents the Company’s guideline for inventory levels at Mist in order to ensure reliable service to its utility customers.

The “backdraft” in this picture is the act of withdrawing gas (“drafting”) after the February peak condition has passed by for use by an off-system market while gas prices are still relatively high. The gas is returned back to the Company at a later time and potentially at a different location when prices are lower and there is more flexibility on the upstream pipeline system. From a utility customer perspective, nothing has changed because the gas is returned to inventory at the same price that it left. However, the sale of the gas (in March in this example) and its purchase at a lower price (in April in this example) generates revenue that would not otherwise have been obtained from this asset.

This simple example is potentially just a sliver of the entire storage optimization transaction. The price spreads between months are not static but widen and narrow on a day-by-day, minute-by-minute basis. By anticipating these movements, i.e., speculating, our optimization partner can use these same volumes in multiple...
transactions. That is, when the spreads between months are relatively wide, the
optimizer sells the spread. When the spreads narrow, the position is closed out and
some level of profits are realized. When the spreads again widen, the position is sold
again and the process repeats. If the spreads never narrow but instead stay the same
or continue to widen, the optimizer simply waits for the physical settlement of the
transaction and is not caught “short” because the physical volumes exist at Mist to
backstop the trade.

These activities reflect the fact that the price of natural gas is constantly moving
up or down over time and at each location where gas is traded. Of course, the ability to
take advantage of these price movements requires sophisticated trading systems and a
large trading staff to analyze and act quickly when transactional opportunities arise. NW
Natural does not employ such systems or staff in serving its utility customer needs, and
as such cannot engage in this kind of speculative activity on its own.

Q. Please describe liquids extractions.

A. Liquids refer to certain heavier hydrocarbons like ethane, propane, and butane that are
associated with methane production, methane being the primary component of natural
gas. Liquids typically have a market value somewhere between that of methane and oil.
The market value can make the extraction of the liquids from methane profitable,
depending on the spread between methane and Natural Gas Liquids (“NGL”) prices, the
relative proportion of the different NGLs in the gas stream, and the cost-effectiveness
and efficiency of the extraction facilities.

In British Columbia and the U.S. Rockies, the extraction of liquids occurs in the
production areas, before the gas stream reaches the typical natural gas trading hubs. In
Alberta, however, the industry was built such that the extraction process usually occurs
in two stages: a preliminary (“shallow cut”) in the production areas and then a more
extensive (“deeper cut”) at facilities located closer to the provincial borders, which is
where there are additional markets to absorb the NGLs.

Q. **How does NW Natural participate in liquids extraction?**
A. The Company purchases gas out of Alberta, where a significant amount of extraction
activities take place outside the production fields and after NW Natural has taken
possession of the gas. For this reason, NW Natural is in a position to participate in
liquids extraction by employing a processing company to perform the extraction on the
Company’s behalf.

Q. **What special skills or knowledge are required for this activity.**
A. To take advantage of the economics of liquids extraction requires expertise in different
fuels and different markets than would be typical for a gas LDC. For example, it requires
knowledge of and negotiations with the owners of the various NGL extraction plants. It
requires a trading footprint that extends to the east of Alberta and south to the mid-
Continent markets, not just the Pacific Northwest. These activities require knowledge
and expertise that go beyond the capabilities present within the Company in order to
provide LDC services.

Q. **Please describe Portfolio Optimization.**
A. Portfolio Optimization can also be thought of as price arbitrage between trading points,
but by directly utilizing LDC gas supply contracts rather than storage capabilities. These
exchanges are made during periods when the Company’s upstream pipeline capacity
and gas commodity contracts open up opportunities for gas movements in new
directions. As with other trading activities previously mentioned, this requires a large
and nimble trading staff with systems to track and act quickly on such opportunities. An illustration of this type of transaction is shown below.

The graphic above also illustrates another point, namely, that optimization transactions can involve multiple activities. In this example, gas that is purchased by NW Natural in Alberta is immediately exchanged with the optimization partner, who moves the gas to eastern markets and replaces the volumes with gas purchased in British Columbia. That in and of itself may generate revenues, but even if there is no profit in that exchange, the transaction has provided volumes that can be transported to the Alberta border from which the liquids can be extracted. So even if the exchange transaction has a negative value, the net result when combined with the liquids extraction should be positive if the optimization partner has managed all the risks of these deals, including counterparty risks such as finding creditworthy for the now-dry gas at the Alberta border.

Q. Please describe Pipeline Capacity Optimization.
A. As previously mentioned, using a third party trading partner that can aggregate requirements over a much larger market area and potentially combine the pipeline capacity with some of the other activities mentioned above yields a better result than the LDC could achieve on its own. Pipeline capacity on its own, however, represents a fairly small opportunity for optimization.

Q. Please describe Off-System Storage Optimization.

A. This refers to the price arbitrage opportunities discussed above for Mist storage, but applied to Jackson Prairie and any other storage contracts held by the Company. Current examples include two 3-year contracts held with storage providers in Alberta.

Q. What level of involvement does the utility in general, and the Gas Supply department in particular, provide for Optimization Activities?

A. Besides accounting services, the Gas Supply department is involved virtually every day in consultations with our optimization partner to review current positions, assess available resources, and determine new opportunities for optimization. The cost of this utility involvement is billed to the Gas Storage business segment.

Q. Does this conclude your testimony?

A. Yes it does.