

**NORTHWEST NATURAL GAS COMPANY  
(NW NATURAL)**

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**APPLICATION**

**FOR**

**AMENDMENT NO. 8**

**TO THE**

**MIST UNDERGROUND NATURAL GAS**

**STORAGE SITE CERTIFICATE**

Submitted to the  
Oregon Energy Facility Siting Council  
August 16, 2001

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**APPLICATION FOR AMENDMENT NO. 8 TO THE  
MIST UNDERGROUND NATURAL GAS  
STORAGE SITE CERTIFICATE**

**I. (a) APPLICANT INFORMATION**

Name and Address:

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Places of Incorporation: Oregon and Washington

Contact Persons: Carla L. Kelley  
Northwest Natural Gas Company  
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**II. (b) DESCRIPTION OF THE FACILITY**

**INTRODUCTION.**

By this Application, Northwest Natural ("NWN") proposes to amend the site certificate for its underground natural gas storage facility at Mist, Oregon. NWN intends to add a new gas-turbine-driven compressor to its Miller Station storage facility. In addition, station improvements include additional electronic metering facilities and new interconnect piping to the South Mist and North Mist pipeline systems. All equipment changes will take place within existing structures. This expansion will increase the combined total Mist storage peak-day delivery to 317 MMcfd from the current maximum capability of 245 MMcfd.<sup>1</sup> These modifications are requested to increase the future capability of Miller Station to handle additional storage now under exploration, and also to accommodate the additional pipeline capacity of the South Mist Feeder Extension project now under review. The ultimate station capacity of Miller Station is approximately 425 MMcfd, assuming future storage projects prove to be viable.

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<sup>1</sup> This expansion also will require one additional high capacity injection/withdrawal well in the Reichhold Pool. This well was described in the Application for Amendment No. 7; however, under current Energy Facility Siting Council rules, jurisdiction of the new well and its accompanying facilities lies with the Oregon Department of Geologic and Mineral Industries ("DOGAMI").



The only changes involved in this Amendment are changes to station equipment and a new maximum throughput (317 MMcfd). Standards affected by these changes are addressed here. Other standards, which do not change, were addressed in prior Amendment applications. For purpose of site description, pursuant to OAR 345-027-0060 (1) (f) (2), the Applications to Amend the Site Certificate for Mist Underground Natural Gas Storage submitted September 15, 1998, and August 29, 2000 are hereby incorporated by reference. Materials submitted with those documents will either be summarized in the application for Amendment No. 8 or referenced. Exhibits submitted with Amendment No. 6 will be referenced rather than reattached here.

## **EXISTING SITE CERTIFICATES AND FACILITIES.<sup>2</sup>**

### **1. Nature of the Facility.**

NWN is a gas utility that delivers energy to more than 525,000 customers. Although energy needs change significantly on a daily, monthly and seasonal basis due to changes in space-heating requirements, harvest processing, annual production cycles and other factors, in Oregon gas usage is generally lowest during summer months and peaks during December, January and February. Underground gas storage provides the most efficient means of balancing relatively constant pipeline gas supplies with widely fluctuating seasonal, daily and hourly market requirements. Gas is injected into storage during off-peak periods when market requirements are less than supply availability, and is withdrawn from storage when market demand exceeds available supplies from other sources. Storage reservoirs usually are replenished from April through September and are drawn down between October and March.

Underground reservoir storage requires suitable underground geological conditions in a specific geographic area. These conditions occur in depleted oil or gas pools like the pools in the Calvin Creek storage area.

An underground storage reservoir, reduced to simplest terms, is little more than a gas production reservoir retrofitted to inject gas back into the ground and withdraw it on a cyclical basis. Some gas always remains in the reservoir to maintain operating pressure. This gas is referred to as "cushion gas." Between one-third and one-half of the original gas in place in each reservoir (including some that could never be produced) is used as cushion gas. The remainder of the reservoir's capacity is used to inject and withdraw gas relatively rapidly to meet market needs. This gas is referred to as "working gas."

The principal differences between a natural gas production field and an underground storage reservoir are operational. The gas wells in a production

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<sup>2</sup> This introductory statement about the Mist underground storage operation is repeated from a prior application, as is the analysis of Council jurisdiction, for the benefit of Council members who were not members at the time Amendment No. 6 was processed.

field are designed to produce gas at flow rates that permit the efficient drainage of the reservoir over time. The Oregon Department of Geology and Mineral Industries ("DOGAMI") regulates the spacing of gas wells. Generally, no more than one well per quarter section (160 acres) is allowed. Closer well spacing could result in higher development costs with negligible increase in overall gas production. Competing wells could also cause the premature demise of a reservoir, leaving behind gas that is uneconomical to produce.

A different operating concept applies to a storage reservoir. Instead of producing the major portion of the underground gas by careful management of field pressures and auxiliary compression over a period of years, the goal changes to that of an annual fill-and-empty cycle. We currently are capable of a significantly greater withdrawal rate than the original production capacity; therefore, a more closely spaced pattern of higher capacity wells has been used for storage operations. Compressors allow the storage pressure to be restored during a six-month injection period and provide for sustained high delivery rates during withdrawal as the reservoir pressure depletes.

## **2. Site Selection.**

Underground storage facilities can only be developed in rare locations where the underground geological conditions are right. The Mist gas field (the "Mist Field") is such a place.

Millions of years ago, the present gas-producing sands in the Mist Field were laid down by a large river delta advancing into the ocean (analogous to the modern Mississippi River delta). The delta subsided and water depths increased, resulting in mud being deposited over the sand. Compaction from the weight of the material consolidated the sand and muds into sandstone and mudstone. Decomposition of the organic remains in the rock formed natural gas. Large amounts of natural gas migrated into the sandstone and accumulated in areas where the gas could be trapped and displace the water from between the sand grains, forming a "bubble." The compressed layers of clay that form the seal (caprock) over the sand prevent further vertical gas migration. The ongoing compression of Oregon against the Pacific Ocean floor created the folds and faults in the sandstone that form the compartments that trap the gas and prevent lateral migration. The fact that gas remains in these reservoirs at high pressure (up to 1,000 pounds per square inch) after millions of years demonstrates the stable nature of these reservoirs. No man-made structures have been so thoroughly tested.

Gas storage facilities have been constructed in similar sandstones in Washington, but no native gas was present. That made exploration and development of the structures much more risky and expensive. It was necessary to pump salty water out of the sandstone and to inject gas produced in other states and transported to the site. There was no guarantee that the injected gas

would stay put or that it would be recoverable. The gas reservoirs in the Mist Field are the only producing gas reservoirs discovered to date in Oregon and Washington, and thus they are the only "pretested" storage reservoirs, a rare and valuable resource.

### **3. Site Background.**

By the late 1970s, NWN had anticipated its need for natural gas storage capacity in the Portland metropolitan area. NWN believed the area around Mist, in rural Columbia County, Oregon, might be one of the few areas in the state containing sandstones of reservoir quality that could be used to store natural gas. These sandstone zones, surrounded by impermeable rock, are referred to as underground "reservoirs," although they are not large caverns. The small spaces between sand grains are in excess of 30 percent of the volume of the rock and can be filled with compressed natural gas. NWN recognized that the Mist area would be an excellent location for storage facilities to serve the region.

Reichhold Energy Company and Diamond Shamrock Exploration Company were exploring the Mist area with the hope that underground reservoirs containing commercial gas deposits would be discovered. NWN formed a subsidiary, Oregon Natural Gas Development Corporation ("ONG"), to participate with those two companies in exploring the Mist area by drilling exploration wells to depths of several thousand feet below the surface. From NWN's perspective, simply finding a good underground reservoir, even without commercial gas deposits, would have been satisfactory. The discovery of natural gas at Mist was a bonus.

The Mist Field was discovered in April 1979. Natural gas production was established in December of that year when the first volumes of natural gas were transported to a connection with the NWN pipeline system about nine miles away, near Clatskanie. Subsequently, producing wells from the commercial discoveries in the Mist Field were connected by buried gathering lines to the natural gas processing equipment located at Miller Station. At Miller Station, the produced natural gas was collected, measured, treated and odorized before its transmission to NWN pipelines. Since 1979, more than \$100 million worth of natural gas has been produced from numerous separate gas reservoirs in the Mist Field.

Through the 1980s and into the 1990s, gas exploration and production in the Mist Field was carried on by ONG and a variety of industry participants including Reichhold Energy Company, Diamond Shamrock Exploration Company, ARCO Oil & Gas Company, Nahama & Weagant Energy Company and Enerfin Resources NW-LP ("Enerfin"). Gathering pipelines connecting individual production wells to Miller Station were constructed and operated by ONG until December 1995 and by Enerfin thereafter. During these same time

periods, ONG and Enerfin also operated the production wells under contract with the well's various owners.

By the early 1980s, ONG had produced most of the economically recoverable natural gas in the Bruer and Flora pools, two of the first production reservoirs at Mist. In anticipation of that occurrence, in 1981, ONG applied for the permits necessary to convert the Bruer and Flora pools into an underground natural gas storage facility.

In September 1981, based on an application from ONG, the Energy Facility Siting Council ("EFSC" or the "Council") approved a site certificate for an underground natural gas storage facility at the Mist Field in Columbia County (the "Storage Certificate"). (Application to Amend the Site Certificate for Mist Underground Natural Gas Storage, September 15, 1998 (henceforth Amendment No. 6), Exhibit 1.) The Storage Certificate authorized ONG to construct and operate "two naturally existing underground gas reservoirs (the Flora and Bruer pools)...; Miller Station with attendant equipment (including, but not limited to, compressors), gathering lines, access roads, existing natural gas wells, monitoring wells and proposed injection/withdrawal wells" (collectively known as the "Mist Site"). (Amendment No. 6, Exhibit 1 at 2, 3). The Mist Site is located in rural Columbia County in parts of Sections 2, 3, 4, 10 and 11 of Township 6 North, Range 5 West, Willamette Meridian.

In 1990, ONG assigned the Storage Certificate to its parent, NWN. (Amendment No. 6, Exhibit 2.) The Council approved three amendments to the Storage Certificate, in 1987, 1988, 1990. The amendments modified several terms of the Storage Certificate and authorized the construction and replacement of wells. (Amendment No. 6, Exhibits 3-5.)

In 1997, the Council approved Amendment No. 4. (Amendment No. 6, Exhibit 6.) That amendment approved an expansion of the Mist Site that increased the combined total Mist storage peak-day delivery capability from 100 MMcfd to 145 MMcfd. The expansion included: (1) improvements to the Miller Station gas-processing facility, including the replacement of two older 550-horsepower compressor units with one larger, more efficient unit; (2) total available compression of 6,650 brake horsepower; (3) construction of a building for the new compressor and updates to related equipment; (4) natural gas storage in one additional naturally occurring underground pool, Al's Pool, in the Calvin Creek storage area; (5) up to four new sites for injection/withdrawal wells, including one to four wells at each site; (6) approximately one mile of buried 8-inch and 6-inch gathering pipeline; and (7) approximately two and one-half miles of buried twin 16-inch transmission pipeline. NWN's Application for Amendment No. 4 described the Project as "Phase I of an expansion that may include four additional phases over a 10-year period." (Application to Amend Site Certificate for Mist Underground Natural Gas Storage Facility, Mar. 20, 1997 ("Phase II Application"), at 6.)

On March 13, 1998, the Council approved Amendment No. 5, which replaced the amendment provisions in the Storage Certificate with a requirement that future site certificate amendments be governed by the Council's amendment rules. (Amendment No. 6, Exhibit 7.)

In 1998, NWN applied to increase the capacity of the Mist storage facility. This was known as Phase III of NWN's storage development effort at Mist. NWN's application for Amendment No. 6, which permitted Phase III, was approved by final order on March 31, 1999. The gas storage portion of that project included: (1) upgrades to the dehydration and metering systems at Miller Station; (2) natural gas storage in one additional naturally occurring underground pool, the Reichhold Pool, within the existing site boundary; (3) up to four new sites for injection/withdrawal wells, including one to four wells at each site; (4) approximately 6,500 feet of buried gathering pipeline no greater than 12 inches in diameter; and (5) the removal of the 6,650 compressor horsepower limitation currently in place for the Miller Station facility. Approval of Amendment No. 6 allows Miller Station to operate at rates of up to 190 MMcfd without any restriction on the use of the three existing compressor units, which have a total rating of 8,200 BHP.

On March 27, 2000, NWN applied to the Federal Energy Regulatory Commission ("FERC") for permission to sell storage and related transportation services to interstate pipelines at market-based rates utilizing NWN's facilities. NWN received its certificate approving that application and directing it to file cost-based rates for the service on May 16, 2001. This service is referred to as "Section 284.224" service. To make optimal use of the Section 284.224 service, NWN amended its site certificate last year (Amendment No. 7) by increasing the permitted throughput of the Mist facility to 245 MMcfd. Amendment No. 7 was granted on November 17, 2000 (Exhibit 1 to this Application).

#### **COUNCIL JURISDICTION.**

##### **1. Gas Storage Facility.**

When EFSC approved the Storage Certificate in 1981, its jurisdiction included both the surface and underground components of the facility. In 1993, the siting law was amended to include within the Council's jurisdiction only the "surface facility related to an underground gas storage reservoir that, at design injection or withdrawal rates, will receive or deliver more than 50 million cubic feet of natural or synthetic gas per day, and require more than 4,000 horsepower of natural gas compression to operate...." ORS 469.300(9)(a)(H).

The underground storage reservoir as well as the injection, withdrawal and monitoring wells and the individual wellhead equipment remain under DOGAMI's pervasive authority. ORS 469.300(9)(a)(H)(i)-(ii); see 1993 Or Laws, ch 544, 3.

The surface facilities at the Mist Site are now subject to Council jurisdiction because they have the capacity to receive or deliver more than 50 million cubic feet per day and in its current configuration the facility utilizes up to 8,200 horsepower of compression to achieve permitted throughput rates.

The Council's jurisdiction over this request to increase throughput and install an additional compressor and other equipment is based on a change in a condition of an existing jurisdictional facility. OAR 345-027-0050(1)(d).

#### **AMENDMENT PROCESS.**

The Council rules that govern site certificate amendments are set forth in OAR chapter 345, division 27. OAR 345-027-0011 states that these rules apply only to "facilities for which a site certificate is executed on or after November 30, 1994." The Storage Certificate was executed in 1981. On February 27, 1998, NWN asked the Council to amend the storage site certificate by replacing the amendment provisions in the site certificate with requirements that future site certificate amendments be governed by the "duly adopted rules of the Energy Facility Siting Council for the amendment of site certificates." On March 13, 1998, the Council approved the requested amendments. (Amendment No. 6, Exhibits 7, 9.) Accordingly, this amendment proceeding is governed by the site certificate amendment rules in OAR chapter 345, division 27.

### **III. (c) PROJECT DESCRIPTION**

#### **GAS STORAGE FACILITY.**

The Project will expand the existing Miller Station and Reichhold Pool facilities so that an additional 72 MMcfd of storage gas can be available for interstate delivery under the FERC "Section 284.224" service certificate. This expansion will increase the combined total Mist storage peak-day delivery to 317 MMcfd from the current maximum capability of 245 MMcfd. Station improvements include additional electronic metering facilities, new interconnect piping to the South Mist and North Mist pipeline systems and an additional gas-turbine-driven compressor. These modifications are requested so that future expansions of the station could be made readily up to the ultimate station capacity of approximately 425 MMcfd if future storage projects prove to be viable. The modifications at Miller Station are under Council jurisdiction.

#### **1. Miller Station Improvements.**

Amendment No. 7 allowed NWN to increase the existing Miller Station facility throughput so that an additional 55 MMcfd of storage gas could be available for interstate delivery under the FERC "Section 284.224" service certificate. That expansion increased the combined total permitted Mist storage

peak-day delivery to 245 MMcfd from the previously permitted maximum of 190 MMcfd. This was accomplished by installing new metering and flow control equipment and additional gas processing equipment under the project approved in Amendment No. 6. No other improvements were required to meet the increased permitted maximum throughput. The current need for the additional throughput arose because of the increased regional demand for gas supplies and storage services. A drawing of the proposed facility modifications is attached as Exhibit 2 to this Application.

The existing compressor capacity consists of one ISO-rated 5,500-BHP gas-turbine-driven compressor and two 1,350-BHP reciprocating compressors. The gas-turbine-driven compressor was installed in 1998 with low-emission burners and controls to minimize NOx emissions. The two reciprocating compressors have engines that utilize clean-burn technology, which also reduces NOx emissions.

The capacity of Miller Station will be expanded to 317 MMcfd to handle the current design capacity of the existing glycol dehydration system. To accomplish this, the facilities will be modified by additional piping, metering and compression equipment installed at Miller Station. The capacity of Miller Station will be expanded to 317 MMcfd to handle the current design capacity of the existing glycol dehydration system. To accomplish this, the facilities will be modified by additional piping, metering and compression equipment installed at Miller Station. The Miller Station interconnect with the South and North Mist pipelines will be expanded and an additional inlet coalescing filter will be installed to allow for this additional throughput. An additional high capacity electronic meter will be installed that expands the station metering capabilities from 250 MMcfd to 425 MMcfd. (Although full metering capabilities will not be utilized for the 317 MMcfd expansion, this size meter will allow for an efficient upgrade of the facility in the future to meet the ultimate design capacity of 425 MMcfd.) To provide the needed operational flexibility, additional flow control equipment will also be installed. The additional unit will nearly double the current plant horsepower of 8,200. The new Rolls-Royce 501-KC7 turbine is equipped with a Dry Low Emissions fuel system that is similar to the existing unit. The new unit will be equipped with a 14<sup>th</sup> stage bleed valve to allow simultaneous achievement of low NOx and CO. In addition, the existing unit will be retrofitted with a 14<sup>th</sup> stage bleed valve to reduce emissions at the low horsepower operating conditions.

## **2. Reservoir Development Phase.**

The Calvin Creek storage area is located two and one-half miles south of NWN's Miller Station compressor plant near Mist, Oregon. (Amendment No. 6, Exhibit 12.) The Calvin Creek storage area has multiple reservoirs located within its boundaries, some of which are potentially suitable for storage development. During Phase III, NWN tested and confirmed the suitability of the Reichhold Pool



for storage operation. Two injection/withdrawal wells, one deviated well and one high capacity horizontal well, were drilled during Phase III. In order to make full use of this pool, NWN will add one additional high capacity well to increase the reservoir deliverability to 100 MMcfd. The additional injection/withdrawal well will be drilled into Reichhold Pool on an existing drill site developed as described in Amendment 6, Exhibit 14 (and under DOGAMI jurisdiction). Since it is located on a common drill site, no new gathering line will be installed.

### **3. Gathering System.**

The gathering system that will support the requested increase in throughput was approved in Amendment No. 6. It consisted of a single 12-inch pipeline from the southern terminus of the twin 16-inch gathering pipelines (the Calvin Creek gathering header) to the location of the Reichhold Pool. At that point, the 12-inch pipeline was connected with eight-inch gathering lines from each of the individual wellheads in the area. Two wells are currently connected to the gathering system. Allowances were made for the future connection of the third injection/withdrawal well during Phase III. All wells are on an existing rocked and graveled well pad. No new underground work for gathering lines will be needed for the gathering system additions. The existing piping is above ground, welded and bolted in place.

In 1999, NWN constructed 2,800 ft. of 12" gathering line to an area near Reichhold Pool. During 2000, an additional 600 ft. was constructed. (Amendment No. 6 was approved for 6,500 feet of gathering line.) The changes requested in Amendment No. 8 will not require any new gathering line construction.

#### **(d) SPECIFIC LANGUAGE OF THE SITE CERTIFICATE REQUESTED.**

NWN requests the following amendment to the Site Certificate:

"Site Specific Conditions Under OAR 345-027-0023: The maximum allowable horsepower at Miller Station shall be 16,000, including the additional compressor. The maximum permitted Miller Station throughput is increased to 317 MMcfd."

**(e) and (f) follow:**

#### **IV. DIVISION 22 STANDARDS**

##### **ORGANIZATIONAL, MANAGERIAL AND TECHNICAL EXPERTISE (OAR 345-022-0010).**

Under this standard, the Council determines whether the applicant has the organizational, managerial and technical expertise to construct and operate the facility. To conclude that the applicant has the necessary expertise, the Council must determine that the applicant has "A reasonable probability of successful



construction and operation of the facility considering the experience of the applicant, the availability of technical expertise to the applicant, and, if the applicant has constructed or operated other facilities, the past performance of the applicant, including but not limited to the number and severity of regulatory citations, in constructing or operating a facility, type of equipment, or process similar to the proposed facility.” OAR 345-022-0010(1).

### **1. NWN's Underground Storage and Pipeline Experience.**

NWN is a 140-year-old company whose core business is the local distribution of natural gas. Around 1980, NWN began developing the natural gas fields in the Mist area for the reinjection and storage of natural gas. Since 1988, NWN has operated its underground natural gas storage operation at Mist under the Storage Certificate. NWN also has a site certificate authorizing it to build and operate the South Mist Feeder pipeline, which brings natural gas to and from the storage facility.

The storage facility allows NWN to store natural gas that it purchases from the interstate pipeline and to withdraw that gas when it is needed. Company personnel who have been managing the existing storage operation will continue to operate the expanded facility. Many of the individuals now working for NWN who are involved in the design and construction of Mist facilities have been with the underground storage project at Mist since its inception, as described below.

### **2. Technical Expertise Available to NWN.**

NWN has assembled an experienced team of professional, technical and administrative personnel to manage all phases of the Project. Following is a brief description of several key members of the Project Team.

#### Project Team

Charlie Stinson, General Manager, Engineering Services and Storage Development. Mr. Stinson is an Oregon-registered petroleum engineer who has been continually involved in the Mist development since discovery of the Mist gas fields in 1979. His specific experiences at Mist include management of the Bruer/Flora storage reservoir development, supervision of the installation and operation of the gas-production gathering system and management of various gas-development ventures. Mr. Stinson was responsible for the recently completed addition of the Calvin reservoirs and expansion of Miller Station, which were approved by EFSC as Amendment No. 4 to the Storage Certificate, and for the modifications to Miller Station and the new 27 miles of the South Mist Feeder approved in Amendment No. 6 and Amendment No. 2 to the South Mist Feeder Site Certificate.

Todd Thomas, Storage Project Manager. Mr. Thomas has a degree in geology and has operated for the past 16 years as a drilling superintendent and

field operations engineer. Mr. Thomas was a member of the reservoir development teams for both the Bruer/Flora project and the Phase II project. He has supervised the drilling of all the storage wells in the Mist Field. Mr. Thomas managed the onsite construction activity for the South Mist Feeder expansion completed in 1999. Mr. Thomas is responsible for construction and overall management of this Project.

Kishore Duwadi, Engineering Supervisor, Miller Station Storage Operations. Mr. Duwadi has a degree in mechanical engineering and has worked for NWN for the past 10 years in design and plant operations. Mr. Duwadi's plant supervisory experience includes 3 years at the company's Newport Liquefied Natural Gas Plant and 1 year at his current position as supervisor of the Mist storage operations.

Jack Meyer, Reservoir Development. Mr. Meyer is an Oregon-registered geologist with more than 20 years of geological and geophysical mapping and interpretation experience. Mr. Meyer has worked on the Mist project for both exploration purposes and underground storage development at the Bruer and Flora pools continuously for the past 17 years.

Nick Potts, Storage Operations. Mr. Potts has a degree in mechanical engineering technology and has worked for NWN for the past 21 years in design and operations. For the past 17 years Mr. Potts has directed the company's gas storage activities, which includes liquefied natural gas facilities and the Mist storage operations.

Roy Rogers, Project Engineer. Mr. Rogers is a mechanical engineer with professional registration in both Oregon and Washington. For the past 12 years, Mr. Rogers has been involved in the design, construction and maintenance of natural gas systems and new construction projects for NWN. He has served as a district engineer and managed the company's pipeline system integrity functions such as leakage inspection, locating and cathodic protection programs.

The past performance of NWN is well known to the Council and its staff, and has not changed since the approval of Amendment No. 6 except for the successful completion of 27 miles of 24-inch pipe permitted in 1999. See Amendment No. 6, pp. 17-18,

### **3. Conclusion.**

In its Order approving Amendment No. 7, the Council stated:

"NWN's experience to date in the Mist Storage Facility, its successful completion of the Calvin Creek expansion in 1997, and the fact that the proposed throughput increase would involve activities identical to those currently

authorized provide reasonable assurance that NWN can successfully continue to operate and retire the facility. No new conditions are required."

In its Order approving Amendment No. 6, the Council stated:

"NWN is a 140 year old company whose core business is the local distribution of natural gas. NWN or its former subsidiary ONG have operated the Mist underground storage facility since 1988. The requested amendment would not allow NWN to construct a new type of facility, but would allow expansion of facilities that are already operating. The company personnel who have been managing the existing storage facility will continue to operate the expanded facility. The individuals responsible for the design and construction of the expanded facility are the same individuals responsible for the Calvin Creek project in 1997. Inspections by OOE staff indicate that NWN complied with site certificate conditions in implementing the Calvin Creek project."

Based on NWN's experience with its existing underground storage facility and the South Mist Feeder pipeline, the expertise of key personnel and its past performance with the existing storage and pipeline facilities, NWN demonstrated that it had a reasonable probability of successful construction and operation of the Project in Amendment No. 6 and had the requisite organizational, managerial and technical expertise. That expertise, with some additions noted above, remains available to this Application.

**STRUCTURAL (OAR 345-022-0020).**

Under the structural standard, the Council determines whether

(1) The applicant, through appropriate site-specific study, has adequately characterized the site in terms of seismic zone and expected ground response during the maximum credible seismic events; and

(2) The facility can be designed, engineered, and constructed adequately to avoid potential dangers to human safety presented by seismic hazards affecting the site, as defined in ORS 455.447(1)(d) and including amplification, that are expected to result from all reasonably probable seismic events." OAR 345-022-0020.

The standard has two components, a site characterization requirement and a design and construction requirement. For Amendment No. 4 (Phase II Application 1997), NWN engaged Dames and Moore to prepare geotechnical investigations of the Miller Station site. The geotechnical investigations of the Miller Station site and discussion of the seismic and geologic conditions were attached to Amendment No. 4 as Exhibits 10, 11, and 12.

Several minor improvements to Miller Station were approved in Amendment No. 6, based on the report prepared by Dames and Moore and attached as Exhibit 10 to the Phase II Application (1997, Amendment No. 4). The addition of one new gas hydration tower and replacement of various meters did not require major new buildings or other major site alteration. The change to the allowable throughput to increase it to 245 MMcfd did not change Dames and Moore's predicted ground response at Miller Station during the maximum credible seismic events or change Dames and Moore's conclusion that the Miller Station facilities, if designed to meet Uniform Building Code Seismic Zone 3 requirements, can be constructed to avoid danger to human safety.

NWN engaged GeoEngineers to review the Dames and Moore reports and prepare a geotechnical report concerning the modifications contained in this Application for Amendment 8. Their report is attached as Exhibit 3. GeoEngineers concludes that adding another turbine, doing the minor station modification work and increasing throughput work discussed in this application does not change the conclusions of the Dames and Moore reports.

None of the maximum allowable operating pressures for any of the equipment, pipelines or reservoirs are being changed, so there is no increased risk of a failure due to overpressurization.

An additional injection/withdrawal well will be drilled into Reichhold Pool on an existing drill site developed as described in Amendment 6, Exhibit 14. Since it is located on a common drill site, no new gathering line will be installed. Amendment No. 6 found that the locations for Reichhold Pool wellheads and gathering lines had been evaluated for seismic hazards including shaking, amplification, landsliding, soil liquefaction and surface rupture. The wellheads, the gathering lines were approved based on the finding that they could be designed and built with very low risk of any damage from seismic hazards and, therefore, with very low risk of any danger to human safety.

#### **SOIL PROTECTION (OAR 345-022-0022).**

Under this standard, the Council determines whether the design, construction and operation of the facility, taking mitigation into account, are likely to result in a significant adverse impact to soils.

All station modifications and gathering line modifications related to the soil standard were described and approved under this standard in Amendment No. 6. For the Miller Station portion of the Project, NWN relied upon the Dames & Moore study of the major soil types in the Miller Station area, which is attached as Exhibit 12 to the Phase II Application, which the Council approved in 1997 and 1999. A topographic map showing the elevations of Miller Station was included in Amendment No. 6, Exhibit 19, Figure G-2a, and Exhibit 14.

## **1. Soil Types: Miller Station; Effect on Soils.**

Miller Station is an existing industrial site, already dedicated to gas storage activities. NWN has elected to add new compression capacity to Miller Station in this Project, rather than to create a second facility near the Reichhold Pool. There will be very little earthwork at Miller Station for the new compression and metering facilities and no significant increased loading of soils in the area. The compressor and its ancillary equipment and the new coalescing filter will require engineered foundations. The metering and flow control facilities will either be buried or supported with pipe supports. No significant cutting or trenching is expected. The planned equipment locations are already covered with crushed rock. Therefore, there will be no significant new adverse impact on soils at the Miller Station site.

## **2. Gathering Lines; Effect on Soils.**

No new gathering lines are proposed.

### **LAND USE (OAR 345-22-030).**

This standard was met in Amendment No. 6 (Path A). NWN activities at Miller Station, its pipelines and storage wells and reservoirs are approved by conditional use permit from Columbia County as well as approved through EFSC land use decision in Amendment No. 6. Therefore, the prior approval by the council of Amendment No. 6 should satisfy the land use standard. The new compressor and other equipment that will be added to existing structures do not require additional land use permits from Columbia County. See Exhibit 4. The new well will also be drilled under an existing conditional use permit from Columbia County. Exhibit 4 to this Application also contains both Columbia County conditional use permits for Miller Station and the well sites.

### **PROTECTED AREAS (OAR 345-022-0040).**

This standard prohibits the siting of an energy facility in any of the protected areas listed in the rule. The standard permits the siting of a facility outside the listed protected areas so long as the "design, construction and operation" of the facility "is not likely to result in significant adverse impact to" any of the protected areas. OAR 345-022-0040(1).

Protected areas are defined in OAR 345-022-0040 and include national parks, national monuments, wilderness areas, national and state wildlife refuges, national coordination areas, national and state fish hatcheries, national recreation and scenic areas, state parks and waysides, state natural heritage areas, state estuarine sanctuaries, scenic waterways, experimental areas established by the Rangeland Resources Program, agricultural experimental stations, research

forests, Bureau of Land Management areas of critical environmental concern and state wildlife and management areas.

For Amendment 6, to identify protected areas in the vicinity of the Project area, NWN's consultant reviewed a set of maps created by the Oregon Office of Energy covering national, state, Bureau of Land Management ("BLM") and Oregon State University ("OSU") protected areas. Information from ODFW was used to identify state hatcheries. Oregon Natural Heritage Program staff provided location information on state natural heritage areas.

The reservoirs and Miller station are not located in any protected area.

An OSU research forest is located about five miles northwest of the Mist storage facility, north of Mist. Other protected areas are found from 10 to more than 20 miles from the Project area.

This standard was met in Amendment No. 6. No changes to site boundaries are proposed.

As noted in the application for Amendment No. 6, Phase III was not located in any protected areas. Where it came closest to protected areas it was entirely underground. There were no off-site environmental impacts that could affect protected areas. Accordingly, the design, construction and operation of the Project will not have any adverse impact on any of the areas listed as protected by OAR 345-022-0040.

#### **FINANCIAL ASSURANCE (OAR 345-022-0050).**

Under this standard, EFSC determines whether the applicant has a reasonable likelihood of obtaining a bond or comparable security, satisfactory to EFSC, in an amount adequate to restore the site if the site certificate holder (1) begins but does not complete construction of the facility or (2) permanently closes the facility before establishing a financial mechanism or instrument, satisfactory to the Council, that will ensure funds will be available to adequately retire the facility and restore the site.

This standard and the retirement standard in OAR 345-022-0130 are designed to ensure that funds are available to restore the site in three different circumstances: (1) the facility construction is begun but not completed by the time required in the site certificate, (2) the facility is permanently closed before a retirement fund is fully funded, and (3) the facility is permanently closed after the retirement fund is fully funded. Under this standard, EFSC addresses the availability of funds in the first two circumstances.

An underground storage facility has an indefinite useful life; retirement of the Mist storage facility is unforeseeable at this time. However, retirement is theoretically possible at any time.

Using the same methodology approved to determine cost of restoration in the application for Amendment No. 6, NWN estimates the cost of restoring the Mist site to be approximately \$400,000 in 2001 dollars. This amount will be offset by an estimated salvage value of installed equipment of \$1,100,000.

NWN's annual report for 2000 is attached as Exhibit 5 to this Application. NWN's annual reports for 1998 and 1999 were submitted to the Office of Energy as part of the Application for the South Mist Pipeline Extension. Additional copies are available upon request to NWN.

Together, Amendment No. 6 and the three current annual reports demonstrate that the cost to restore the portions of the gas storage and pipeline sites related to the amendments proposed in this Application is small relative to the value of the existing certificated facilities at Mist and their salvage value. There is therefore no question that NWN could restore the gas storage site if NWN were to close the facility before establishing a funding mechanism for site restoration.

#### **FISH AND WILDLIFE HABITAT (OAR 345-022-0060).**

Under this standard, the Council determines whether the design, construction, operation and retirement of the facility, taking into account mitigation, is consistent with the fish and wildlife habitat mitigation goals and standards of OAR 635-415-0030. The State Fish and Wildlife Commission recently amended OAR 635-415-0030. Among the changes, the amendment increases the number of habitat categories from 4 to 6. The Council's Fish and Wildlife Habitat standard has not yet been amended to reflect the changes to OAR 635-415-0030.

The version of OAR 635-415-0030 currently referenced in the Council's standard describes four categories of habitat in order of their value. The rule then establishes mitigation goals and corresponding implementation standards for each habitat category. See Amendment No. 6, pp. 81-82.

To ensure compliance with the fish and wildlife habitat mitigation goals and standards, NWN engaged Dames & Moore to conduct a biological resource investigation and evaluations of the area covered in Amendment No. 6. Dames & Moore conducted a study of the Mist storage area (including the new gathering lines). Dames & Moore's reports identify the major ecological habitats in the area, characterize the habitats by category, identify the potentially affected fish and wildlife species, and evaluate the potential impacts to habitats and recommend mitigation measures. (Amendment No. 6, Exhibit 15.)

As part of the studies, a biologist walked the entire length of the gathering line routes to identify all habitats, wetlands and streams that would be affected. A corridor 200 feet wide was evaluated to accommodate potential route adjustments. Dames & Moore identified areas as wetlands if they contained evidence of hydrophytic vegetation, hydric soils and wetland hydrology. Any watercourse with a defined channel was recognized as a stream.

The storage area study did not include the 12-acre Miller Station site because it is completely fenced, most of the site is paved with gravel or covered with buildings and the remainder is of no habitat value due to continuous human activity in the area. The modifications proposed in Amendment No. 8 will occur in this area.

Information on the habitats can be found in full in Amendment No. 6, pp. 98-99. No new gathering lines are proposed for Amendment No. 8.

For these reasons, the design, construction, operation and retirement of the requested modifications, taking mitigation into account, are consistent with the habitat mitigation goals and standards of OAR 635-415-0030.

#### **THREATENED & ENDANGERED SPECIES (OAR 345-022-0070).**

Under this standard, the Council determines, with respect to plants, whether the design, construction, operation and retirement of a facility will be consistent with applicable conservation programs adopted pursuant to ORS 564.105(3) (plants). If no conservation program applies, the Council determines, for both plants and wild life, whether the facility has the potential to significantly reduce the likelihood of the survival or recovery of any threatened or endangered species listed under ORS 496.172(2) (wildlife) or ORS 564.105(3) (plants).

No conservation program adopted under ORS 564.105(3) applies to the study area.

The proposed modifications require construction only at Miller Station in areas previously approved and developed. Construction in these areas was approved in Amendment No. 6. See discussion of threatened and endangered species in Amendment No. 6, pp. 99-102 in relation to Miller Station and the gathering lines. In the time since the Council approved Amendment No. 6, there have been no new listings that would affect the facilities in use for Amendment No. 8.

None of the work proposed for Amendment No. 8 has the potential to reduce the likelihood of the survival or recovery of any species that is, or is likely to be, listed as threatened or endangered under Oregon law.



**SCENIC/AESTHETIC (OAR 345-022-0080).**

Under this standard, the Council determines whether “the design, construction, operation and retirement of the facility, taking into account mitigation, is... likely to result in significant adverse impact to scenic and aesthetic values identified as significant or important in applicable federal land management plans or in the local land use plan for the site or its vicinity.” OAR 345-022-0080.

This standard is discussed in detail in Amendment No. 6, pp. 102-106. No new areas are affected.

**1. Miller Station; Proposed Impact.**

The additional compressor proposed for Miller Station will be housed in existing structures permitted under Amendment No. 4. All necessary ancillary compressor equipment will be located immediately adjacent to existing equipment or the existing building. An additional coalescing filter, similar to one permitted under Amendment No. 4, will be installed next to the similar existing vessel. Since no structures are proposed in addition to those already approved, Amendment No. 8 will not adversely impact any scenic or aesthetic value identified as significant or important in any applicable federal land management or local land use plan for the site or its vicinity.

**HISTORIC, CULTURAL AND ARCHEOLOGICAL RESOURCES (OAR 345-022-0090).**

Under this standard, the Council considers whether the construction, operation and retirement of a facility, taking mitigation into account, is likely to result in significant adverse impacts to:

Historic, cultural or archaeological resources that have been listed on, or would likely be listed on, the National Register of Historic Places;

For a facility on private land, “archaeological objects” as defined in ORS 358.905(1)(a) or “archaeological sites” as defined in ORS 358.905(1)(c); and

For a facility on public land, “archaeological sites” as defined in ORS 358.905(1)(c).

ORS 358.905(1)(a) defines an “archaeological object” as an object that (1) is at least 50 years old, (2) comprises “the physical record” of any culture and (3) is “material remains of past human life or activity that are of archaeological significance.”

ORS 358.905(1)(c) defines “archaeological site” as any location that “contains archaeological objects and the contextual associations of the

archaeological objects” with each other or biotic or geological remains or deposits.

Dames & Moore conducted archaeological inventories of the proposed gathering line in May and June 1998. (Amendment No. 6, Exhibit 15.) No new cultural resources were identified along the gathering line route.

No new gathering lines are proposed other than those permitted in Amendment No. 6. The area proposed for Amendment No. 8 was studied for Amendment No. 6. A monitoring plan was proposed and approved in Amendment No. 6:

“If any artifacts or other cultural materials that might qualify as “archaeological sites” or “archaeological objects” are identified during monitoring, all ground-disturbing activities in the area will cease until the archaeologist can evaluate their potential significance. If the materials are potentially eligible for listing on the National Register of Historic Places or likely to qualify as archaeological sites or objects, NWN will consult with the SHPO and comply with archaeological permit requirements administered by the SHPO (currently set forth in OAR chapter 736, division 51).”

Therefore, the standard is met.

**RECREATION (OAR 345-022-0100).**

Under this standard, the Council determines whether the “design, construction and operation” of a facility will result in “significant adverse impact to important recreational opportunities in the impact area.” OAR 345-022-0100. Factors considered in judging the importance of a recreational opportunity include:

- (1) Any special designation or management of the location;
- (2) The degree of demand;
- (3) Uniqueness;
- (4) Outstanding or unusual qualities;
- (5) Availability or rareness; and
- (6) Irreplaceability or irretrievability of the opportunity.” Id.

NWN evaluated recreational impacts based on the study area defined in OAR 345-001-0010(50)(g) for a surface facility related to an underground gas

storage reservoir. That study area is the area within five miles of the site boundary. The existing recreational facilities in Columbia County are described at p. 112 and proposed recreational facilities at p.113 of Amendment No. 6.

Changes planned for Miller Station pursuant to Amendment No. 8 are all within the current fenced Miller Station site. The remainder of the Project is underground. Accordingly, the only impact to hunting was some habitat loss and possible minor disturbance of hunting activities during construction.

To NWN's knowledge there are no other recreational opportunities, important or otherwise, within the study area.

For these reasons, the Project will not result in a significant adverse impact to important recreational opportunities within the study area for this amendment.

#### **SOCIOECONOMIC IMPACTS (OAR 345-022-0110).**

Under this standard, the Council determines whether the construction and operation of a facility, taking mitigation into account, will result in significant adverse impact to the ability of communities within the study area to provide the following governmental services: sewers and sewage treatment, water, storm water drainage, solid waste management, housing, traffic safety, police and fire protection, health care and schools.

The study area for socioeconomic impacts of a surface facility related to an underground gas storage reservoir is the area within 30 miles of the site boundary. OAR 345-01-010(50)(g)(G).

Potential providers of governmental services in the Mist storage study area include Columbia County and the incorporated cities and towns within 30 miles of the site boundary. The nearest communities include Mist, which is unincorporated; Vernonia, which is approximately 15 miles away; and Clatskanie, which is approximately 12 miles away.

The population of Columbia County is approximately 42,650. (Oregon Blue Book, p. 263, 1999). Accordingly, even during peak construction periods, the Project will not have a significant impact on the population in the area.

#### **1. Sewers and Sewage Treatment.**

No community in the study area provides sewers or sewage treatment to the existing certificated energy facilities or the surrounding areas. For Miller Station, the existing and expanded facilities have been and will be served by on-site sewage disposal systems. The Project therefore will not have any adverse impact on any community's ability to provide sewers or sewage treatment.

## **2. Water.**

No community in the study area provides water to the existing certificated energy facilities or the surrounding areas. The existing and expanded Miller Station facility has been and will be served by existing water wells. Accordingly, the Project will not have an adverse impact on the ability of any community to provide water.

## **3. Storm Water Drainage.**

Again, no community in the study area provides storm water drainage to the existing certificated energy facilities or the surrounding areas. Storm water drainage will be handled on site by natural drainage and the existing collection system for facility pad runoff. The Project therefore will not have an adverse impact on the ability of any community to provide storm water drainage.

## **4. Solid Waste Management.**

No community in the study area provides solid waste management services to the existing certificated energy facilities or the areas around them. Current and future solid waste disposal for the energy facilities is and will be handled through private contracts with local service companies. There will therefore be no adverse impact on the ability of any community in the area to provide solid waste management services.

## **5. Housing.**

At the peak of construction activity there will be approximately 60 workers assigned to work on the project. NWN anticipates that fewer than 50 percent of this work force will require temporary housing. Even though there is very little temporary housing near Miller Station, there are numerous communities within a 30-mile commute distance that have a wide array of facilities. The cities of Vernonia, Clatskanie and St. Helens have motel facilities totaling approximately 100 rooms. Longview and Kelso, Washington, are also within 30 miles of Mist; there are several hundred motel rooms available in these communities.

Temporary housing in the area is therefore adequate to handle the number of construction workers for the Project. There will be no adverse impact on the ability of the communities in the area to provide housing.

## **6. Traffic Safety.**

The only impact to local traffic will be from the construction activity associated with the Project. Once the Project is complete, there will be no additional traffic in the area.

For the Mist storage expansion, the principal roads in the vicinity of the Project are Highway 202, a two-lane highway that bisects the Project area as it runs generally southeast/northwest from Mist to Astoria, and Highway 47, a two-lane highway that runs generally north/south from Clatskanie, through Mist, to its intersection with Highway 26 west of Hillsboro (Amendment No. 6, Exhibit 10.) The southeastern endpoint of Highway 202 occurs at its intersection with Highway 47 in Mist. The minor amount of construction activity in the Mist area will have minimal impact on these roads.

During the construction phases, the most Project-related traffic will access the Project area on either Highways 202 or 47, and then on the country roads in the area or other various local roads, including private logging roads controlled by Longview Fibre and Olympic Resource Management.

One of the roads that will host significant additional traffic is Longview Fibre's private Mainline Road. Access to this road is controlled with close cooperation between Longview Fibre and NWN. Longview Fibre expressed no concern about Project impacts on this road during construction of the project in Amendment No. 6 and, in fact, expressed its support for the Project in a letter to Columbia County, noting the successful degree of cooperation between the two companies. (Amendment No. 6, Exhibit 24.)

Given the excess capacity of the existing roads in the area, the negligible traffic associated with facility operation and the relatively light traffic association with Project construction, the Project will not have a significant adverse impact on the ability of communities in the area to ensure traffic safety.

#### **7. Police Protection.**

Police protection in the area is provided by the City of Vernonia and the Columbia County Sheriff's Department. Conversations with these police departments indicate that the 60-person construction work force does not create any significant concerns for the effected police departments. Letters from the Vernonia Police Chief and Columbia County Sheriff both confirm that the Project will not place a significant burden on their abilities to provide police protection. See Exhibit 6.

#### **8. Fire Protection.**

The Mist-Birkenfeld Rural Fire Protection District provides fire protection services in the Mist area. In a letter, District Chief Dave Crawford stated:

"You have done a great job of keeping us informed of work locations and any special hazards we might encounter in past projects...We look forward to working with you over the next few months in our community.

The cooperation demonstrated by NNG with our fire district and the community spirit we share as neighbors has been exemplary." Exhibit 7.

The Project will pose very little if any additional fire hazard in the area. NWN has operated its existing underground natural gas storage facility and the South Mist Feeder pipeline for approximately 10 years without causing any fires or other hazards. The wellhead and pipeline facilities have numerous safety features, including relief valves and automatic shutdown systems.

Finally, the facilities are monitored from the "nerve center" at Miller Station by NWN's trained personnel. Miller Station is regularly inspected by the PUC; the last inspection was in November 2000 for compliance with the pipeline safety regulations of the U.S. Department of Transportation (49 CFR part 192). Accordingly, the Project will not have an adverse impact on the ability of communities in the area to provide fire protection.

#### **9. Health Care.**

The minimal number of permanent employees and the relatively small construction work force should place few additional demands on the health care facilities that serve the area. Local hospitalization needs are currently met by hospitals in the Portland area, Astoria, and Longview, Washington. The communities in the area therefore provide very little in the way of health care.

However, to the extent that there are injuries or other health care needs associated with the Project, the Mist-Birkenfeld Rural Fire Protection District has a Multiple Casualty Incident Plan in place. The district has the supplies and materials necessary to support the plan and the resources available in connection with the Project. (Amendment No. 6, Exhibit 46.) The Project, therefore, will not have a significant adverse impact on the ability of the communities in the area to provide health care service.

#### **10. Schools.**

There are smaller communities in the area, such as Mist, that would not be able to accommodate as many as 15 additional students, but because of the limited amount of workers involved in the construction, few if any students would need this service. The Project therefore will not have a significant adverse impact on the ability of the communities in the area to provide schooling.

#### **WASTE MINIMIZATION (OAR 345-022-0120).**

This standard requires an applicant, to the extent reasonably practicable, to "minimize generation of solid waste and wastewater in the construction, operation, and retirement of the facility, and when solid waste or wastewater is generated, recycle and reuse such wastes." OAR 345-022-0120(1).

In addition, to the extent reasonably practicable, "the accumulation, storage, disposal and transportation of waste generated by the construction and operation of the facility must have minimal adverse impact on surrounding and adjacent areas." OAR 345-022-0120(2).

**1. Introduction.**

NWN has in place a hazardous and nonhazardous waste reduction and recycling program for all of its facilities. Recycling and reuse is a priority for the company and, as described below, will be implemented during the construction phases and during the day-to-day operations of the Project.

**2. Minimization of Solid Waste.**

During construction: There will be solid wastes generated during construction. These solid wastes will consist of nonhazardous construction materials such as straw bales and silt fencing. The silt fence material and straw bales will be transported to a local landfill.

During Operations: There will be no generation of waste, hazardous or nonhazardous, during the operational phase of the Project beyond what was described in NWN's Application for Amendment Nos. 4 and 6 to the Storage Certificate and approved by the Council in those processes.

**3. Minimization of Water Use.**

No water use is planned as part of Amendment No. 8 construction.

**4. Impact on Surrounding Areas.**

The accumulation and storage of Project waste will take place at Miller Station and transportation of it will be from Miller Station. Miller Station is fully fenced and virtually surrounded by second growth forest with no neighbors nearby. The accumulation, storage and transportation of Project waste will therefore have little impact, if any, on surrounding and adjacent areas.

**RETIREMENT (OAR 345-022-0130).**

Under this standard, the Council determines whether "the site... can be restored adequately to a useful, nonhazardous condition following facility retirement." OAR 345-022-0130.

Retirement of the Mist storage facility is unforeseeable at this time. The estimated facility life is indefinite because it is not anticipated that the natural reservoirs will lose their storage capacity and the process equipment will be

replaced as needed. The original Mist storage facility has been fully operational since 1988. The integrity of the formation and capacity of the reservoir have not changed in nearly 13 years of operation. However, if retirement is necessary, the site can be restored to a useful nonhazardous condition.

As described in NWN's 1997 application, the storage facility is composed of three distinct areas, plus the South Mist Feeder pipeline to which NWN recently added 27 miles of parallel pipeline. The three storage areas are the gas processing facility, the gathering lines and the injection/withdrawal wells. Retirement would be conducted in accordance with the nature of the equipment and structures in these areas.

The retirement process for these facilities would be the same as for those described in 1997 and approved in 1999 in Amendment No. 6. The approved plan from Amendment No. 6 is summarized below.

### **1. Gas Processing Facility.**

The gas processing facility at Miller Station is located on a 12-acre site and contains the gathering line manifold and six buildings, including the new compressor building. A chain-link fence surrounds the site. The buildings are steel prefabricated structures mounted on a concrete slab. The buildings house process equipment such as compressors, a gas dehydration system, control systems and safety equipment. The gathering line manifold consists of a series of above-ground pipes and valves.

Upon decommission, the process equipment would be removed and sold as used equipment or scrap. Any hazardous materials stored in the buildings or located within the process equipment would be removed and disposed of following the applicable state hazardous materials statutes and rules. The building would be disassembled and the steel siding and frames would be sold as scrap metal. The concrete slabs would be broken up and the concrete would be disposed of at an appropriate landfill. The gathering line manifold and the above-ground portion of the pipelines would be removed and sold as scrap metal. The fence would be removed and sold as scrap metal. If necessary, NWN would revegetate the area to prevent erosion and encourage habitat redevelopment.

### **2. Gathering Lines.**

The gathering lines extend underground from the processing facility at Miller Station to the wellheads. Upon decommission, the pipelines would be left in place because removing the pipelines would cause unnecessary disruption to the environment. Before abandoning the pipelines, NWN would inspect them and would remove any hazardous materials in the pipelines. The above-ground portions of the pipelines would be removed and sold as scrap metal. If



necessary, NWN will revegetate the right-of-way in the area above the pipelines to encourage habitat redevelopment.

### **3. Injection/Withdrawal Wells.**

The injection/withdrawal wells [15] are comprised of an above-ground portion, the wellhead, and a below-ground portion, the encased well. The wellhead is installed on a concrete base. Upon decommission, the wellhead would be removed and the well would be plugged in compliance with DOGAMI regulations. The wellhead would be sold as scrap metal. The concrete base would be broken up and the concrete would be disposed of at an appropriate landfill. The well would be capped at a point below ground level. If necessary, NWN would revegetate the wellhead area to prevent erosion and encourage habitat redevelopment and would otherwise reclaim the well site in accordance with DOGAMI regulations.

### **4. Cost of Restoration.**

The costs of retirement are nearly all associated with Miller Station. The restoration cost of the Miller Station plant site is equal to its salvage value less the removal and disposal cost of all the structures and foundations.

The major items that have significant salvage value are the station compressors, which consist of a single 5,035-horsepower turbine-driven centrifugal compressor, two 1,350-horsepower reciprocating compressors and the new 7800-horsepower turbine-driven compressor. The nominal salvage value of these units is estimated to be 15 percent of their cost. The remaining items are the buildings, valves, pressure vessels, above-ground piping and all other auxiliary equipment. All of these items will also have some intrinsic value, but it is assumed they will be removed and disposed of for their salvage value.

The demolition and disposal cost will consist of the labor costs of disassembling the above-ground equipment and the disposal costs for the foundations. It is assumed that all gravel would be left on location and the grade left as is. It is also assumed that all buried piping will be purged then cut and capped below grade and left in place.

The total estimated salvage value is \$1,100,000 in 2001 dollars. This is offset by approximately \$400,000 of demolition and disposal costs. As the salvage value of the facility is greater than the removal and disposal costs, NWN estimates that a cash surplus would result from the retirement of the facility.

### **5. Financial Mechanism.**

Under this standard, EFSC determines whether the site can be restored to a useful, nonhazardous condition upon retirement. EFSC has interpreted this

standard to require a finding that the applicant will be able to cover the cost of that retirement.

As noted above, the salvage value of the facility exceeds the total cost of retiring the entire underground storage facility at Mist. Furthermore, the site certificate for the existing facility does not require NWN to establish a funding mechanism for facility retirement. These facts coupled with NWN's financial strength demonstrate that NWN will be able to cover the cost of facility retirement and that no new funding mechanism needs to be established in anticipation of facility retirement.

The foregoing discussion demonstrates that the site can be restored to a useful, nonhazardous condition following facility retirement.

## **V. DIVISION 23 STANDARDS**

### **APPLICABILITY OF NEED FOR FACILITY STANDARD.**

In general, an applicant for an amendment to an existing site certificate does not have to demonstrate compliance with the "Need for Facility" standard contained in OAR chapter 345, division 23. NWN will not address that standard in Amendment No. 8 of the Storage Certificate because underground storage was specifically exempted from the "need" standard by the former OAR 345-023-0010(1)(f) and no current Need for Facility standard applies to surface facilities associated with underground natural gas storage.

## **VI. DIVISION 24 STANDARDS**

### **PUBLIC HEALTH AND SAFETY STANDARDS FOR SURFACE FACILITIES RELATED TO UNDERGROUND GAS STORAGE RESERVOIRS (OAR 345-024-0030).**

(1) This standard requires siting of a proposed facility related to an underground gas storage reservoir at certain distances from existing permanent habitable dwellings. For a major facility such as a compressor station, the required distance is 700 feet.

All major surface facilities are located at NWN's Miller Station. This facility is located in a second growth conifer forest approximately 2,750 meters (9,000 feet) north-northwest of the town of Mist. The nearest permanent habitable dwelling is located approximately 1,980 meters (6,500 feet) south-southwest of the facility. The new compressor will be housed inside an existing structure at Miller Station. Therefore, there is no change that would affect the prior approval of EFSC for this standard.

No new road construction will be necessary for Amendment No. 8.

(2) The facilities will be constructed and maintained in accordance with the applicable requirements of the U.S. Department of Transportation as set forth in 49 CFR part 192 and OAR 860-024-0020. The existing underground storage facility at Mist was constructed and is maintained in accordance with the same regulations. The PUC, which administers these rules under a delegation from the federal government, last inspected the current facility and its operation and maintenance procedures in November, 2000. That inspection required NWN to correct two record-keeping processes and to reevaluate its vent stacks and weep holes at Miller Station by April 1, 2001. A report was sent to the PUC on March 29, 2001, reporting complete compliance.

(3) The facility must be monitored to ensure public health and safety.

The subject facilities will be designed, constructed, operated and maintained so as not to allow natural gas leakage that endangers public health and safety. The facilities will be designed, constructed and operated in accordance with federal pipeline safety regulations enforced by the PUC. Among other things, these regulations require measures to prevent leakage, including factory-installed pipeline coating, individual joint wrap, effective cathodic protection systems and isolation from other pipes that could cause inadvertent electrical contact.

The wellhead and pipeline facilities' numerous safety features include relief valves and automatic shutdown systems. In addition, the facilities are monitored by trained personnel from NWN's nerve center at Miller Station.

U.S. Department of Transportation Pipeline Safety Regulation, 49 CFR part 192 subpart D (Design of Pipeline Components), addresses specifically the design and operational safety requirements for compressor plants. These requirements have been strictly adhered to in the original plant design, completed modifications and the current proposed additions.

An Emergency Shutdown system is in place that can be either manually or automatically activated. It stops all active plant process, closes all plant inlet and outlet valves, shuts off engine fuel and start gas systems and, upon closure of necessary valves, vents to the atmosphere all process and fuel gas within the plant. As methane is lighter than air, the safe location is to vent vertically. These systems are maintained on a regular basis and tested at least annually to ensure proper response.

Systems are in place which monitor compressor, process and control building atmospheres for the presence of flammable vapors as well as systems that detect the presence of a fire. These instruments will trigger an alarm or plant shutdown when certain preset levels are reached.

The plant has a staff of six operators and maintenance personnel working rotating shifts and one full-time supervisor working day shift. A communication link is maintained between the plant and the NWN operations control room in Portland.

In addition, the following items are indications of NWN's commitment to public health and safety:

(1) Fire training school for plant operators and maintenance personnel, generally on an annual basis;

(2) Written action emergency procedures for company gas dispatchers and plant personnel; and

(3) Maintenance of both Life Flight and C-Com procedures and phone numbers.

The existing emergency plan will be expanded to include the proposed equipment at Miller Station. This program will continue and will apply to the new facilities approved in Amendment No. 8.

(4) The facility must be designed, constructed and operated so as not to produce or contribute to seismic hazards.

Amendment No. 6 fully demonstrated at pp. 18-21 and Exhibits referenced therein that the facilities will not produce or contribute to seismic hazards that could endanger the public health and safety or result in property damage. No changes to the facility proposed in this Application for Amendment No. 8 alter that conclusion. See Exhibit 3.

The public health and safety standards in OAR 345-024-0030 satisfied by Amendment No. 6 are satisfied for Amendment No. 8.

**CARBON DIOXIDE OFFSETS FOR NONGENERATING ENERGY FACILITIES.  
STANDARD FOR NONGENERATING ENERGY FACILITIES (OAR 345-024-0620).**

"To issue a site certificate for a nongenerating energy facility that emits carbon dioxide, the Council must find that the net carbon dioxide emissions rate of the proposed facility does not exceed 0.522 pounds of carbon dioxide per horsepower hour. The Council shall determine whether the carbon dioxide emissions standard is met as follows:

(1) The Council shall determine the gross carbon dioxide emissions that are reasonably likely to result from the operation of the proposed energy facility. The Council shall base such determination on the proposed design of the energy facility. In determining gross carbon dioxide emissions for a nongenerating

facility, the Council shall calculate carbon dioxide emissions for a 30-year period unless the applicant requests, and the Council adopts in the site certificate, a different period. The Council shall determine gross carbon dioxide emissions based on its findings of the reasonably likely operation of the energy facility. The Council shall use a rate of 117 pounds of carbon dioxide per million Btu of natural gas fuel ...”

The Miller Station compression facility consists of two existing internal combustion engine-driven compressors and one existing turbine-driven compressor. The proposed facility is the addition of a new turbine-driven compressor. The new compressor will be used primarily during withdrawal of gas from the reservoirs. At the beginning of the withdrawal cycle, the gas will free flow from the reservoir. The compressor will only operate during the later portion of the withdrawal cycle. The carbon dioxide offsets are applicable to operation of the new turbine.

An injection and withdrawal model was developed to estimate the amount of horsepower needed during a typical injection and withdrawal cycle. The horsepower requirements were then allocated among the four pieces of compression equipment available for use in a manner that used each piece of equipment in a reasonable manner for overall plant efficiency. Under a likely annual injection and withdrawal scenario, the new turbine would be used for approximately 14 days per year, during the withdrawal cycle only.

Although the second turbine would likely operate at part loads during some portion of the withdrawal cycle, the following calculations are based on operation at maximum horsepower with ambient temperature conditions of 40 degrees F for 21 days per year over a 30-year period. This is a conservative estimate of the reasonably likely operation and allows for an operational increase of 50 percent in future years.

$$\frac{21 \text{ days}}{\text{year}} \times \frac{24 \text{ hours}}{\text{day}} \times \frac{57.8 \text{ MMBtu}}{\text{hour}} \times 30 \text{ years} \times \frac{117 \text{ lb CO}_2}{\text{MMBtu}} \times \frac{\text{ton}}{2,000 \text{ lbs}} =$$

51,125 tons CO<sub>2</sub> emissions reasonably likely over a 30-year period

The following calculation uses the same operating assumptions to calculate the allowable CO<sub>2</sub> emissions based on 0.522 pounds of CO<sub>2</sub> per horsepower hour (hp-hr):

$$\frac{21 \text{ days}}{\text{year}} \times \frac{24 \text{ hours}}{\text{day}} \times 7,199 \text{ hp} \times 30 \text{ years} \times \frac{0.522 \text{ lb CO}_2}{\text{hp-hr}} \times \frac{\text{ton}}{2,000 \text{ lbs}} =$$

28,410 tons of CO<sub>2</sub> allowable under the standard

Therefore, the remaining emissions reduction needed to meet the standard under a conservative estimate of the reasonably likely operations is:

$$51,125 \text{ tons CO}_2 - 28,410 \text{ tons of CO}_2 = 22,715 \text{ tons over 30 years}$$

(2) "For any remaining emissions reduction necessary to meet the applicable standard, the applicant may elect to use any of the means described in OAR 345-024-0630, or any combination thereof. The Council shall determine the amount of carbon dioxide emissions reduction that is reasonably likely to result from the applicant's offsets and whether the resulting net carbon dioxide emissions meet the applicable carbon dioxide emissions standard;"

The applicant wishes to meet the applicable standard by means of OAR 345-024-0630(2) by providing offset funds at the rate of 57 cents for each ton of remaining CO<sub>2</sub> emissions reduction needed. This would result in a CO<sub>2</sub> offset fund of \$ 12,948.

(3) "If the applicant elects to comply with the standard using the means described in OAR 345-024-0630(1)..."

The applicant does not elect to comply in this manner.

(4) "Before beginning construction, the certificate holder shall notify the Office of Energy in writing of its final selection of an equipment manufacturer and shall submit a written design information report to the Office sufficient to verify the facility's designed rate of fuel use and its nominal capacity for each fuel type. In the site certificate, the Council may specify other information to be included in the report. The Office shall use the information the certificate holder provides in the report as the basis for calculating, according to the site certificate, the amount of carbon dioxide emissions reductions the certificate holder must provide under OAR 345-024-0630;"

The Design Information Report is attached as Exhibit 8.

(5) "In the site certificate, the Council shall specify the schedule by which the certificate holder shall provide carbon dioxide emission offsets. In the schedule, the Council shall specify the amount and timing of offsets the certificate holder must provide to a carbon dioxide emissions offset credit account. In determining the amount and timing of offsets, the Council may consider the estimate of total offsets that may be required for the facility and the minimum amount of offsets needed for effective offset projects. The Office shall maintain the record of the offset credit account."

The applicant assumes that the emission offset credit will be paid in a single installment.

**MEANS OF COMPLIANCE FOR NONGENERATING ENERGY FACILITIES  
(OAR 345-024-0630).**

"The applicant may elect to use any of the following means, or any combination thereof, to comply with the carbon dioxide emissions standard for nongenerating energy facilities:

(1) Implementing offset projects directly or through a third party....

(2) Providing offset funds, directly or through a third party, in an amount deemed sufficient to produce the reduction in carbon dioxide emissions necessary to meet the applicable carbon dioxide emissions standard according to the schedule set forth pursuant to OAR 345-024-0620(5). The applicant or third party shall use the funds as specified in OAR 345-024-0710. The Council shall deem the payment of 57 cents to result in a reduction of one ton of carbon dioxide emissions, unless the Council by rule changes the monetary offset rate. The Council shall determine the offset funds using the monetary offset rate and the level of emissions reduction required to meet the applicable standard. If the Council issues a site certificate based on this section, the Council may not adjust the amount of the offset funds based on the actual performance of offsets;

(3) Any other means that the Council adopts by rule...."

The applicant will provide offset funds directly, as outlined in (2) above.

(4) "Each year after beginning commercial operation, the certificate holder shall report to the Office data showing the amount and type of fossil fuels used by the facility and its horsepower-hours of operation. The Council shall specify in the site certificate how the Office shall use those data to calculate the gross carbon dioxide emissions from the facility during the report year and the net emissions in excess of the carbon dioxide emissions standard. The Office shall then subtract excess emissions from the carbon dioxide emissions offset credit account. The Council shall specify in the site certificate the minimum amount of carbon dioxide offset credits that a certificate holder shall provide to establish the offset credit account. The Council may specify an amount of offset credits equal to the total offsets required for the facility. The Council shall specify the minimum amount of carbon dioxide offset credits that a certificate holder must maintain in the account and the minimum amount of carbon dioxide offset credits the certificate holder shall provide to replenish the account. The Office shall notify the certificate holder when it must replenish its offset credit account according to the conditions in the site certificate. The certificate holder shall maintain a positive balance in the offset credit account for 30 years, unless the Council specifies a different period in the site certificate;"

The applicant recommends the use of the simple equations outlined above to determine compliance, using the actual annual horsepower-hours and actual annual million Btu of fuel consumption. The applicant suggests establishing the offset account with a balance of 22,715 tons of CO<sub>2</sub>. This is the projected 30 year offset for the project operations. Given the relatively small amount of offset credits in comparison to a power plant, a single deposit with no future adjustments would be most practical in terms of the effort expended by the Council and the applicant for compliance.

(5) "If the certificate holder is replenishing its offset credit account by meeting the monetary path payment requirement described in OAR 334-024-0710, the certificate holder may replenish its offset credit account without amending the site certificate by using the calculation methodology detailed in conditions that the Council adopts in the site certificate;"

The applicant suggests establishing the offset account with a balance of 22,715 tons of CO<sub>2</sub>. This is the projected 30 year offset for the project operations. Given the relatively small amount of offset credits in comparison to a power plant, a single deposit with no future adjustments would be most practical in terms of the effort expended by the Council and the applicant for compliance.

(6) "If the certificate holder proposes to replenish the offset credit account under OAR345-024-0630(1), the Council may amend the site certificate conditions to ensure that the proposed offset projects are implemented;"

The applicant does not wish to use this compliance method.



## **VII. OTHER STANDARDS AND PERMITS**

### **NOISE.**

This section provides an analysis of the noise resulting from the operation of the Miller Station following construction of the currently proposed modifications. The analysis is provided to demonstrate compliance with OAR 340, Division 35.

OAR 340, Division 35 contains the Oregon Noise Control Regulations. The Oregon Noise Control Regulations limit the allowable sound emissions of industrial and commercial noise sources in several ways: specifically, limits on allowable statistical sound levels, limits on allowable octave band sound pressure levels, and limits on impulsive sound levels. For new noise sources located on previously unused sites there is an additional limit on the allowable increase in two statistical noise descriptors. This increase limit will not apply to the Miller Station modifications because the facility has been operating at the same location during the last 20 years. However, the facility could easily comply with this additional limitation.

The installation of the turbine-driven compressor and supporting equipment will be a modification to an existing noise source (Miller Station). Miller Station is defined as a new industrial noise source because it was constructed after January 1, 1975.

The nearest sensitive residential receptor is located approximately 6,100 feet from the plant. Using a conservative estimation method, the sound pressure level at the nearest residence caused by the operation of the turbine-driven compressor and supporting equipment is projected to be below 30 dBA. This is well below statistical and octave band limits defined in the Noise Control Regulations. The plant will not generate impulsive noise under normal operating conditions.

Nighttime sound levels were monitored at two locations in the town of Mist between the hours of 10 p.m. and 4 a.m. on Thursday and Friday February 20 and 21, 1997 to establish a baseline noise level prior to the installation of the existing turbine-driven compressor. During the monitoring, the existing reciprocating engine-driven compressors were operated near maximum capacity. Sound levels were monitored for periods of 45 minutes to 1 hour. The average sound levels measured during the baseline monitoring are shown in Table 1 (following page). During monitoring, the dominant sound sources contributing to overall measured levels were traffic on Highway 47, neighborhood sources such as dogs barking, and natural sources such as bullfrogs. Miller Station was audible as a background source. Measurements were also made following installation of the existing turbine-driven compressor. The post-construction

measurements indicated that no perceptible change had occurred in the noise contribution from Miller Station as a result of the installation of the existing turbine-driven compressor.

Based on the expected sound level contribution of the new turbine-driven compressor and the results of the previous noise monitoring, the proposed modification is not expected to have a perceptible impact on existing sound levels. The plant will comply with all applicable conditions of OAR 340, Division 35.

Table 1 Baseline Noise Levels		
Statistical Sound Level	Site A Average Level (dBA)	Site B Average Level (dBA)
L <sub>50</sub>	36	39
L <sub>10</sub>	40	47
L <sub>1</sub>	45	52
Site A was located along Wallace Road. Site B was located north of Highway 47 near the turnoff to Mainline Road.		

#### AIR QUALITY.

NWN has an existing air quality permit from the Department of Environmental Quality ("DEQ"). On August 3, 2001, NWN applied for an amendment to that permit to take into account the facilities modifications described in this Application. A copy of the application is available upon request. We expect a final order on the permit in early Fall.

#### VIII. (g) NOTICE LIST

The proposed Amendment No. 8 would not change the site boundary or extend construction deadlines. Therefore OAR 345-027-0060 (1) (g) is inapplicable.

#### IX. CONCLUSION

In summary, the requested Miller Station modifications, including the new compressor, and the resulting increase in deliverability through Miller Station will have no impact on public health & safety. The additional compressor and other equipment and proposed modifications, as well as the requested change in throughput amount, meet all EFSC standards. This application does not affect

Mist reservoirs except that an additional well (under DOGAMI jurisdiction) will be drilled in the Calvin Creek area, and attached to existing, previously permitted Reichhold gathering lines.

Therefore, the Applicant respectfully requests approval of Amendment No. 8.

ht...mistamendmentvii.doc

**APPLICATION FOR AMENDMENT NO. 8 TO THE  
MIST UNDERGROUND NATURAL GAS  
STORAGE SITE CERTIFICATE**

**EXHIBIT LIST**

- |           |   |
|-----------|---|
| Exhibit 1 | Amendment No. 7 to the Energy Facility Site Certificate           |
| Exhibit 2 | Site Map  |
| Exhibit 3 | GeoEngineers' Geotechnical Report on Modifications                |
| Exhibit 4 | Columbia County Conditional Use Documents                         |
| Exhibit 5 | NW Natural 2000 Annual Report (in binder pocket)                  |
| Exhibit 6 | Letters from Columbia County Sheriff and Vernonia Chief of Police |
| Exhibit 7 | Letter from Mist-Birkenfeld Rural Fire District Chief             |
| Exhibit 8 | Design Information Report   |

AMENDMENT NUMBER SEVEN  
TO THE ENERGY FACILITY SITE CERTIFICATE  
FOR THE NORTHWEST NATURAL  
MIST UNDERGROUND NATURAL GAS STORAGE FACILITY

This amendment number seven to the Energy Facility Site Certificate for the Northwest Natural Mist Underground Gas Storage Facility is issued and executed pursuant to the Order in the Matter of the Application for Amendment by Northwest Natural for amendment number seven to its site certificate for the Mist Underground Natural Gas Storage Facility between the State of Oregon (State) acting by and through its Energy Facility Siting Council (EFSC or "the Council") and Northwest Natural Co. (NWN), an Oregon corporation.

The amendment authorizes NWN to increase the allowed throughput at the Mist storage facility from 190 million cubic feet per day (MMcfd) to 245 MMcfd. The amendment does not authorize construction of new facilities other than those previously allowed by amendment six to the site certificate.

The findings of fact, reasoning and conclusions of law underlying the terms and conditions of this amendment are set forth in the Council's Final Order Approving Amendment Number Seven which was issued on November 17, 2000 and which by this reference is incorporated herein.

I. DESCRIPTION OF THE AMENDMENT

Amendment #7 increases the allowed throughput from 190 MMcfd to 245 MMcfd. This increase does not change the site or require new equipment at Miller station.

In March 1999, the Council approved amendment #6 to the site certificate. Under amendment #6, NWN developed an area within the Calvin Creek area called the Reichhold Pool. The new pool added 45 MMcfd to the throughput at Miller station. NWN also increased gas dehydration and metering capacity. In connection with the development of the new pool, EFSC reviewed and permitted the installation of one new 12 inch line gathering line plus 6 and 8 inch feeder lines as part of amendment #6.

In its request for amendment #7, NWN proposes to construct approximately 525 feet of new 12 inch gathering lines that would serve the Reichhold pool. These gathering lines were already studied and authorized under amendment #6. This amendment #7 does not authorize construction of gathering lines other than those studied and authorized under amendment #6.

II. CONDITIONS REQUIRED FOR AMENDMENT

The Site Certificate is hereby amended to permit operation at 245 MMcfd. One site certificate condition shall be amended as follows:

Site Specific Conditions Under 345-027-0023

(4) ~~The Site Certificate shall specify the site boundary and total permitted daily throughput of the facility. The site boundary is as specified in Exhibit 2 to the Application for Amendment #7; the total permitted daily throughput of the facility is 245 MMcfd.~~

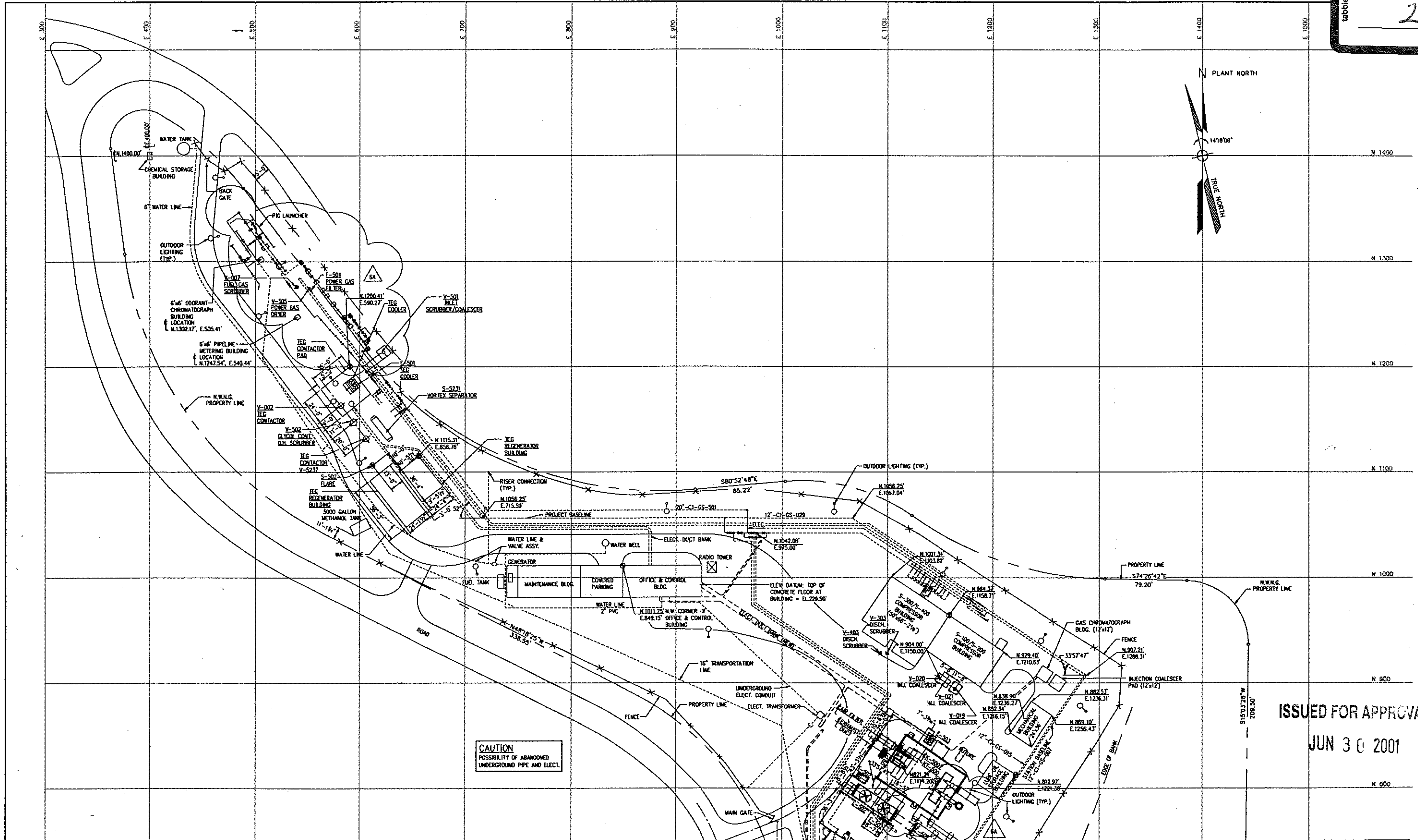
IN WITNESS THEREOF, this Site Certificate Amendment has been executed by the State of Oregon, acting by and through its Energy Facility Siting Council and Northwest Natural Co.

Muel Wood  
Northwest Natural Co.

Dec 12, 2000  
Date

Karen H. Green  
Karen H. Green  
Chair, Energy Facility Siting Council

Nov 27, 2000  
Date



MATCH LINE N.750.0' FOR CONT. SEE DWG. 003-P001-D

**CAUTION**  
POSSIBILITY OF ABANDONED  
UNDERGROUND PIPE AND ELECT.

ISSUED FOR APPROVAL  
JUN 30 2001

REFERENCE DRAWINGS	No.	DATE	REVISIONS	REV. BY	CHK. BY	EDAPP.	PHAPP.	No.	DATE	REVISIONS	REV. BY	CHK. BY	EDAPP.	PHAPP.	ENGINEERING RECORD	DATE	
								0	6/27/88	ISSUED FOR CONSTRUCTION	KCB	RTS			DRAWN BY	MBB	6/20/88
								1	7/20/88	DWG. OF RECORD	JPG	RTS			CHECKED BY	KCB	6/21/88
								2	6/18/97	REDRAWN & REV. FOR KTF JOB 2383 (IFA)	VMH	DKB	JMF	DC	TECH. APP.	RTS/OCF	6/21/88
								3	8/11/97	ISSUED FOR CONSTRUCTION - KTF JOB 2383	VMH	JMF	DB	DC	PROJECT APP.	DC	6/18/97
								4	9/18/97	REVISED FOR CONSTRUCTION	DKB	JF	DB	DC	SCALE: 1"=40'-0"		
								5	4/16/01	AS-BUILD, PHASE III EXPANSION	GB	JC	RLB		CAD: P002		
								6A	6/25/01	REVISED FOR MILLER STATION 317 MMSCFD EXP.	GW						

Northwest Natural Gas  
220 N.W. Second Avenue / Portland, Oregon 97208



SITE PLAN  
JOB NO. 2383.00R  
DWG. NO. 003-P002-D  
REV. 6A

August 6, 2001

Northwest Natural  
 220 Northwest Second Avenue  
 Portland, Oregon 97209

Attention: Todd Thomas

Foundation Report Update  
 Miller Station Gas Compression Facility  
 Mist, Oregon  
 File No. 6024-040-00

This letter summarizes our geotechnical review of the planned Miller Station Gas Compression Facility Expansion relative to the foundation design and construction recommendations provided in Dames & Moore's January 24, 1997 geotechnical report. The report was prepared under the direction of Doug Schwarm, who is also the principal author of this review.

We understand that additions to Miller Station will include; (1) a Rolls Royce 501-KC7 compressor; (2) a Hammco air cooler (3) an exhaust system; (4) a horizontal cyclotube separator; (5) an inlet coalescing filter; and (6) a lube oil cooler. Table 1 presents the anticipated equipment loads provided by Process Engineering Design.

**Table 1  
 Equipment Load Summary**

Description	Weight (pounds)
Hammco Air Cooler	72,161
Rolls Royce 501-KC7 Compressor	61,840
Exhaust System	22,260
Horizontal Cyclotube Separator	14,109
Inlet Coalescing Filter	6,200
Lube Oil Cooler	6,000

GeoEngineers, Inc.  
 750+ SW Bridgeport Road  
 Portland, OR 97224  
 Telephone (503) 624-9274  
 Fax (503) 620-5940



The January 24, 1997 report addresses the installation of two 80,000-pound turbine driven compressors, a 95,000-pound glycol dehydration unit and other appurtenant equipment similar to the planned equipment listed in Table 1. From a geotechnical perspective, the proposed foundation loads are similar for both the existing and proposed equipment. Consequently, the geotechnical engineering recommendations provided in the January 24, 1997 geotechnical report are appropriate for use in design and construction of the proposed expansion.

The seismicity and seismic zone at Miller Station are unchanged since the report was written. However, the Uniform Building Code (UBC) method of computing spectral accelerations has been changed, requiring a translation to the updated seismic parameters in order to use the current building code design method. Table 2 summarizes the past and current seismic design parameters for the soil conditions at Miller Station, which reflect equivalent seismicity and seismic design levels.

**Table 2**  
**Updated Seismic Design Parameters**

Parameter		Value	
		1994 UBC	1997 UBC
Seismic Zone Factor	Z	0.30	0.30
Soil Profile Type	S	S <sub>2</sub>	S <sub>c</sub>
S Factor		1.2	-----
Seismic Coefficient	C <sub>s</sub>	-----	0.33
Seismic Coefficient	C <sub>v</sub>	-----	0.45

Aside from that change in terminology, it is our opinion that the recommendations in the January 24, 1997 report remain appropriate for use in design of the proposed expansion. Furthermore, it is our opinion that proposed construction will not produce or contribute to seismic hazards.



We trust that this information meets your current needs. Please do not hesitate to call if you have any questions or if we can be of further assistance.

Yours very truly,

GeoEngineers, Inc.



Brett A. Shipton P.E.  
Project Engineer



Douglas R. Schwarm, P.E.  
Associate

BAS:DRS:mln

Document ID: 602404000R2.doc

Four copies submitted

COLUMBIA COUNTY  
LAND DEVELOPMENT SERVICES  
COURTHOUSE  
ST. HELENS, OR. 97051  
Phone: (503) 397-1501 Fax: (503) 366-3902

August 14, 2001

Peter Mustow  
Stoel Rives LLP  
900 SW 5<sup>th</sup> Ave., Suite 2600  
Portland, OR 97204-1268

RE: NW Natural Compressor Modifications at Miller Station


Dear Peter:

This office has received your letter dated August 10, 2001 requesting confirmation that no land use or design review applications will be required by Columbia County for compressor processing capacity modifications at the NW Natural Gas Miller Station near Mist, Or. I understand that an application is being submitted to the Oregon Energy Facility Siting Council for this project later this month.

The facilities at Miller Station are the central point in the gathering system for natural gas at the Mist Field. On February 10, 1997 Columbia County approved a conditional use and design review, CU 53-96 and DR 21-96, for a metal building, compressor and related processing equipment at the Miller Station for gas in-pu to the delivery system. The Commission found that the use was allowed in the Primary Forest Zone, after review, and that it would not interfere with accepted forest practices or otherwise have detrimental impacts on the area. Translated to your request, the original permit approval would encompass the modifications you are now seeking. You are not proposing to construct any new buildings and the use of the property is remaining the same. No new land use applications are required based on the information in your August 10, 2001 letter (attached).

We look forward to receiving a copy of your application to the Oregon Energy Siting Facility Council, when submitted. If I can be of further assistance, please contact me.

Sincerely,



Glen C. Higgins,  
Chief Planner

cc: Mist-Birkenfeld CPAC  
Mist-Birkenfeld RFPD





February 13, 2001

Todd Dugdale, Director  
Land Development Services  
Columbia County Courthouse  
Room 105  
St. Helens, Oregon 97051

Dear Mr. Dugdale:

This letter is to notify you of the location and status of four wells located in T6N-R5W, Columbia County. Three of these wells have been activated for service to our gas storage system:

Well 24c-23-65 – located in the SE4SW4 of Section 23 – CU 00-09 - 9/20/99

Well 24bh-23-65 – located in the SE4SW4 of Section 23 – CU 00-09 – 9/20/99

Well 43a-22-65 (formerly well 13-23-65) – located in the NE4NE4 of Section 22  
CU 00-42 – 5/5/00

The fourth well, 14dh-23-65 is not yet drilled but will be located in the SW4SW4 of Section 23 – CU 00-09 – 9/20/99.

If there are further issues to be covered, please contact me at the number shown above, extension 4686.

Sincerely,

Todd Thomas  
Storage Development Engineer  
Gas Storage

tat/tac

COLUMBIA COUNTY  
LAND DEVELOPMENT SERVICES  
COURTHOUSE  
ST. HELENS, OREGON 97051  
(503)397-1501

**FINAL ORDER and APPEAL INFORMATION**

**Applicant:** Northwest Natural Gas Company      **File Number:** CU 00-09  
**Planner:** Pete Watson      **Notice Date:** September 21, 1999

**Appeal Body:**

- Planning Commission, for appeal of an administrative decision; file this appeal in the Land Development Services office, ground floor, Courthouse Annex, St. Helens, OR 97051.
- Board of County Commissioners, for appeal of this Planning Commission decision; file this appeal in the Office of the County Clerk, second floor, Courthouse Annex, St. Helens, OR 97051.
- Land Use Board of Appeals (LUBA), for appeal of this Planning Commission or Board of Commissioner decision. File a Notice of Appeal with the Land Use Board of Appeals; PUC Building, 550 Capitol Street NE, Salem, OR 97310.

Attached is the FINAL ORDER on the application listed above. This decision, or any part of it, or any condition attached to it, may be appealed to the **Appeal Body** noted above.

An appeal to the Planning Commission or to the Board of Commissioners must be filed within 7 calendar days of the above Notice Date, the date this notice was mailed to the applicant and to other persons entitled to notice. The appeal must be accompanied by the appropriate appeal fee.

An appeal to the Land Use Board of Appeals must be filed with the Land Use Board of Appeals within 21 days of the date the land use decision became final.

If a local appeal is filed, and after notice is given to those persons entitled to notice, a public hearing will be held by the Appeal Body at its earliest available regular meeting. At the hearing, all interested parties will have an opportunity to appear and be heard.

If a local appeal is not filed, this decision will become final 7 days after the above Notice Date. A decision appealed to LUBA will be final after all appeals are completed.

Until the appeal period expires, the applicant may not take action on the application.

**PLEASE NOTE:** An appeal may be filed only by persons who appeared in person or in writing before the Planning Department, the Planning Commission or the Board of County Commissioners. You have "appeared" if you supplied information or argument in favor of or opposed to the application listed above.

If any of the above is not clear, or you have questions or require additional information, please contact the Planner listed above at (503) 397-1501, or FAX to his attention at (503) 366-3902.

24c-23  
24bh-23

BEFORE THE PLANNING COMMISSION  
COLUMBIA COUNTY, STATE OF OREGON

14 dh - 23

Conditional Use Permit CU 00-09

In the Matter of the Application of Northwest)  
Natural Gas Company for a Conditional Use)  
Permit in the Primary Forest Zone )

**Final Order CU 00-09**

This matter came before the Columbia County Planning Commission on the application of Northwest Natural Gas Company for a Conditional Use Permit to allow the drilling of 3 injection/withdrawal (I/W) gas wells on an existing 1203.36-acre parcel in the Primary Forest PF-76 zone.

The subject property is located off Barnhard Road and is designated on the Assessor's records as tax account number 6500-000-05000.

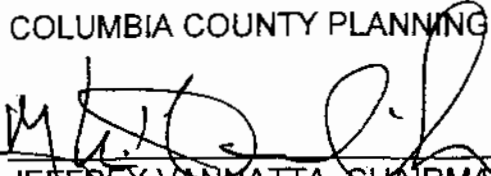
All owners of property within 500 feet of the subject property, the Mist-Birkenfeld CPAC, and appropriate government agencies were notified of the application and the hearing.


A public hearing was held on September 13, 1999. The Planning Commission heard testimony from the applicant and all interested parties, and considered all written materials submitted and the Planning Commission staff report.

The Planning Commission hereby adopts the findings and conclusions in the attached Staff Report dated August 23, 1999, and orders this application for a Conditional Use Permit APPROVED with the following conditions:

1. ~~When the wells are completed, applicant must notify the County Land Development Services of the location and status of the wells.~~
2. This permit shall become void 2 years from the date of the final decision if development has not begun on the property. Extensions of time may be granted by the Planning Director if requested in writing before the expiration date and if the applicant was not responsible for the failure to develop.
3. Applicant shall notify the Mist-Birkenfeld Rural Fire District after the drilling site is set up, for inspection and approval prior to beginning drilling.

COLUMBIA COUNTY PLANNING COMMISSION

  
\_\_\_\_\_  
JEFFREY VANNATTA, CHAIRMAN  
MICHAEL HERDRICH, VICE-CHAIRMAN

  
\_\_\_\_\_  
DATE

pw







Columbia County Planning Commission  
STAFF REPORT

Conditional Use Permit - PF-76 Zone

**FILE NUMBER:** CU 53-96

**APPLICANT/OWNER:** Northwest Natural Gas Company  
220 NW Second Avenue  
Portland, OR 97209

**AGENTS:** Michael C. Robinson  
Peter D. Mostow  
Stoel Rives LLP  
900 SW Fifth Avenue, Ste. 2300  
Portland, OR 97204-1268

**PROPERTY LOCATION:** Miller Station, about 3 miles northwest of Mist.

**REQUEST:** To replace two 550-hp compressors with one 3950-hp compressor at a gas processing facility on a parcel of 12.23 acres in the PF-76 zone, for which a Conditional Use Permit is required.

**TAX ACCT. NUMBER:** 6500-000-02501

**ZONING:** Primary Forest (PF-76)

**APPLIC'N. COMPLETE:** 1-6-97                      **120 DAY DEADLINE:** 5-6-97

**WAIVER SIGNED?:** No.

**BACKGROUND:**

The applicants request approval to replace two 550-HP compressors with one 3950-HP compressor at a gas processing facility on a 12.23 acre parcel in the Primary Forest PF-76 zone. Surrounding properties are in forest use. There are several existing structures on the property, which has access to South Mainline Road about 3 miles northwest of Mist. The topography of the property is fairly gentle, sloping up from the road and then leveling off at the compressor site. There are no flood plains or wetlands on the property (FEMA map 41009C0125 C)(National Wetlands Inventory, Clatskanie quad map). The property is within the Mist-Birkenfeld Rural Fire Protection District.

**FINDINGS:**

The following sections of the Zoning Ordinance and state laws are pertinent to this application:

Columbia County Zoning Ordinance Section 503 requires the following:

"Section 503 Conditional Uses: In the PF zone the following conditional uses and their accessory uses are permitted subject to the provisions of Sections 504 and 505. A conditional use shall be reviewed according to the procedures provided in Section 1503.

...

- .2 Operations conducted for the exploration, mining, and processing of...mineral or subsurface resources not permitted outright."

Finding 1: In the PF-76 zone, an expansion of a mineral resources processing facility requires a Conditional Use Permit.

Zoning Ordinance Section 504 requires the following:

"Section 504 All Conditional Uses Permitted In The PF Zone Shall Meet The Following Requirements:

- .1 The use is consistent with forest and farm uses and with the intent and purposes set forth in the Oregon Forest Practices Act."

The Oregon Forest Practices Act (ORS Chapter 527) includes the following:

"527.630 Policy. (1) ...it is declared to be the public policy of the State of Oregon to encourage economically efficient forest practices that assure the continuous growing and harvesting of forest tree species and the maintenance of forest land for such purposes as the leading use on privately owned land, consistent with sound management of soil, air, water and fish and wildlife resources that assures the continuous benefits of those resources for future generations of Oregonians."

Finding 2: The proposed use of the property is to replace two small compressors with one larger one, to increase the efficiency of the natural gas injecting operation. This is on a site which has been in non-forest use for many years. No forest land will be taken out of production and the site will not be expanded; all new facilities will be well within the boundaries of the site. The above criteria do not seem to apply to this request.

Continuing with Zoning Ordinance Section 504:

- "2 The use will not significantly increase the cost, nor interfere with accepted forest management practices or farm uses on adjacent or nearby lands devoted to forest or farm use."

**Finding 3:** The proposed use will not interfere with farm or forest uses on adjacent lands if appropriate measures are taken to prevent fire from spreading to adjacent forests.

Continuing with Zoning Ordinance Section 504:

- "3 The use will be limited to a site no larger than necessary to accommodate the activity and, as such will not materially alter the stability of the overall land use pattern of the area or substantially limit or impair the permitted uses of surrounding properties. If necessary, measures will be taken to minimize potential negative effects on adjacent forest lands."

**Finding 4:** The proposed compressor building will be limited to a small area in the north central part of the property. The overall land use pattern of the area is timber and natural gas production. Appropriate measures will need to be taken to minimize the danger of fire spreading to adjacent forest lands.

Continuing with Zoning Ordinance Section 504:

- "4 The use does not constitute an unnecessary fire hazard, and provides for fire safety measures in planning, design, construction, and operation."

**Finding 5:** Fire safety measures will need to be strictly enforced in planning, design, construction and occupation of the new building. The site has many established fire detection and prevention facilities on the site, including gas leak detectors, alarms, fire extinguishers, a 20,000 gallon water tank and an onsite fire truck.

Continuing with Zoning Ordinance Section 504:

- "5 Public utilities are to develop or utilize rights-of-way that have the least adverse impact on forest resources. Existing rights-of-way are to be utilized wherever possible.

**Finding 6:** All public utilities are in place.

Continuing with Zoning Ordinance Section 504:

"6 Development within major and peripheral big game ranges shall be sited to minimize the impact on big game habitat. To minimize the impact, structures shall: be located near existing roads; be as close as possible to existing structures on adjoining lots; and be clustered where several structures are proposed."

Finding 7: The area is a big game range, but this site is already developed into an industrial use; the new building will not expand the site and will be clustered with other structures on the site.

Zoning Ordinance Section 1503 requires the following:

"1503 Conditional Uses:

.5 Granting a Permit: The Commission may grant a Conditional Use Permit after conducting a public hearing, provided the applicant provides evidence substantiating that all the requirements of this ordinance relative to the proposed use are satisfied and demonstrates the proposed use also satisfies the following criteria:

A. The use is listed as a Conditional Use in the zone which is currently applied to the site;"

Finding 8: The PF-76 zone lists "Operations conducted for the exploration, mining, and processing of...mineral or subsurface resources not permitted outright" under Conditional Uses.

Continuing with Zoning Ordinance Section 1503.5:

"B. The use meets the specific criteria established in the underlying zone:"

Finding 9: The criteria of the PF-76 zone have been shown to be met in Findings 1 through 7.

Continuing with Zoning Ordinance Section 1503.5:

"C. The characteristics of the site are suitable for the proposed use considering size, shape, location, topography, existence of improvements, and natural features;"

Finding 10: The property is located about 3 miles northwest of Mist and is 12.23 acres. The lot is irregular in shape and the topography is gently sloping. There are many existing improvements on the property, and the new compressor and its building will be amidst the other structures. The property is within the Mist-Birkenfeld Rural Fire Protection District.

These appear to make the site suitable for the proposed new compressor.

Continuing with Zoning Ordinance Section 1503.5:

- "D. The site and proposed development is timely, considering the adequacy of transportation systems, public facilities, and services existing or planned for the area affected by the use."

Finding 11: The only transportation system in the area is South Mainline Road, owned by Longview Fibre and used mostly for log trucking. Public facilities are electric power and telephone. These appear to make the proposed use timely, as no new facilities will be required by the new compressor.

Continuing with Zoning Ordinance Section 1503.5:

- "E. The proposed use will not alter the character of the surrounding area in a manner which substantially limits, impairs, or precludes the use of surrounding properties for the primary uses listed in the underlying district;"

Finding 12: The surrounding area is in timber production. The proposed replacement compressor will not alter the character of the area, as it will be entirely within the existing plant site.

Continuing with Zoning Ordinance Section 1503.5:

- "F. The proposal satisfies the goals and policies of the Comprehensive Plan which apply to the proposed use;"

Finding 13: The Columbia County Comprehensive Plan (CCCP) ENERGY SOURCES section includes these findings (p.224):

"Potential conflicting uses for natural gas wells in the County are minimized by the controls and regulations imposed by ODOGAMI [Oregon Department of Geology and Mineral Industries]. They are also minimized since wells are located in remote forested areas and surrounding property owners share in the profits of producing wells. The county will conserve forest lands for forest uses and allow operations conducted for the exploration, mining, and processing of subsurface resources as a conditional use. The County will rely on ODOGAMI to insure future protection of resources and surrounding lands."

The Energy Sources GOAL is (CCCP p.225):

"To protect deposits of energy materials in the County and prevent injury to surrounding lands and residents."

The new compressor will be regulated by DOGAMI rules, and will be used to pressurize natural gas for piping to and from Miller Station. This operation and the others at Miller Station have been previously approved by the County as a way to prolong the useful life of the gas fields.

Continuing with Zoning Ordinance Section 1503.5:

"G. The proposal will not create any hazardous conditions."

**Finding 14:** The proposed new compressor will not be hazardous, as suitable precautions have been taken to detect and control fire and to prevent its spread to surrounding forest lands. The new compressor will be housed in a new metal frame, metal clad building and should not be a fire hazard.

Continuing with Zoning Ordinance Section 1503:

"6 Design Review: The Commission may require the Conditional Use be subject to a site design review by the Planning Commission."

**Finding 15:** A Site Design Review is required for the new building; see DR 21-96.

The following state laws must also be met by this application:

Oregon Revised Statutes: ORS Chapter 527, the Oregon Forest Practices Act, contains no regulations for gas wells or their production facilities.

Oregon Administrative Rules: OAR 660-06-025(4) reads:

"The following uses may be allowed on forest lands subject to the review standards in section (5) of this rule:

....

(f) Mining and processing of oil, gas or other subsurface resources...not otherwise permitted under section (3)(m) of this rule (e.g., compressors, separators and storage serving multiple wells)..."

OAR 660-06-025(5) sets out the following requirements for non-forest uses in forest lands:

"(a) The proposed use will not force a significant change in, or significantly increase the cost of, accepted farming or forest practices on agricultural or forest lands;"

**Finding 16:** The new compressor will be housed in a new building in the midst of existing structures and facilities at Miller Station. There will be no new impacts on adjacent or nearby forest operations.

Continuing with OAR 660-06-025(5):

- "(b) The proposed use will not significantly increase fire hazard or significantly increase fire suppression costs or significantly increase risks to fire suppression personnel; and"

**Finding 17:** The new building and compressor will include fire detection and suppression equipment integrated with the existing comprehensive equipment on the site. The fire fighting risks and costs should not be greater than the fire fighting risks and costs of the two compressors being replaced.

Continuing with OAR 660-06-025(5):

- "(c) A written statement recorded with the deed or written contract with the county or its equivalent is obtained from the land owner which recognizes the rights of adjacent and nearby land owners to conduct forest operations consistent with the Forest Practices Act and Rules..."

**Finding 18:** The recorded leases between the applicant and adjacent and nearby property owners recognize their rights to conduct forest operations with regard for, and without unnecessary harm to, their forest and agricultural operations. Applicant has offered to enter into a "written contract with the county" if required by the Planning Commission.

**COMMENTS:**

1. Larry Oblack, member of the Mist Birkenfeld CPAC, has no objection to approval of the request as submitted.
2. Dan E. Wermiel, Petroleum Geologist; Oil, Gas and Geothermal Regulation; Geologic Services section; DOGAMI, has no objection to approval of the request as submitted.

No other comments have been received from government agencies or nearby property owners as of the date of this staff report (January 22, 1997).

**CONCLUSION AND RECOMMENDATION:**

Based on the above findings, staff recommends approval of this request, with no conditions.

**Note:** ORS 671.025 requires that the plans and specifications for certain buildings in Oregon must have the stamp on them of a registered architect or registered professional engineer. Exceptions are ORS 671.030(2):

1. Single family residential buildings.
2. Farm buildings.



3. Accessory buildings to single family residences and farm buildings.
4. Buildings of 4,000 sq.ft. or less ground area.
5. Buildings with an interior height of 20' or less (top surface of lowest floor to highest interior overhead finish).
6. Non-structural alterations or repairs to a building.

The structure proposed in this application may be subject to ORS 671.025; if so, the plans submitted for a building permit must have the stamp of a registered architect or registered professional engineer on them.

pw



*Pathways* *Profitable*  
to *Growth*



**NW Natural**  
2000 Annual Report



## Corporate Profile

NW Natural, a 142-year-old company headquartered in Portland, Oregon, is one of the fastest growing natural gas local distribution companies in the country.

The Company serves more than 520,000 customers in northwest Oregon and southwest Washington, including the Portland-Vancouver metropolitan area, the Willamette Valley, the northern Oregon coast and the Columbia River Gorge. More than 200,000 customers have been added to NW Natural's distribution system in the past 10 years.

In keeping with its steady growth, NW Natural has increased annual dividends paid to shareholders every year for 45 consecutive years.

NW Natural purchases gas for its core market from a variety of suppliers in the western United States and Canada. In addition, the Company operates an underground gas storage facility in Columbia County, Oregon, and leases additional gas storage outside its service area. NW Natural also operates two liquefied natural gas plants in its service area.

## Service Territory



## Financial Briefs

	2000	1999	Percent increase (decrease)
<b>Earnings</b>			
<b>Financial facts (\$000):</b>			
Net operating revenues	257,950	243,637	6
Net income	50,224	45,296	11
Earnings applicable to common stock	47,768	42,781	12
<b>Financial ratios (%):</b>			
Return on average common equity	10.8	10.2	6
<b>Capital structure at year-end:</b>			
Long-term debt	45.1	46.0	
Preferred and preference stock	3.9	4.1	
Common stock equity	51.0	49.9	

## Common stock

<b>Shareholder data:</b>			
Common shareholders	10,850	11,511	(6)
Average shares outstanding (000)	25,183	24,976	1
<b>Per share data (\$):</b>			
Basic earnings	1.90	1.71	11
Diluted earnings	1.88	1.70	11
Dividends paid on common stock	1.240	1.225	1
Book value at year-end	17.93	17.12	5
Market value at year-end	26.500	21.938	21

## Operating highlights

<b>Gas sales and transportation deliveries (000 therms)</b>			
Gas sales and transportation deliveries (000 therms)	1,179,773	1,214,146	(3)
Degree days (20-year average 4,197)	4,418	4,256	4
Customers at year-end	523,406	501,163	4
Number of utility employees	1,315	1,275	3

## Dividends paid on common stock

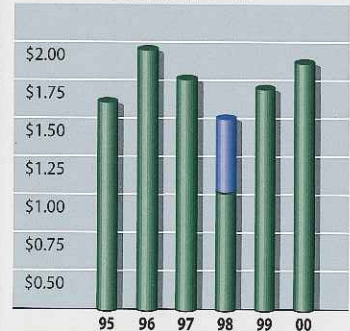
Payment date (per share)	2000	1999
February 15	\$ 0.310	\$ 0.305
May 15	0.310	0.305
August 15	0.310	0.305
November 15	0.310	0.305
December 15	—	0.005
<b>Total dividends paid</b>	<b>\$ 1.240</b>	<b>\$ 1.225</b>

## Dividends paid per share (IN DOLLARS)



Annual dividends paid per share in 2000 increased for the 45th consecutive year, a growth record matched by few companies.

## Earnings per share (IN DOLLARS)



■ DILUTED EARNINGS PER SHARE  
 ■ LOSS OF 50 CENTS PER SHARE IN 1998 DUE TO ASSET IMPAIRMENT CHARGES

Diluted earnings were \$1.88 per share in 2000, the second highest in the Company's history.





**Gas Storage**

With gas storage gaining in strategic importance, NW Natural's expansion of its Mist facilities presents bright opportunities for growth in the core market and beyond. *Page 8*



**Growth Initiatives**

One path leads to distributed generation; another to interstate gas storage services. NW Natural explores new ways to leverage corporate assets and boost profitable growth. *Page 10*

**Marketing**

Despite some bumps in the road — gas prices going up and housing starts going down — NW Natural again achieves customer growth far outpacing the industry average. *Page 12*

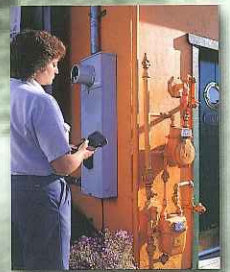


**System Integrity**

From proactive pipeline safety to replacement of a 100-year-old low-pressure system, NW Natural leads the way in ensuring a safe and stable transmission and distribution system. *Page 14*

**Innovation**

NW Natural applies human ingenuity and new technologies to improve processes ranging from new service installation to customer responsiveness — on the phone, on the web and in person. *Page 16*



For 142 years, NW Natural has followed a path of steady growth. The challenges along the way have been many. But the Company has met each one — by pursuing market opportunities, focusing on outstanding customer service and ensuring efficient operations. These are NW Natural's secrets to success — and the principles that will guide it toward an even brighter future.

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## A year of exceptional performance

### To Our Shareholders:

It was a standout year for NW Natural.

In 2000, we refocused on our primary path to profitable growth: a very healthy core business. Through rigorous cost control, aggressive growth strategies and redirected investment, we set a new record for earnings. We also upheld our reputation as one of the fastest growing, most efficient natural gas distribution companies in the nation.

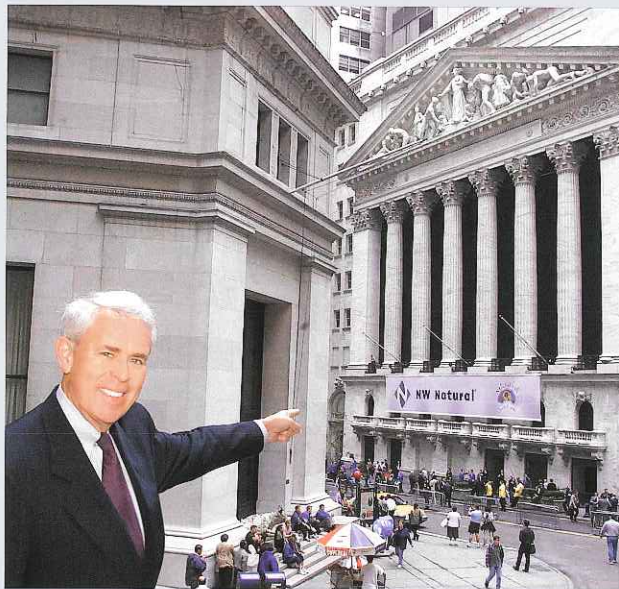
Our course was made more challenging by a volatile natural gas commodity market and a strong push for conservation in the West. The Company adapted to these unexpected forces—and still delivered strong customer growth and bottom-line results.

### ► Signs of success

In 2000, NW Natural:

- Set a new record for consolidated earnings applicable to common stock, at \$47.8 million.
- Achieved earnings of \$1.88 a diluted share, up 11 percent from \$1.70 a diluted share in 1999.
- Grew its customer base by 4.4 percent, about three times the national average for natural gas local distribution companies.
- Increased productivity by 6 percent, reducing costs per customer from \$188.56 in 1999 to \$176.31 in 2000.
- Took advantage of a favorable commodities market to sell the Company's exploration and production subsidiary.
- Completed the next phase of Mist gas storage expansion.

- Filed and settled a general rate case in Washington and secured fair regulatory treatment in Washington and Oregon for gas costs, the Mist storage project and new state cost allocations.



**NW Natural Chairman Richard G. Reiten points out the banner adorning the front of the New York Stock Exchange on the day NW Natural listed on the NYSE — July 27, 2000.**

### ► Strategies pave the way

The Company's 2000 achievements embodied several key strategies:

#### **Grow shareholder value.**

In July, we took a major step toward enhancing current and long-term shareholder value. NW Natural transferred its stock listing from Nasdaq to the New York Stock Exchange. The Company also launched a stock buyback program. This demonstrated management's confidence in our business at a time when most of the investment community favored high-tech stocks.

We believe these steps had a positive impact on the Company's stock price. In 2000,

NW Natural's share price rose from a low of \$17.75 in March to a high of \$27.50 in December—a recovery of 55 percent. The total return on an investment in our stock made at the beginning of 2000 was 27.6 percent, including dividends.

#### **Focus on the core business.**

Early in the year, NW Natural sold Canor, its Canadian energy exploration and production subsidiary. We redeployed the \$35 million in cash proceeds into our core business to support growth.

The sale of Canor, and a smaller sale of domestic gas and oil properties later in the year, removed the last major non-core assets from our balance sheet, so we could redirect investment into the primary business.

#### **Aggressively pursue growth.**

In 2000, NW Natural added 22,243 customers, for a total of 523,406 customers at year-end.

It was the Company's 12th consecutive year of customer growth exceeding 4 percent.

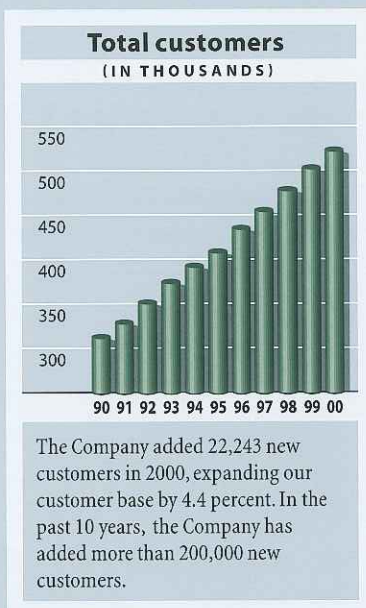
We intensified our emphasis on residential and commercial conversions to offset a decline in housing starts caused by slower economic growth. Targeted marketing and innovative campaigns helped attract 7,781 conversion customers in 2000.

NW Natural also vigorously pursued the multi-family housing market—and we increased our market share by 14 percent. We focused on educating builders and developers about new natural gas systems and technologies that made multi-family hookups more cost-effective.



### Control costs.

In 2000, NW Natural substantially reduced operating costs without impairing growth or service. In particular, we deployed new technologies in construction, accounting, customer service and marketing. In each case, the Company was able to drive costs down and, at the same time, increase productivity.



New technology also allowed NW Natural to launch a Joint Meter Reading program with Portland General Electric. To our knowledge, it is the first time two competing utilities have cooperated to reduce their meter reading costs.

### Keep the customer satisfied.

It has been challenging to keep customers happy at a time of double-digit gas cost increases. Indeed, our customer satisfaction figures dropped after we increased rates to cover higher gas costs. Cold weather in November and December further exacerbated high bill complaints.

To help customers manage their bills, NW Natural offered advice on how to use natural gas more efficiently. The Company also doubled its contribution to the Gas Assistance Program to help low-income customers pay their heating bills.

Given the circumstances, overall customer satisfaction held up surprisingly well. In 2000, the Company's average customer satisfaction rating (the percentage of customers surveyed who gave us an "excellent" service rating of 9 or 10) was 61.8 percent, compared to 65.7 percent in 1999. In the same survey, conducted by Market Decisions Corp., the electric utilities we compete with averaged a 47.1 percent "excellent" rating in 2000, and a 48.2 percent rating in 1999.

If we include customers who said they were "satisfied" or better with NW Natural's service, our customer satisfaction level was 86.9 percent in 2000.

We do not take these results for granted. The Company will continue to work hard to maintain customer loyalty in the face of fluctuating commodity prices.

### Invest in storage.

NW Natural has long known that underground gas storage is a tremendous strategic asset. Never was its value more evident than in 2000.

With natural gas selling at a premium on the spot market, NW Natural was able to draw on its gas storage supplies to moderate price increases. Storage, along with financial hedging techniques and long-term supply contracts, helped us keep our prices down. We had the lowest gas cost increase in the Pacific Northwest in 2000 and one of the lowest increases among natural gas distribution companies nationwide.

We completed an expansion of our central gas storage facility, developed a new storage pool and proceeded with a major pipeline expansion plan in 2000. This increased our gas storage capacity to 10.5 billion cubic feet.

We see Mist as not only providing for our own customer growth, but also offering opportunities to provide storage services to other companies in the West and in British Columbia.

### Keep our system safe.

Concern about pipeline safety reached a new high in the wake of a gasoline pipeline rupture in Bellingham, Washington, and a natural gas transmission line rupture in Carlsbad, New Mexico.

In 2000, NW Natural stepped up its proactive pipeline safety program to identify and address potential problems before they occurred. We reinforced sections of our system that were threatened by potential land movement. The Company also employed geotechnical experts to conduct thorough investigations on the ground and from the air to assure pipeline integrity.



In addition, NW Natural successfully replaced the last segment of its 100-year-old low-pressure distribution system, a project that had spanned 15 years. As far as we know, we are the only natural gas LDC to have completely replaced its low-pressure cast iron system.

### Develop our people.

We run a lean operation at NW Natural. To achieve maximum productivity, the Company



must effectively train, develop and support its employees.

In 2000 we initiated a new performance-based management system for non-bargaining unit employees. This system more strongly ties salary and incentive awards to individual performance. Each employee's goals are linked to Company goals.

### ► What lies ahead?

We at NW Natural are proud of our achievements and our history. But we cannot rest here.

### Raising the bar

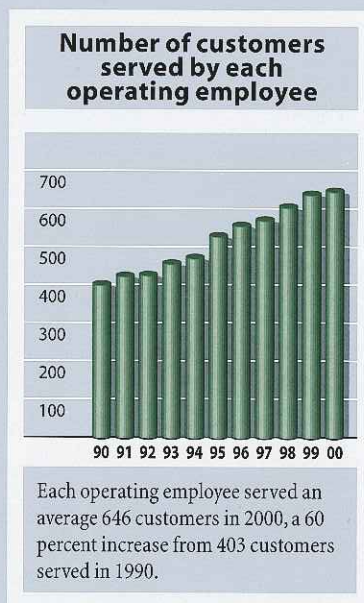
Our goal for the next five years is to achieve even higher earnings growth. NW Natural will pursue this goal through two main efforts.

First, we will build on the Company's current strengths. We believe we can continue to achieve 4 to 5 percent customer growth despite a slowing economy. At the same time, we must keep our costs down. Data from the American Gas Association's 1999 Annual Industry Benchmarking Study shows that NW Natural consistently has one of the lowest costs per customer of any natural gas LDC in the nation — a record we intend to maintain.

Second, we will be exploring new pathways to earnings growth that are related to our core business. These include:

- **Gas storage services.** Gas storage is a valuable tool for managing gas costs and supplies. NW Natural has reached agreement with two companies to provide them with future storage services.
- **Fiber optics.** NW Natural is investigating the possibility of working with other local companies to develop a fiber optic network in the Portland metro area. We're looking at ways to improve the usefulness of our out-of-service natural gas pipe as a conduit for fiber optic lines.
- **Distributed generation.** Concerns about the adequacy of electricity supplies have spurred growing interest in distributed gen-

eration. We are embarking on a number of pilot projects in cooperation with other firms to test the viability of new natural gas fuel cells, microturbines and Stirling engines. While the commercial use of these technologies may be several years away, we would benefit at that time from being able to distribute natural gas to customers for onsite electric generation.



### Facing the challenges

The road ahead is a challenging one. We expect the following concerns to be paramount.

- **Natural gas prices will be high until new production catches up with demand.** While natural gas prices have moderated some after peaking in late 2000, they are unlikely to fall significantly until major new supplies come online. That is probably two to three years away. In the meantime, NW Natural will need to rely on storage, price hedging programs and other gas supply management strategies to maintain our price advantage.
- **Usage per customer is on the decline.** There has been a downward trend in the average amount of natural gas usage per customer. Some of the decline has been caused by higher-efficiency appliances and

technologies. However, higher prices are also having an impact. We support the efficient use of energy and responsible stewardship of resources, and we will work with our regulators to ensure that customers and shareholders benefit from upholding that philosophy.

- **Upheaval in California's energy market and a softening economy will present new challenges.** We know we are on the right path to growth — but thriving during a time of economic slowdown and the remarking of California's energy system will not be easy. On the bright side: We believe we have a major opportunity to gain market share through the promotion of direct use of natural gas. About half the energy value of natural gas is lost when it is used to generate electricity versus being used directly by the consumer. Therefore, we are working with government leaders and policy makers to encourage energy policies that will support the most efficient use of natural gas.

As we begin 2001, NW Natural is ready for the challenges ahead. We are superbly positioned in the marketplace. Our product is in high demand. We still enjoy major competitive advantages. Our employees are energized and sharply focused on profitable growth.

As we look to the future, the view from our pathway is very bright.

Sincerely,

Richard G. Reiten  
Chairman, President and Chief Executive Officer  
February 28, 2001



## Rising to the gas price challenge

**Q. How is NW Natural dealing with rising wholesale gas costs?**

**Mr. Reiten:** NW Natural raised its rates in Oregon and Washington in the fall of 2000 to cover the higher cost of the natural gas we purchase and deliver to customers. We thought at the time that our 20-plus percent price increase was disturbing. As it turns out, it was among the lowest of any gas utility in the country, and the lowest in the Northwest.

We use underground gas storage, financial hedging and other mechanisms to keep our prices as low as possible. Storage allows us to reduce our dependence on pipeline supplies during the peak winter months, when prices tend to be higher. Storage also allows us to purchase less year-round pipeline capacity.

In 2000, we used financial swaps and caps in the summer to lock in prices on more than 90 percent of our gas supplies for the coming year. That made us less vulnerable to the dramatic swings in spot natural gas prices in the fall.

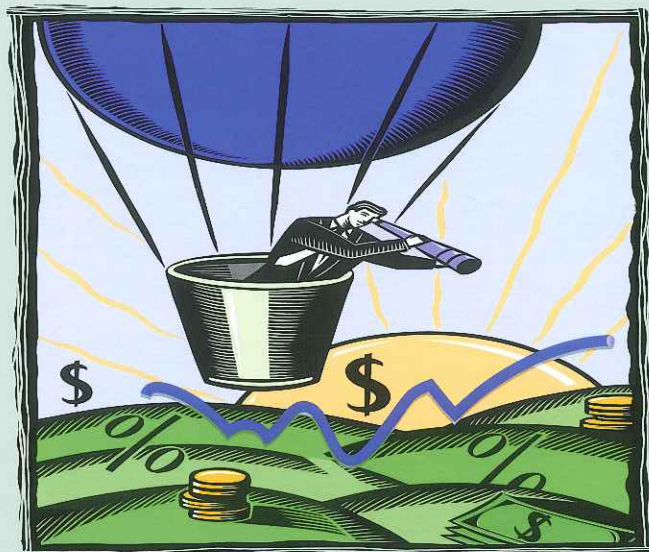
**Q. What have higher gas costs done to your competitive position?**

**Mr. Reiten:** Natural gas is still the best buy for customers. In most parts of NW Natural's service area, natural gas is up to 48 percent less expensive than electricity. That gap is bound to widen as electric utilities in our region have to pay more for their power, given the high demand in California.

We also compare favorably to oil. The margin between these two fuels varies depending on the fluctuations in oil and gas prices.

**Q. Are you concerned about the adequacy of gas supplies?**

**Mr. Reiten:** We are confident that we have adequate supplies to meet our customers' needs. But in some regions, natural gas supplies are tight. Fortunately, gas producers have been quick to respond. In 2000, the drilling rig count increased by 50 percent. In the near term,



increased drilling will help alleviate the price problem. Longer term, exploration into frontiers such as Alaska, which are now beginning in earnest, will put the industry in good shape for a long time to come.

**Q. How would you characterize the current energy climate in the West?**

**Mr. Reiten:** Undeniably chaotic. California is in a state of upheaval over soaring energy prices and inadequate electricity supplies.

Because Oregon is its neighbor to the north, we, too, are affected. The situation this summer may be particularly unpleasant. California will need its usual peak amounts of electricity for the hot summer months, but Northwest electricity providers won't be in as strong a position to sell power to them. We've had near-drought conditions this winter, which will reduce our region's production of hydropower. In addition, gas consumption by older inefficient electric generating plants in California will be high, affecting West Coast gas prices.

Nevertheless, the turmoil in Western electricity markets gives us a good opportunity to encourage conversions to natural gas — and the direct use of our product. Through direct use we can decrease the amount of natural gas that is burned to generate electricity.

When natural gas is used directly by the consumer, it is 92 percent efficient. When it is used to generate electricity, about half of its energy value is lost. We believe the increased direct use of natural gas is a smarter choice from both a societal and consumer viewpoint. It also reduces the current high demand for electric generation, which California (and by association, the Northwest) is hard pressed to provide.

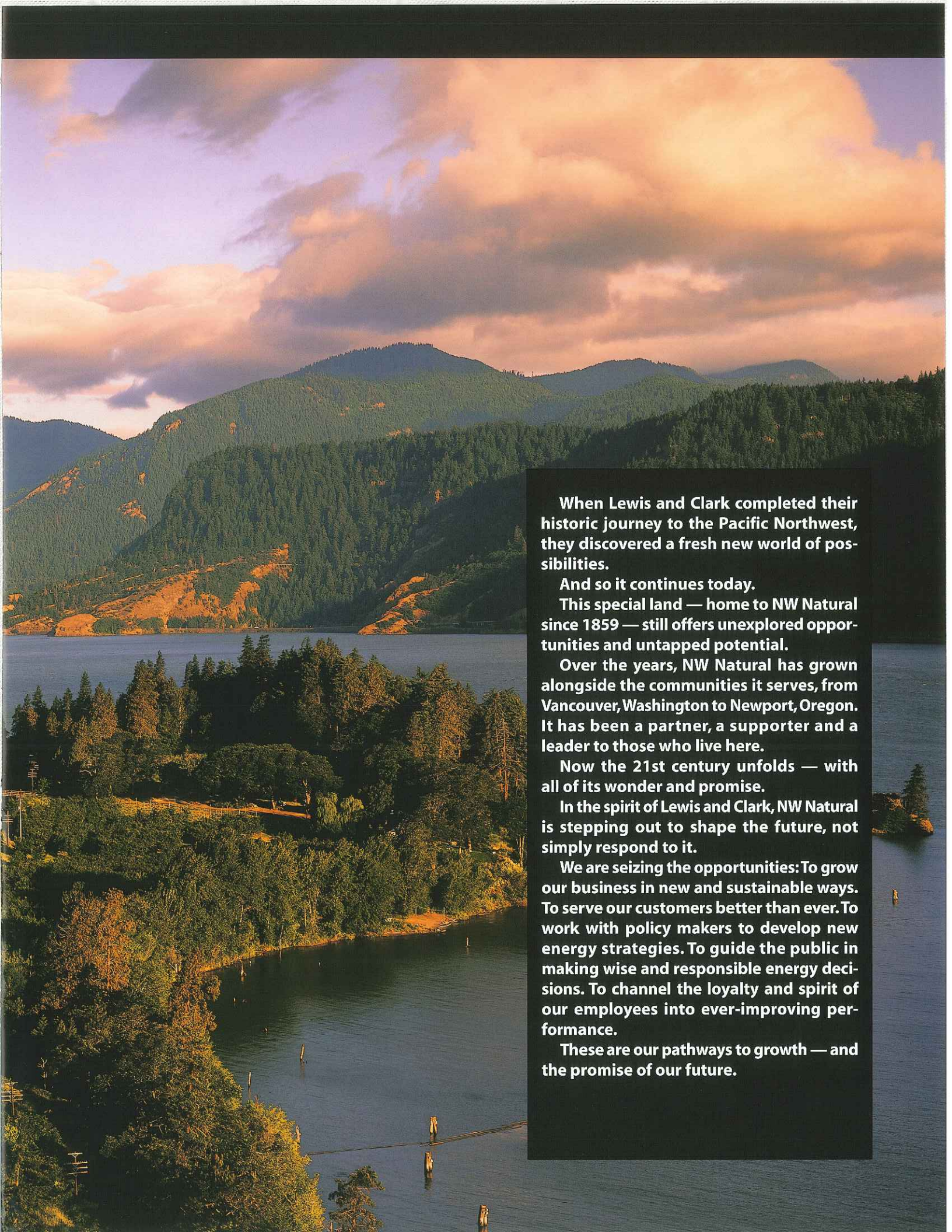
So, we can easily say: Help conserve electricity. Switch to natural gas! With our low market share, the impact of those conversions on regional electric demand could be quite substantial — making NW Natural an important part of the solution to today's electricity shortages.



# *Pathways to Growth*







**When Lewis and Clark completed their historic journey to the Pacific Northwest, they discovered a fresh new world of possibilities.**

**And so it continues today.**

**This special land — home to NW Natural since 1859 — still offers unexplored opportunities and untapped potential.**

**Over the years, NW Natural has grown alongside the communities it serves, from Vancouver, Washington to Newport, Oregon. It has been a partner, a supporter and a leader to those who live here.**

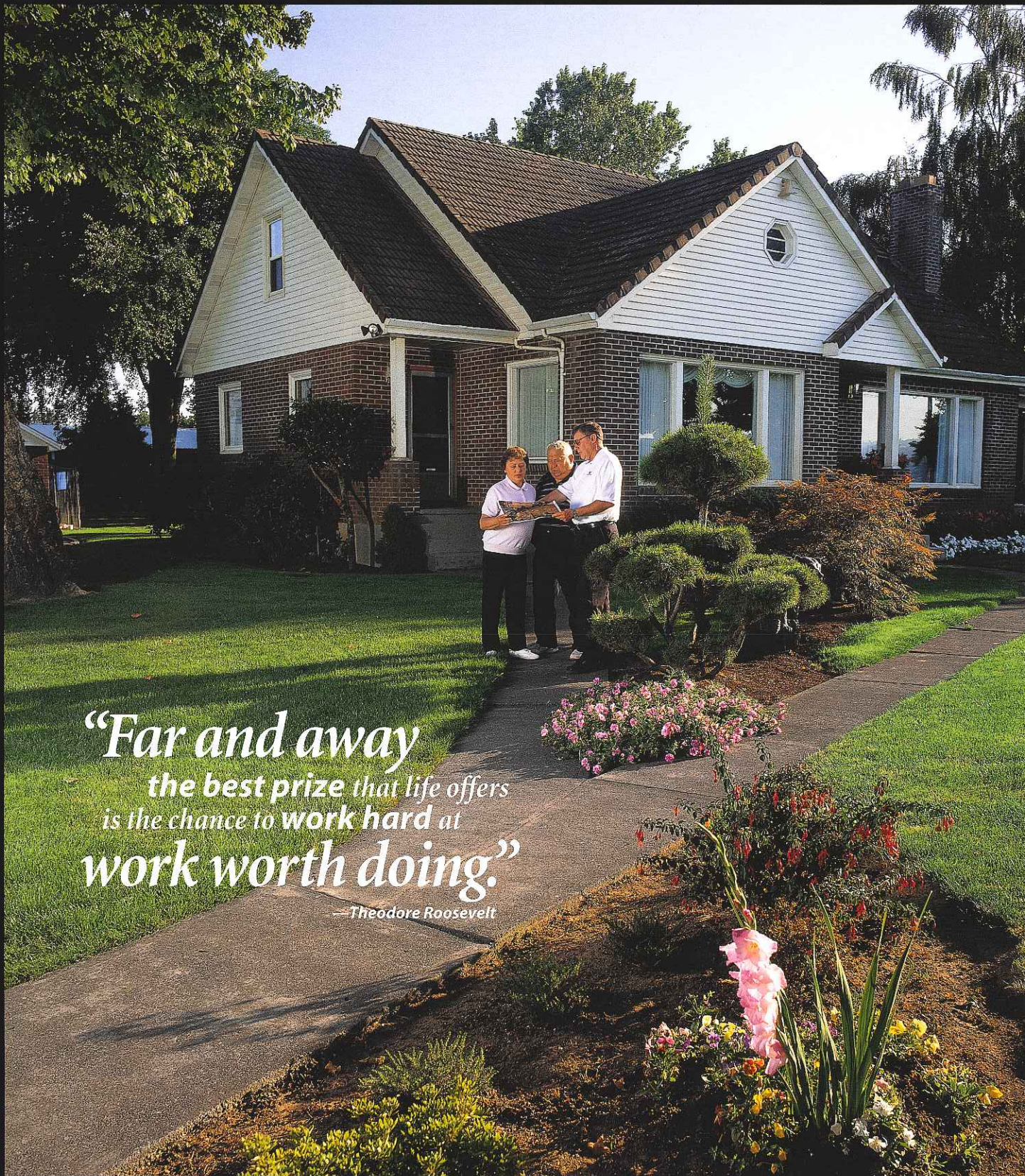
**Now the 21st century unfolds — with all of its wonder and promise.**

**In the spirit of Lewis and Clark, NW Natural is stepping out to shape the future, not simply respond to it.**

**We are seizing the opportunities: To grow our business in new and sustainable ways. To serve our customers better than ever. To work with policy makers to develop new energy strategies. To guide the public in making wise and responsible energy decisions. To channel the loyalty and spirit of our employees into ever-improving performance.**

**These are our pathways to growth — and the promise of our future.**





*“Far and away  
the best prize that life offers  
is the chance to work hard at  
work worth doing.”*

*— Theodore Roosevelt*



# The bright present and future of Mist

## New wells boost storage capacity

When NW Natural “struck it rich” at the Reichhold Pool at Mist, it didn’t hit oil or gas—it hit sandstone.

Specifically, the Company developed a vast underground area of sandstone that once contained natural gas, and now can be used for storing it.

“We’re making use of what Mother Nature provided,” said Charlie Stinson, General Manager of Engineering Services and Storage Development.

NW Natural had planned to drill three wells at Reichhold in 2000, but stopped after two because they were so prolific.

“These two wells at Reichhold deliver the same amount of gas as five existing wells in one of our other reservoirs,” said Stinson. He said the high deliverability was accomplished through the use of new technology and improved drilling techniques.

The addition of the Reichhold Pool boosted the Company’s storage capacity at Mist by about 25 percent, bringing the total to 10.5 billion cubic feet.

“We’re on a trajectory to serve additional customer growth through our storage system,” said Stinson. “Through phased development, we can bring these resources on line just in time for customer growth.”

◀ Robert Burns (right), consulting land representative, confers with homeowners Reinhold and Charlotte Hillner about surveying their property in conjunction with the South Mist Pipeline Extension Project.

NW Natural is working aggressively to maximize the value of its gas storage assets.

Storage helps the Company keep prices down. NW Natural purchases gas supplies at low prices in the summer; stores the gas; then uses it in the winter in place of higher cost supplies. This allows



Bert Kilcrease, a contract employee from Rockford Corp., completes the tie-in of the newly developed Reichhold Pool to NW Natural’s underground natural gas storage system at Mist.

the Company to avoid buying year-round pipeline capacity when it needs that capacity for only a small part of the year. The savings are passed on to customers.

### ▶ Getting the most from Mist

In 2000, NW Natural completed \$3.2 million in improvements at Miller Station, the central control facility for the Mist gas storage fields in northwest Oregon. These improvements increased the capacity at Miller Station and made it easier to switch quickly from injection to withdrawal operations. The Company also invested \$4.8 million in developing a fourth storage reservoir — the Reichhold Pool (see sidebar).

As a result, natural gas can now be withdrawn from Mist at a rate of up to 245 million cubic feet per day, up from the previous 190 million cu.ft./day.

### ▶ Pipeline extension project underway

The key to maximizing the use of gas storage for core customers is the South Mist Pipeline Extension — a 60-mile, 24-inch diameter natural gas transmission line that will link Mist to an interstate pipeline at Molalla, Oregon. The extension will help the Company better serve high-growth areas west and south of Portland, and will provide support to the existing Portland distribution system.

In 2000, NW Natural collected data, conducted land surveys and talked to property owners, public agencies and interested parties to select a preferred route for the new pipeline. Oregon’s Energy Facility Siting Council and other agencies will review the Company’s siting application in 2001. NW Natural hopes to secure the necessary permits and begin construction in 2002.

While the Company’s main focus is expanding gas storage on behalf of its core customers, it also plans to sell excess gas storage capacity to other natural gas companies. This storage capacity could be regained in the future to meet the growing needs of NW Natural customers.

Other companies are interested in purchasing gas storage capacity because it gives them added flexibility in managing gas supplies. Storage also acts as a valuable resource to meet customer needs during peak usage periods.



# Exploring new prospects for growth

There is more than one pathway to growth for NW Natural.

The Company is exploring new business ventures to leverage existing assets, meet customer needs and boost profitability.

## ➤ Gas storage: A hot commodity

NW Natural's underground storage capabilities are the crown jewel of the Company's assets—and increasingly attractive to other businesses.



**Major Accounts Manager Chris Cole (on ground) oversees the delivery of a large new gas sub-meter at Intel's Ronler Acres site. The sub-meter, which is separate from the company's master meter, will allow Intel to track natural gas usage at this specific facility. Unloading the equipment are Shop Leader Greg Beck (left) and Equipment Operator Paul Sabah of NW Natural.**

In 2000, NW Natural entered an arrangement with Aquila Energy, a subsidiary of UtiliCorp, to make the most of the Company's storage and transportation assets. Aquila applies its financial trading capability with NW Natural's unused storage capacity on any given day to take advantage of price differentials in regional markets. NW Natural received about \$0.5 million in revenues in 2000 from this arrangement, which is ongoing.

NW Natural has agreements to provide interstate gas storage services to two outside firms, once it receives approval from the Federal Energy Regulatory Commission. The Company is also exploring the possibility of developing a stand-alone business to develop and sell additional storage services to utilities and other large energy consumers.

## ➤ Technology opens new possibilities

As distributed generation (the generation of electricity onsite vs. in a centralized power plant) attracts more attention, NW Natural is testing ways in which the Company might become involved.

In 2000, NW Natural and Portland General Electric (PGE) signed a memo of understanding with General Electric Fuel Cell Systems, LLC, representing Plug Power, for a fuel cell distributorship. The joint NW Natural/ PGE distributorship covers all of Oregon and part of southwest Washington.

In addition, NW Natural signed preliminary agreements with PGE and Washington County, west of Portland, for a fuel cell demonstration project. The Company also signed a preliminary agreement with a development firm for the demonstration of a microturbine and/or a Stirling engine. These pilot projects will test the quality, reliability, marketability and profitability of new onsite natural gas-fired generation technologies.

Finally, NW Natural is continuing to expand its range of energy services to customers. In particular, the Company has stepped up its offering of Nertec metering devices to industrial and large commercial customers. The equipment allows customers to monitor on a daily basis the hour-by-hour consumption of natural gas in any part of their operations. NW Natural can use the information to track usage and respond quickly to any problems or needs. Over 300 customers are now using Nertec equipment.

## Setting the stage for Coos Bay expansion

**After a year of negotiation and planning, NW Natural is primed to expand into Coos County, Oregon.**

**Coos County is building a natural gas transmission pipeline from the interstate pipeline near Roseburg to the Coos Bay region. NW Natural will build and link its own local distribution system to the county-owned transmission line.**

**The Company is negotiating a contract with Coos County for transmission of the gas supplies NW Natural needs to serve the area. This contract will also provide an option for NW Natural to operate the county transmission line under certain conditions.**

**NW Natural plans to construct its distribution system on a schedule matching the county's construction of its transmission line. The Company will first build the high pressure backbone of the distribution system; then the low pressure portions. The goal is to be ready to hook up new customers as soon as the county's pipeline is complete.**

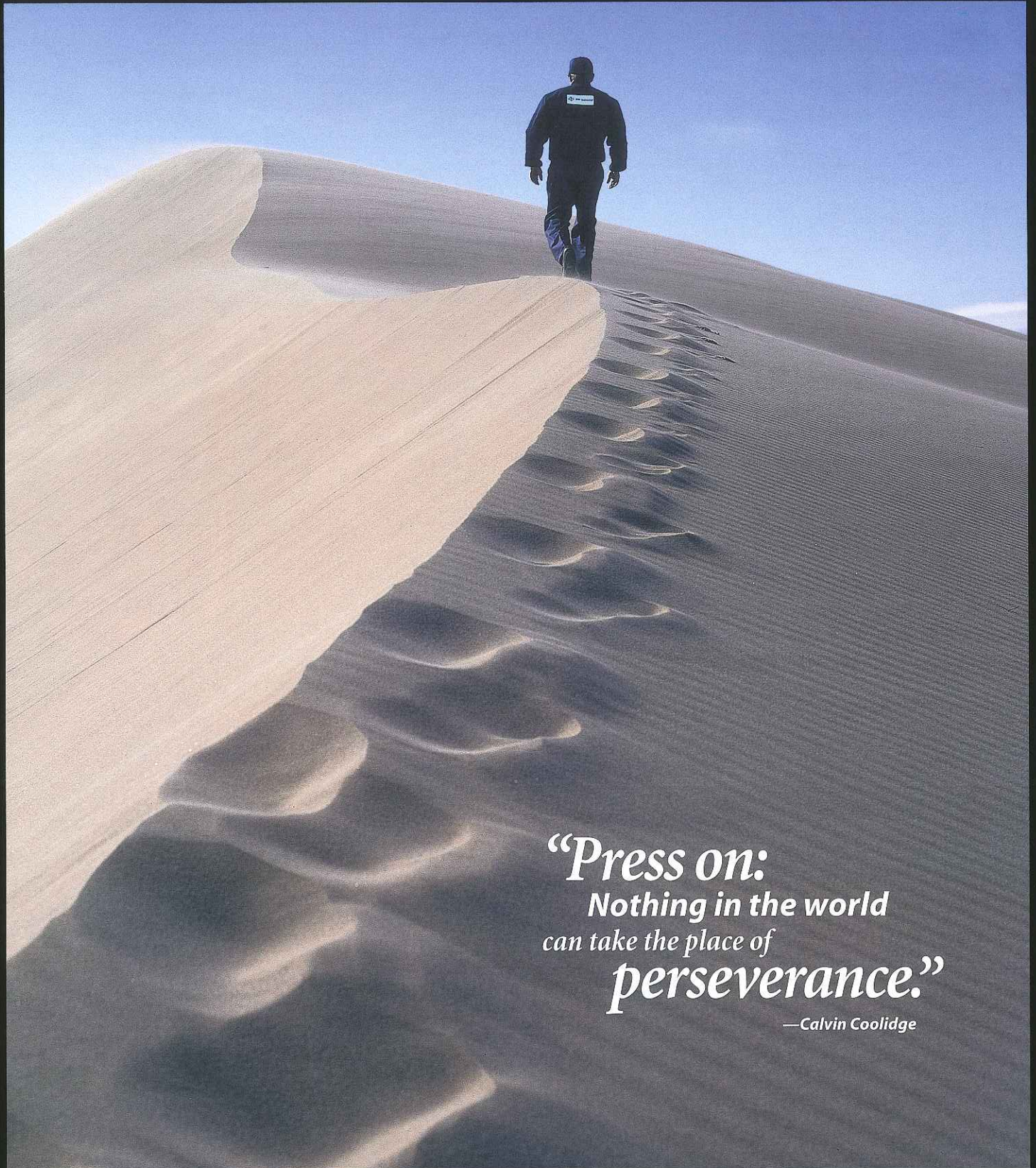
**In response to a NW Natural mailing of 12,000 market surveys to Coos Bay/North Bend residents, about 50 percent of respondents said they were interested in natural gas service.**

**The Company hopes to begin serving the region in 2002.**

➤ *Oregon Dunes Recreational Area near Florence, Oregon.*



*Nothing in the world*



*“Press on:  
Nothing in the world  
can take the place of  
perseverance.”*

*—Calvin Coolidge*

*can take the place of  
perseverance.”*



A man wearing a white hard hat, an orange t-shirt, and blue jeans is walking on a paved path. He is carrying a large coil of yellow pipe over his shoulder. The path is surrounded by trees with vibrant autumn foliage in shades of yellow, orange, and red. The ground is covered with fallen leaves. The scene is lit with warm, golden light, suggesting late afternoon or early morning.

*"Whatever  
you attempt,  
go at it with spirit."*

—David Starr Jordan



# Aggressive campaigns spur growth

## Customers flock to on-the-bill financing

In 2000, NW Natural teamed up with Questar Energy Services to give residential and commercial customers something they've been wanting: the ability to purchase natural gas equipment and pay for it on their gas bills.

Through the program, QES, a subsidiary of Questar Corp., finances the purchase and installation of natural gas appliances or a combination of gas and electric equipment. NW Natural then bills customers for the loan payments on their monthly gas statements.

Customers can also use the loans to convert their heating systems to natural gas or to decommission their underground oil tanks.

NW Natural launched the program in September. By year-end, Questar had approved more than \$3 million in loan applications, surpassing all expectations. Twenty-four percent of NW Natural's conversions in the last four months of the year involved on-the-bill financing.

Financing on the bill boosts NW Natural's business by increasing load and removing a financial obstacle to gas conversions and equipment purchases. Customers appreciate the convenience of paying for their natural gas and appliances, all on one bill.

◀ Main Crew Leader Greg Rookstool in Astoria, Oregon.

For the 12th year in a row, NW Natural achieved customer growth of more than 4 percent in 2000.

But it wasn't easy.

A slowdown in new construction and public concern about higher natural gas prices made 2000 a particularly challenging year for customer growth.

Through aggressive new programs, targeted sales campaigns and an emboldened approach to main extensions, NW Natural was able to overcome these obstacles and attract 22,243 new customers, an increase of 4.4 percent.

### ► Offers entice conversions

With housing starts in Oregon and Washington down 10 percent, the Company re-doubled its emphasis on conversions.

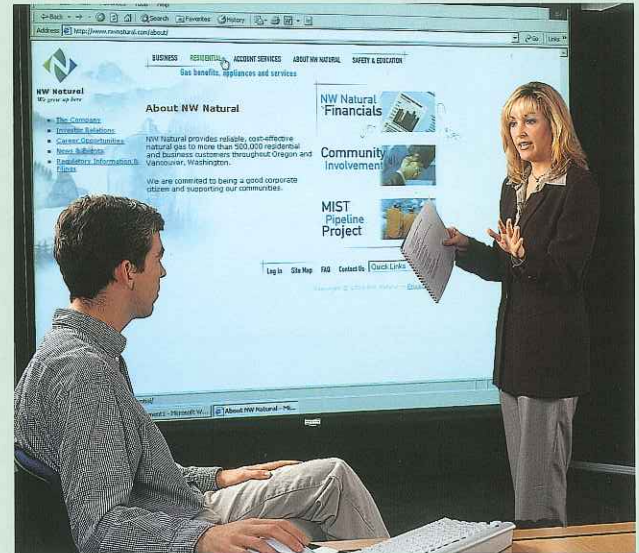
First, it launched an Oil Pump-out Campaign, which offered oil heating customers a free pump-out of their oil tank and free decommissioning consultation if they switched to natural gas. Second, the Company offered a variety of rebates and free gas equipment to people who agreed to convert within a certain time.

The Company's new On-the-Bill Financing program (see sidebar) also made it easy for customers to pay for a gas conversion or new gas equipment.

### ► Build it and they will come

In 2000, NW Natural piloted a new approach to main extensions, based on the premise that certain types of customers are more likely to sign up if a gas main is installed in their street.

The Company selected four pilot areas where the cost of extending the main was low and the probability of conversions was high. Construction crews planned and installed the gas main as



**Kim Heiting, Director of Consumer Information and Internet Services, discusses features of NW Natural's new web site with Account Manager Robert Jacobs of CyberSight, the design firm that developed the site.**

Marketing people blitzed the area with conversion information.

The initial expectation was that these main extensions would be profitable in three years. Instead, three of the four were profitable by the end of the year, and the fourth was expected to be so soon.

NW Natural will expand this approach in 2001.

The Company also targeted the multi-family market, achieving 14 percent growth in that sector in 2000. New technologies and new options for builders and developers made natural gas a more attractive option for apartments, condominiums and other multi-family housing.

The Industrial and Commercial Marketing department launched several new campaigns to attract more business and industrial customers. Based on prior market studies, these campaigns aimed at building market awareness of new gas technologies, as well as older gas technologies that can be applied in new ways.



# Proactive efforts protect the pipe

In response to growing national concern and weather-related risks to pipeline safety, NW Natural ramped up its efforts in 2000 to assure the safety and integrity of its transmission lines.

The Company earned accolades from state and federal safety officials for its proactive work in assessing and mitigating risks to its system from landslide activity.

In 1999, NW Natural launched an aggressive program to monitor transmission pipeline safety

those locations. NW Natural then took action to prevent problems from occurring.

## ► Landslides create challenges

One main area of concern was the Company's Central Coast feeder. A section of the feeder was affected by the reactivation of a major ancient landslide due to heavy rainfall. The landslide, 1.4 miles long, caused sections of roads to sink and, in some cases, wash away.

NW Natural first performed remedial repairs and then, after monitoring slide activity and performing a detailed geotechnical evaluation, re-designed and rerouted the pipe around the slide area to a safer, more stable location. The Company used natural gas supplies from its liquefied natural gas storage facility in Newport to continue serving customers during the repair.

## ► Protecting underwater pipe

Heavy rains also caused erosion in streambeds and river bottoms, exposing Company transmission lines that had been buried under the waterways. NW Natural used creative technologies to stabilize and protect the pipe from potential damage due to large boulders and logs in the rivers during high water. Crews padded the pipes with sandbags, then covered them with enormous flexible concrete "blankets." Through this process, three potentially problematic waterway crossings were protected.

On a broader scale, NW Natural is actively involved in policy discussions about new pipeline safety legislation and regulation. The Company is also implementing its plan to comply with the U.S. Department of Transportation's Operator Qualification Rule, which will require consistent and formalized procedures for training and certifying the skills of employees whose jobs are linked to pipeline safety.

## Out with the old; in with the new

**Long-time employees at NW Natural remember when, on cold winter days, Company crews had to manually bypass regulators to keep natural gas flowing through low-pressure pipes.**

**But no more.**

**In October 2000, NW Natural completed the replacement of its 100-year-old, primarily cast iron low-pressure pipe with new polyethylene pipe. In total, the company replaced 400 miles of low-pressure pipe over a span of 15 years.**

**Pressure in the new pipe can be maintained at 35 to 60 pounds per square inch, compared to the pressure of only about one-quarter pound per square inch in the old pipe. The higher operating pressure makes it easier to move additional supplies of natural gas to customers.**

**To convert the low-pressure system to medium-pressure pipe, NW Natural inserted new poly pipe into the existing low-pressure mains and services wherever possible. This substantially reduced project costs and surface disruption.**

**Benefits of the new system include improved reliability, system capacity and safety, as well as reduced repair and maintenance costs.**

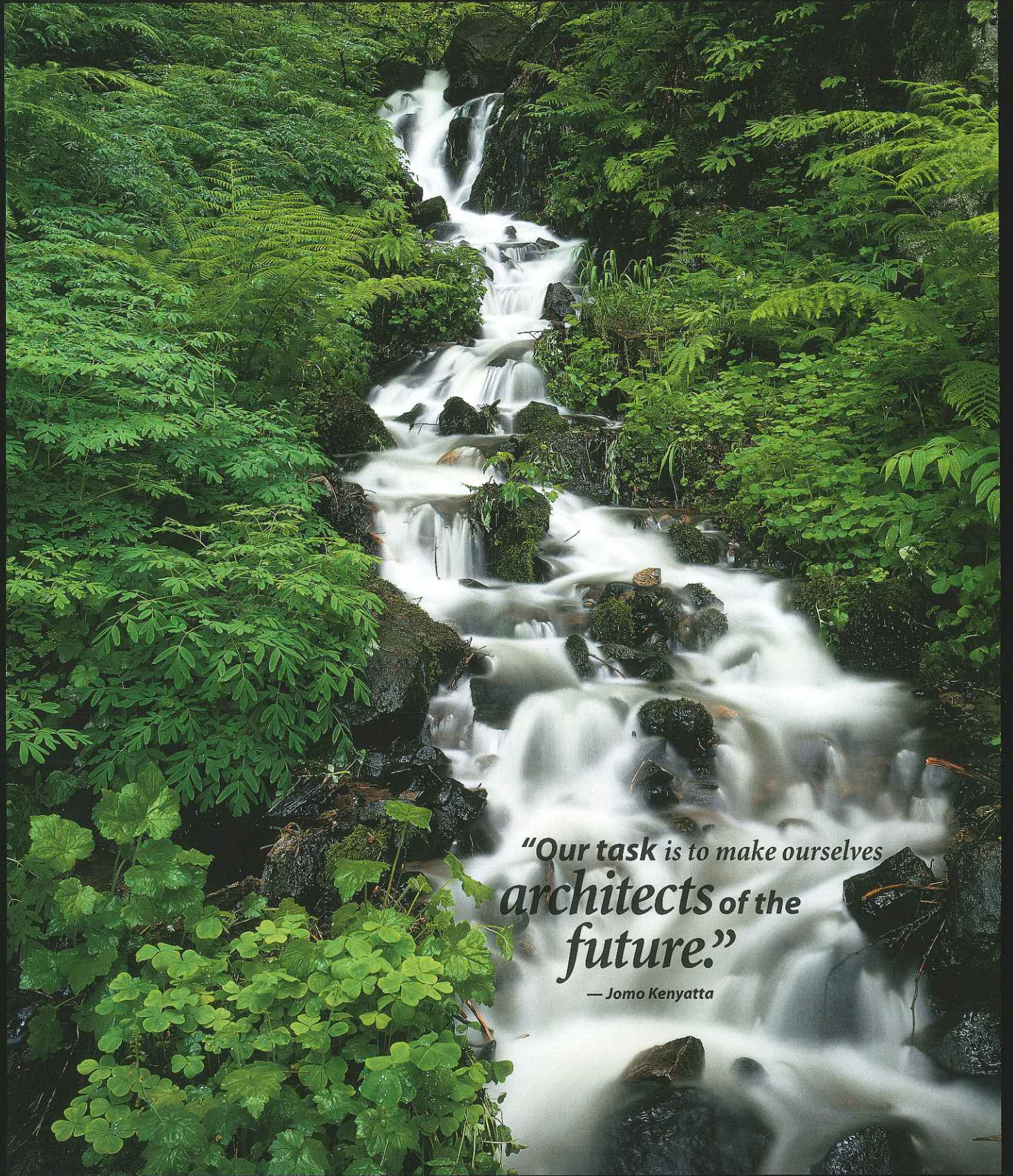


**Utility Assistant Bryan Baxter (background) feeds new polyethylene pipe to Pipe Joiner Chris Wiles (in ditch), who inserts it into 100-year-old cast iron pipe as part of the Company's replacement of its low-pressure distribution system. Distribution Crew Leader Hayden Golden directs the process.**

through aerial photographs as well as on-the-ground inspections. The Company used geotechnical experts from inside and outside NW Natural to analyze the data, identify potential problem areas and conduct detailed site evaluations at

► *Wooded creek in southwest Washington.*





*"Our task is to make ourselves  
architects of the  
future."*

*— Jomo Kenyatta*

*architects of the  
future."*



# Creativity + technology = savings

In 2000, NW Natural created and adopted new approaches for everything from digging trenches and laying pipe to predicting call volumes and scheduling service visits.

## ➤ **New construction techniques pay off**

The Company began using mini-directional drills for residential and commercial main extensions and conversion services. The mini-drills are used to create a tunnel and pull the pipe back through it, rather than digging an open trench. They are safer, more efficient and less disruptive to the ground surface than other excavation techniques.

NW Natural also developed new partnerships with builders, developers and other utilities to install new gas services faster and at less cost. For example, the Company partnered with the builder of a 500-home development to schedule the hookup of gas service a month in advance for the exact day the developer wanted it — thus saving waiting time and avoiding delays.

NW Natural also continued its Unity partnership with Portland General Electric. Through Unity, the two companies coordinate the digging of trenches so underground electric, gas, cable and phone lines can be installed simultaneously.

In addition, the Company partnered with Qwest to share each other's trenches when possible for the joint laying of gas and fiber optic lines.

## ➤ **Customers benefit, too**

NW Natural installed a software program for call volume forecasting to improve staffing and scheduling of customer service representatives. With the software, NW Natural can schedule addition-

al reps at predicted peak times for customer calls, thereby reducing the wait time for customers calling in and improving customer service.

NW Natural also began using a new software program called Service Order Scheduler (SOS) to improve service and reduce overtime for service technicians. The program allows the Company to



**NW Natural Meter Reader Diana Salathe uses new handheld technology to read a commercial customer's natural gas and electric meters. NW Natural and Portland General Electric launched a Joint Meter Reading Program in 2000.**

schedule each service tech's workday so customers receive service when promised, yet there is still time to respond to emergencies. Through SOS and other advancements, NW Natural has reduced overtime costs for Portland-area service techs by \$210,000 per year over the past three years.

In 2000, the Company adopted new customer service technologies. Electronic bill payment makes it easy for customers to pay their bills online. The Company's newly redesigned web site provides interactive capabilities so customers can check their account balances and review other account information.

## **One meter reader is better than two**

**Can two competing energy companies team up to achieve mutual savings?**

**You bet, say officials at NW Natural and Portland General Electric (PGE).**

**The two companies began jointly reading natural gas and electric meters in Portland and Salem in July 2000. The goal? To increase operating efficiency and reduce costs.**

**Under the program, one meter reader instead of two reads both the electric and gas meters in a given neighborhood. Meter readers from both companies were trained to read both electric and gas meters.**

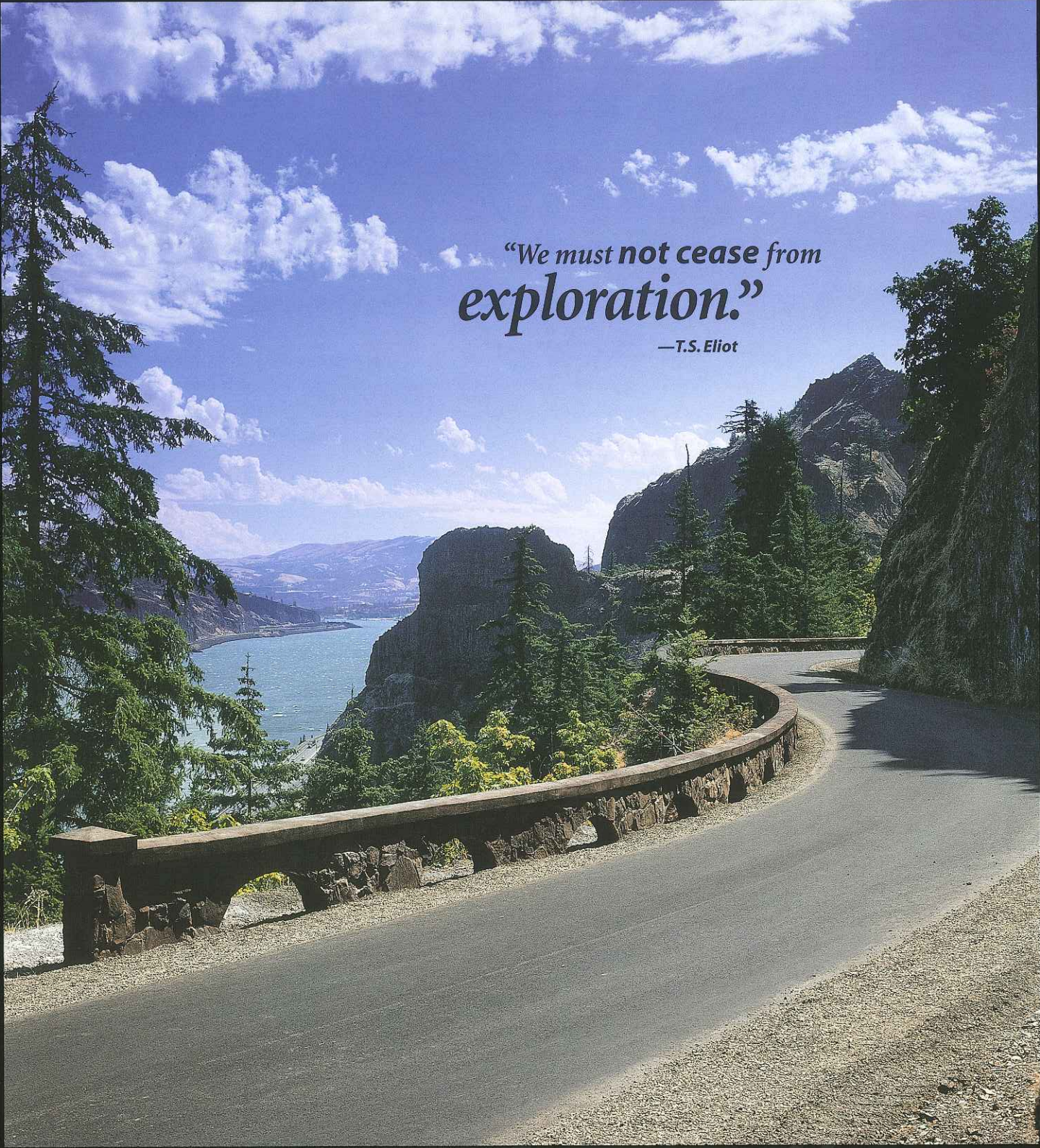
**By the end of 2000, the Joint Meter Reading Program included most of the 1.1 million gas and electric meters in the companies' overlapping service areas.**

**By coordinating meter reading routes, the two companies reduce meter reading costs, which reduces the pressure on future gas and electric rates. Savings from the project will begin accruing in 2001, and will be shared between the two companies.**

**Gas customers still pay their natural gas bills to NW Natural and still contact NW Natural with any questions or concerns related to their gas service.**

➤ *Sections of the Historic Columbia River Highway in Oregon have been renovated for bicyclists and hikers.*





*“We must not cease from  
exploration.”*

—T.S. Eliot

*exploration.*



**Basic earnings per share:** earnings applicable to common stock for a period, divided by the average number of shares of common stock actually outstanding during that period.

**Bcf:** one billion cubic feet, a volumetric measure of natural gas, roughly equal to 10 million therms.

**Book value:** the common stock equity on a company's balance sheet, which was \$452 million for NW Natural at year-end 2000. The book value divided by the number of shares of common stock outstanding equals book value per share, or \$17.93 for NW Natural at year-end 2000.

**BTU:** British thermal unit, a basic unit of thermal energy measurement. One Btu equals the energy required to raise one pound of water one degree Fahrenheit. One hundred thousand Btus equal one therm.

**Bypass:** a direct connection to the interstate gas pipeline which circumvents the pipes of the local distribution company; usually considered only by large industrial users.

**CIS:** customer information system. NW Natural's computerized CIS is used for customer orders, bills, account histories and collections.

**Demand charge:** a component in all gas rates that covers the cost of securing pipeline capacity to meet peak demand, whether that full capacity is used or not.

**Deregulation:** in the energy industry, a broad term that generally refers to changes in industry structure intended to provide consumers more direct access to competitive forces in the commodity markets.

**Diluted earnings per share:** earnings applicable to common stock for a period, divided by the average number of shares of stock that would be outstanding if all securities convertible into common stock were converted and all options to purchase common stock at prices lower than the average price for the period were exercised.

**Distributed generation:** the generation of electricity on a smaller scale than centralized power stations, using new gas-fired technologies such as fuel cells and micro-turbines for onsite commercial or residential use.

**DRIP:** dividend reinvestment plan enabling participating shareholders to further invest in a company by directly reinvesting dividends into the purchase of additional shares.

**FERC:** Federal Energy Regulatory Commission, the agency with regulatory jurisdiction over interstate natural gas transportation.

**Firm service:** natural gas service offered to customers under contracts or rate schedules that provide for no service interruptions.

**General rate case:** a periodic filing with state regulators to establish equitable rates and balance the interests of all classes of customers with those of a company and its shareholders. NW Natural's most recent general rate cases were concluded in Oregon in 1999 and in Washington in 2000.

**Interruptible service:** service offered to customers (usually large industrial or commercial) under contracts or rate schedules that allow for interruptions during times of peak demand.

**Heating degree days:** units of measure that reflect temperature-sensitive consumption of natural gas, calculated by subtracting the average of a day's high and low temperature from 65 degrees Fahrenheit.

**LNG:** liquefied natural gas, the cryogenic liquid form of natural gas. At temperatures below minus 258 degrees Fahrenheit, natural gas can be stored in a liquid form, which is 600 times more dense than its gaseous form.

**LDC:** local distribution company, such as NW Natural, which is mainly involved in the final distribution and sale of natural gas to customers.

**Margin:** in NW Natural's case, the difference between gross sales revenue and the cost of gas included in the sale.

**Market value:** also known as market capitalization. The market value of a company is the number of shares of common stock outstanding multiplied by the market price per share.

**Mcf:** one thousand cubic feet, a volumetric measure of natural gas, roughly equal to 10 therms.

**Natural gas:** a naturally occurring, flammable hydrocarbon found in porous underground formations, primarily consisting of methane (CH<sub>4</sub>).

**OPUC:** Public Utility Commission of Oregon, a three-member panel appointed by the Governor that has regulatory authority over public utilities in Oregon.

**PGA:** purchased gas adjustment, or gas tracker, a mechanism for adjusting rates due to changes in gas costs and recovering from customers deferred gas cost imbalances caused by fluctuating gas commodity costs.

**Therm:** the basic unit of natural gas measurement, equal to 100,000 Btus. An average residential customer in NW Natural's service area uses about 800 therms in an average weather year.

**Throughput:** the amount of natural gas transported through a distribution system in any given period.

**Transportation customer:** typically a large industrial customer that secures its own natural gas supply and pays only for use of the distribution system to transport it.

**Underground storage:** storage of natural gas by injection into underground rock formations for withdrawal during the winter heating season, such as at NW Natural's Mist Storage Field in Columbia County, Oregon.

**WUTC:** Washington Utilities and Transportation Commission, a three-member panel appointed by the Governor that has regulatory authority over public utilities in Washington.



*NW Natural's earnings in 2000 were \$47.8 million, up 12 percent from 1999 and a new record for the Company.*

The consolidated financial statements include:  
Regulated utility:

- Northwest Natural Gas Company (NW Natural)

Non-regulated subsidiary businesses:

- NNG Financial Corporation (Financial Corporation), a wholly-owned subsidiary
- Canor Energy, Ltd. (Canor), a majority-owned subsidiary reclassified as a discontinued segment in 1999 and sold in the first quarter of 2000

Together these businesses are referred to herein as the "Company" (see "Subsidiary Operations" below and Note 2 to the Consolidated Financial Statements).

At Dec. 31, 1999, the Company's investment in Canor was reclassified to current assets and reported as a discontinued segment. In the consolidated statements of income for 1999 and 1998, Canor's operating revenues and expenses are included in net income from discontinued segment.

The following is management's assessment of the Company's financial condition including the principal factors that affect results of operations. The discussion refers to the consolidated activities of the Company for the three years ended Dec. 31, 2000.

### ► Highlights and Outlook

Among its accomplishments in 2000, NW Natural:

- grew the customer base by more than 4 percent for the 12th year in a row, adding 22,243 customers to its gas distribution system during the year;
- completed another phase in the expansion of the Mist gas storage system and placed it in service Dec. 1, 2000, on time and on budget;
- filed and settled a general rate case in Washington and secured fair regulatory treatment in both Oregon and Washington for the Mist storage project, new state cost allocations and gas cost changes;
- completed the replacement of the last remaining portion of its 100-year-old low-pressure gas distribution system;
- sold its Canadian energy exploration and production subsidiary at a gain, redeploying \$35 million in cash proceeds from the sale into the Company's growing operations in its core market;
- increased productivity by 6 percent, reducing its ratio of expenses per customer from \$188.56 in 1999 to \$176.31 in 2000; and
- began trading its common stock on the New York Stock Exchange.

Among its corporate strategies for 2001, NW Natural will focus on:

- supporting and strengthening its core gas distribution business;
- sustaining profitable customer growth while providing excellent customer service;
- enhancing service and creating shareholder value through further gas storage development; and
- improving efficiency by managing costs, investments and utilization of assets.

### ► Earnings and Dividends

The Company's earnings applicable to common stock in 2000 were \$47.8 million, up from \$42.8 million in 1999 and \$24.7 million in 1998. Earnings for 2000 set a new record for the Company while earnings for 1999 were its third highest on record. Earnings for 1998 were reduced by write-downs of subsidiary assets and by warmer than normal weather.

Diluted earnings per share from consolidated operations were \$1.88 a share in 2000, compared to \$1.70 a share in 1999 and \$1.02 a share in 1998.

NW Natural earned \$1.78 a diluted share from gas utility operations in 2000, compared to \$1.66 in 1999 and \$1.43 in 1998. Weather conditions in its service territory in 2000 were 4 percent colder than in 1999 and 5 percent colder than the 20-year average. Weather in 1999 was 6 percent colder than in 1998 and 2 percent colder than the 20-year average. Weather in 1998 was 5 percent warmer than the 20-year average.

Non-regulated operating results for 2000, excluding Canor, were earnings of 1 cent a share compared to earnings of 3 cents a share from these operations in 1999 and a loss of 42 cents a share in 1998 (see Note 2). The loss in 1998 included write-downs of subsidiary assets equivalent to 43 cents a share. The Company recognized a gain equivalent to 9 cents a share from the sale of Canor during the first quarter of 2000. Results from Canor for the years ended Dec. 31, 1999 and 1998 were equivalent to earnings of 1 cent a share (see Note 2). Results in 1998 included write-downs of assets equivalent to 7 cents a share and a gain equivalent to 15 cents a share from a transaction involving Canor (see "Discontinued Segment," below).

2000 was the 45th consecutive year in which the Company's dividends paid have increased. Dividends paid on common stock were \$1.24 a share in 2000 compared to \$1.225 a share in 1999 and \$1.22 a share in 1998.

### ► Results of Operations

#### Regulatory Matters

NW Natural provides gas utility service in Oregon and Washington, with Oregon representing approximately 92 percent of its revenues. Future earnings and cash flows from utility operations will be determined largely by the pace of continued growth in the residential and commercial markets and by NW Natural's ability to remain price competitive in the large industrial market, to control expenses, and to obtain reasonable and timely regulatory ratemaking treatment for investments made in utility plant.

In October 2000, the Washington Utilities and Transportation Commission (WUTC) authorized a general rate increase totaling \$4.3 million per year, or 12.1 percent. The first \$3.0 million per year of the revenue increase, relating to costs allocated to Washington under a new cost allocation study approved by the WUTC and the Public Utility Commission of Oregon (OPUC), was effective on Nov. 1, 2000. The remaining increase of \$1.3 million per year will be effective on Oct. 1, 2001. The WUTC authorized and based rates on a return on common equity (ROE) of 10.8 percent.

In November 1999, the OPUC authorized a general rate increase of \$0.2 million per year effective Dec. 1, 1999. Higher revenues from rate increases averaging 1.3 percent for residential customers were partially offset by rate decreases for certain commercial and large industrial customers. The OPUC authorized and based rates on an ROE of 10.25 percent. On Dec. 1, 2000, NW Natural reduced rates in Oregon by \$3.0 million per year to implement the cost allocation study that produced the equivalent rate increase in Washington.

NW Natural applies rate changes each year reflecting changes in its purchased gas costs, the application of temporary rate adjustments to amortize regulatory balancing accounts and the removal of temporary rate adjustments effective the previous year. On Sept. 28, 2000, the OPUC approved, effective Oct. 1, 2000, rate increases averaging 23 percent for NW Natural's Oregon sales customers. On July 31, 2000, the WUTC approved, effective Aug. 1, 2000, rate increases also averaging 23 percent for NW Natural's Washington sales customers. These rate increases reflect



sizable increases in the cost of natural gas commodity purchased under contracts with gas producers (see "Comparison of Gas Operations – Cost of Gas," below).

Also reflecting changes in NW Natural's purchased gas costs, the OPUC approved rate increases averaging 9.1 percent effective Dec. 1, 1999, and increases averaging 3.4 percent, 6.1 percent and 11.4 percent effective Dec. 1, April 1 and Jan. 1, 1998, respectively. The WUTC approved rate increases averaging 11.1 percent and 5.8 percent effective Dec. 1, 1999 and 1998, respectively.

In an order issued in April 1999, the OPUC formalized a process that tests for excessive earnings in connection with gas utilities' annual filings of rate changes due to increases or decreases in gas costs. The OPUC confirmed NW Natural's ability to pass through 100 percent of its prudently incurred gas costs into rates. Under this order, NW Natural is authorized to retain all of its earnings up to a threshold level equal to its authorized ROE plus 300 basis points. One-third of any earnings above that level will be refunded to customers. The excess earnings threshold is subject to adjustment up or down each year depending on movements in interest rates.

Even with the commodity-related rate increases approved in Washington and Oregon in recent years, NW Natural expects to maintain a price advantage over competing fuels, including heating oil as well as electricity provided by the investor-owned electric utilities in its service territory.

**Comparison of Gas Operations**

The following table summarizes the composition of gas utility volumes and revenues for the three years ended Dec. 31:

Thousands (Except customers and degree days)	2000	1999	1998
<b>Gas Sales and Transportation Volumes - Therms (000's):</b>			
Residential and commercial sales	606,755	605,351	544,810
Unbilled volumes	8,691	(9,343)	8,645
Weather-sensitive volumes	615,446	596,008	553,455
Industrial firm sales	76,559	84,630	87,275
Industrial interruptible sales	56,632	52,938	51,521
Total gas sales	748,637	733,576	692,251
Transportation deliveries	431,136	480,570	446,165
Total volumes sold and delivered	1,179,773	1,214,146	1,138,416
<b>Utility Operating Revenues - Dollars (000's):</b>			
Residential and commercial sales	\$ 440,302	\$ 382,377	\$ 323,277
Unbilled revenues	12,661	(2,671)	8,314
Weather-sensitive revenues	452,963	379,706	331,591
Industrial firm sales	37,378	35,857	34,303
Industrial interruptible sales	23,483	17,182	15,337
Total gas sales	513,824	432,745	381,231
Transportation revenues	21,491	21,351	19,958
Other revenues	(3,976)	1,194	2,617
Total utility operating revenues	\$ 531,339	\$ 455,290	\$ 403,806
Cost of gas sold	\$ 273,978	\$ 212,021	\$ 173,242
Total number of customers (end of period)	523,406	501,163	477,407
Actual degree days	4,418	4,256	4,011
20-year average degree days	4,197	4,193	4,234

**Residential and Commercial**

NW Natural continues to experience rapid customer growth, with 22,243 customers added since Dec. 31, 1999. This represents a growth rate of 4.4 percent, compared to 5 percent in 1999 and 4.2 percent in 1998. In the three years ended Dec. 31, 2000, more than 65,000 customers were added to the system, representing an average annual growth rate of 4.6 percent.

Typically, 75 percent or more of NW Natural's annual operating revenues are derived from gas sales to weather-sensitive residential and commercial customers. Accordingly, variations in temperatures between periods will affect volumes of gas sold to and revenues derived from these customers.

Weather conditions were 5 percent colder than average in 2000, 2 percent colder than average in 1999 and 5 percent warmer than average in 1998. Average weather conditions are calculated from the most recent 20 years of temperature data measured by heating degree days. Weather in 2000

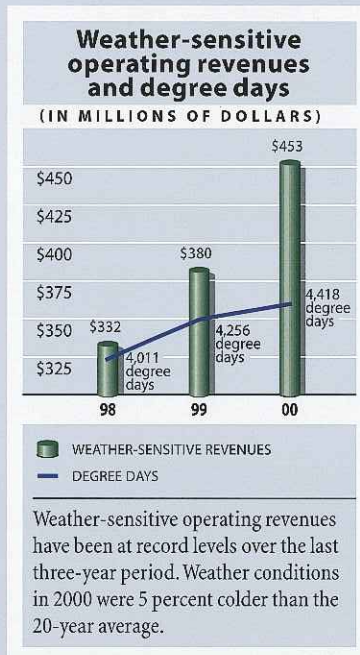
was 4 percent colder than 1999 and 1999 was 6 percent colder than 1998.

The volumes of gas sold to residential and commercial customers were 3 percent higher in 2000 than in 1999 and 8 percent higher in 1999 than in 1998, reflecting the continued customer growth and colder weather. Partially offsetting the effects of the customer growth and colder weather on sales to these customers in 2000, however, was a reduction from 1999 of about 7 percent in residential and commercial customers' consumption per heating degree day, probably due to the impact of gas commodity cost-related rate increases in recent years (see "Regulatory Matters," above). Revenue from residential and commercial customers was up 19 percent in 2000 due to increased volumes and the rate increases effective in 1999 and 2000, and up 15 percent in 1999 due to increased volumes and rate increases effective in 1998 and 1999.

In order to match revenues with related purchased gas costs, NW Natural records unbilled revenues for gas delivered but not yet billed to customers through the end of the period. Amounts reported as unbilled revenues reflect the increase or decrease in the balance of unbilled revenues over the prior year end. Year-end balances are affected by weather conditions, rate changes and customer billing dates from one period to the next.

**Industrial Sales, Transportation and Other Revenues**

Total volumes of gas delivered to industrial customers were 9 percent lower in 2000 than in 1999 and 6 percent higher in 1999 than in 1998. During 1999, industrial transportation volumes included 33 million therms of deliveries to an electric generating plant during a temporary shutdown of its primary gas supply line. The combined margin from industrial sales and transportation decreased 2 percent in 2000 from 1999 and increased slightly in 1999 from 1998. The 2000 results include the





positive effects on industrial margins of higher oil prices in an industrial schedule in which rates vary with oil prices. The slight increase in industrial margin in 1999 from 1998 reflected the effect of low oil prices on rates under this schedule, and transfers of some industrial customers to rate schedules or special contracts with lower margins.

Other revenues include amortizations from regulatory accounts and miscellaneous fees charged to gas sales customers. Other revenues in 2000 amounted to a net reduction to utility operating revenues of \$4.0 million, compared to a net increase of \$1.2 million in 1999. Factors contributing to the reduction in 2000 were higher amortizations from regulatory accounts covering conservation programs (\$1.9 million), property taxes (\$1.7 million) and Year 2000 costs (\$1.1 million), and lower miscellaneous revenues (\$1.0 million), partially offset by higher revenues from customer late payment and reconnection fees (\$0.6 million).

In 1999, other revenues totaled \$1.2 million, including fees assessed to customers (\$1.6 million), partially offset by other regulatory account adjustments (\$0.4 million). In 1998, other revenues included the deferral of \$2.0 million in revenue reductions required under a settlement approved by the OPUC as part of the Jan. 1, 1998 rate changes, offset by \$3.1 million from the amortization of property tax savings and \$1.4 million from amortizations of other regulatory accounts.

#### **Cost of Gas**

NW Natural's cost per therm of gas sold was 27 percent higher in 2000 than in 1999, primarily due to higher prevailing prices in the natural gas commodity market. Its cost of gas sold was 15 percent higher in 1999 than in 1998. The cost per therm of gas sold includes current gas purchases, gas drawn from storage inventory, gains or losses from commodity hedges, demand cost equalization, regulatory deferrals and company use.

NW Natural was able to offset some of the impact of the higher gas prices during 2000 through an active natural gas commodity hedge program conducted under the terms of the Company's Derivatives Policy (see Note 1, "Derivatives Policy"). NW Natural recorded net gains from commodity swap and call option contracts of \$56 million in 2000, compared to net gains of \$4 million in 1999. Gains (losses) from commodity hedges are recorded as reductions (increases) to the cost of gas. The cost of gas sold also was reduced by off-system gas sales of \$3.0 million in 2000, compared to \$1.7 million in 1999 and \$4.6 million in 1998. Under an agreement with the OPUC, revenues from these sales are treated as a reduction of gas costs.

NW Natural has a Purchased Gas Adjustment (PGA) tariff under which its net income from Oregon operations is affected only within defined limits by changes in purchased gas costs. NW Natural absorbs 33 percent of the higher cost of gas sold, or retains 33 percent of the lower cost, in either case as compared to projections. The remaining 67 percent of the higher or lower gas costs are recorded as deferred debits or credits (regulatory assets or liabilities) for recovery from or refund to customers in future rates. NW Natural deferred \$6.1 million of higher gas costs in 2000 and expects to recover these amounts from customers during the next two years. The combined impact of NW Natural's higher gas costs and its partially offsetting off-system gas sales under the PGA sharing mechanism in 2000 was that the Company absorbed \$2.0 million of its higher gas costs, reducing earnings by about 5 cents a share.

#### **Non-regulated Operations**

Non-regulated operating results in 2000 were earnings of 1 cent a share, compared to earnings of 3 cents a share from these operations in 1999 and a loss of 42 cents a share in 1998 (see Note 2).

Financial Corporation's operating results in 2000 were net income of \$0.1 million, compared to \$0.5 million in 1999 and \$0.1 million in 1998. The decrease in income from 1999 to 2000 was primarily due to an adjustment to deferred taxes in 2000. The increase in income from 1998 to 1999 was primarily due to stronger operating results from Financial Corporation's investments in limited partnerships in solar electric, wind-power electric and hydroelectric generation projects in California.

Financial Corporation recorded asset impairment charges in 1998 totaling \$16.6 million, equivalent to 43 cents a share. The charges resulted from the application of Statement of Financial Accounting Standards (SFAS) No. 121, "Accounting for the Impairment of Long-Lived Assets and for Long-Lived Assets to Be Disposed Of," to Financial Corporation's limited partnership investments. The determinations of impairments for Financial Corporation's assets resulted from estimates in 1998 of lower prices for future sales of electricity from the partnerships' power projects.

The Company's investment in Financial Corporation at Dec. 31, 2000, was \$7.2 million, compared to \$7.1 million at Dec. 31, 1999 and \$6.6 million at Dec. 31, 1998.

The Company realized income of \$0.1 million in 2000 from non-utility gas storage, involving the sale of gas storage services to upstream customers using storage capacity not required from time to time for service to utility customers. NW Natural retains 80 percent of the revenues from the upstream storage services and credits the remaining 20 percent to its utility customers.

#### **Discontinued Segment**

On Jan. 26, 2000, the Company sold its interest in Canor at a gain of \$2.4 million, equivalent to 9 cents a diluted share (see Note 2). Net income from Canor for 1999 and 1998 was \$0.4 million in both years. Results for 1998 included asset write-downs totaling \$2.8 million, equivalent to 7 cents a share, and a \$3.5 million gain, equivalent to 15 cents a share, from a merger involving Canor. The gain from the merger was not subject to U.S. income tax in 1998, but it was effectively taxed upon disposition of Canor in 2000.

The Company's investment in Canor of \$29.2 million at Dec. 31, 1999, was reported in current assets as an investment in discontinued segment.

#### **Operating Expenses**

##### **Operations and Maintenance**

Consolidated operations and maintenance expenses were \$4.6 million, or 6 percent, higher in 2000 than in 1999. The increase was primarily due to credits to a litigation reserve in 1999 totaling \$4.9 million resulting from favorable decisions by the Oregon Supreme Court and the Oregon Court of Appeals in a case involving claims by a commercial customer (see Note 12), and to increased payroll costs (\$0.9 million) and accruals for environmental claims (\$0.6 million) in 2000, partially offset by a lower bonus accrual (\$1.3 million) in 2000.

Operations and maintenance expenses in 1999 were \$5.0 million, or 6 percent, lower than in 1998. The decrease was primarily due to the \$4.9 million credit to the litigation reserve (see above). Lower expenses in 1999 for uncollectible accounts (\$0.6 million), pensions (\$0.4 million) and other miscellaneous operating costs (\$2.0 million) were approximately offset by higher expenses for bonus accruals (\$2.5 million) and early retirement and severance charges (\$0.9 million).

##### **Taxes Other Than Income**

Taxes other than income, which are comprised of property, franchise, payroll and other taxes, increased \$3.7 million, or 15 percent, in 2000.



Franchise taxes, which are based on gross revenues, increased \$2.6 million, or 25 percent, reflecting higher revenues due to an increase in the Company's customer base and rate increases effective in late 1999 and 2000. Property tax expense was \$0.6 million, or 7 percent, higher than in 1999 due to more plant in service. Payroll tax expense was \$0.3 million, or 9 percent, higher than in 1999 due to an increase in payroll expense.

Taxes other than income increased \$2.7 million, or 12 percent, in 1999. Property tax expense was \$0.9 million, or 10 percent, higher than in 1998 due to more plant in service. Franchise taxes increased \$1.4 million, or 16 percent, reflecting higher revenues due to rate increases effective Dec. 1, 1998 and 1999.

**Depreciation, Depletion and Amortization**

Depreciation, depletion and amortization expense was \$3.6 million lower in 2000 than in 1999. The reduction was due to charges to NW Natural's depreciation expense in both years relating to regulatory treatment of a new customer information system (CIS) completed in 1997. NW Natural wrote down its CIS assets by \$6.5 million in 1999 pursuant to the OPUC's order in its Oregon general rate case concluded in November 1999, and by a further \$0.4 million in 2000 pursuant to the WUTC's order in its Washington general rate case concluded in October 2000. (See "Results of Operations – Regulatory Matters," above.)

Exclusive of these regulatory mandated charges, consolidated depreciation, depletion and amortization expense increased \$2.6 million, or 6 percent, in 2000 compared to 1999 and \$0.5 million, or 1 percent, in 1999 compared to 1998. As a percentage of average plant and property, depreciation, depletion and amortization expense was 3.5 percent for both 2000 and 1999.

**Other Income (Expense)**

Other income was \$3.9 million in 2000, \$1.0 million lower than in 1999, primarily due to a reduction of interest income from \$3.9 million to \$3.1 million. Other income was \$4.8 million in 1999, compared to Other expense of \$13.7 million in 1998, reflecting \$16.6 million in asset write-downs recorded by Financial Corporation in 1998 under SFAS No. 121 (see "Non-regulated Operations," above).

**Interest Charges – Net**

Interest charges increased \$3.5 million, or 12 percent, in 2000 compared to 1999, primarily due to an increase in long-term debt outstanding and an adjustment relating to the favorable decisions by the Oregon Supreme Court and the Oregon Court of Appeals in a case involving claims by a commercial customer that reduced interest expense by \$1.7 million in 1999 (see Note 12).

Interest charges decreased \$1.5 million, or 5 percent, in 1999 compared to 1998, primarily due to reversals of interest charges recorded in prior years following the favorable decisions by the Oregon Supreme Court and the Oregon Court of Appeals in the case involving claims by a commercial customer (see Note 12).

Allowance for Funds Used During Construction (AFUDC) represents the cost of funds used during the construction of utility plant (see Note 1). In 2000, AFUDC reduced interest expense by \$0.8 million compared to \$1.2 million in 1999 and \$1.4 million in 1998. The weighted average AFUDC rates were 6.0 percent in 2000 and 1999 and 5.5 percent in 1998 (see "Financing Activities," below).

**Income Taxes**

The effective corporate income tax rates for 2000, 1999 and 1998 were 35.9 percent, 35.4 percent and 35.1 percent, respectively.

**Redeemable Preferred and Preference Stock Dividend Requirements**

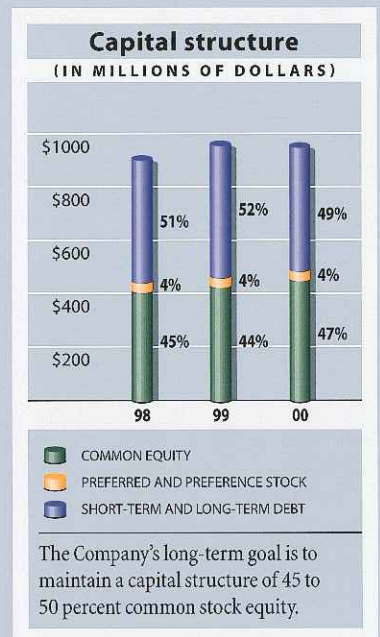
Redeemable preferred and preference stock dividend requirements for 2000 and 1999 were lower by \$0.1 million, or 2 percent, in 2000 and 3 percent in 1999, due to sinking fund redemptions.

**Financial Condition**

**Capital Structure**

NW Natural's capital expenditures are primarily related to utility construction resulting from customer growth, system improvements and the development of underground gas storage. NW Natural finances these expenditures from cash provided by operations and from short-term borrowings which are periodically refinanced through the sale of long-term debt or equity securities. In addition to its capital expenditures, the weather-sensitive nature of gas usage by NW Natural's residential and commercial customers influences the Company's financing requirements. Short-term liquidity is satisfied primarily through the sale of commercial paper, which is supported by commercial bank lines of credit (see Note 6).

The Company's long-term goal is to maintain a capital structure comprised of 45 to 50 percent common stock equity, 5 to 10 percent preferred and preference stock and 45 to 50 percent short-term and long-term debt. When additional capital is required, the Company issues debt or equity securities depending upon both the target capital structure and market conditions. The Company also uses these sources to meet long-term debt and preferred and preference stock redemption requirements (see Notes 3 and 5).



**Cash Flows**

**Operating Activities**

Continuing operations provided net cash of \$87.2 million in 2000 compared to \$108.2 million in 1999. An increase in cash from operations before working capital changes (\$14.8 million) was offset by higher working capital requirements (\$35.8 million). The increase in cash from continuing operations before working capital changes was primarily due to an increase in the balance of deferred income taxes and investment tax credits compared to a decrease in 1999 (\$9.7 million), a decrease in regulatory account net debit balances compared to an increase in 1999 (\$8.1 million) and higher net income from continuing operations (\$2.9 million), offset in part by lower depreciation, depletion and amortization (\$3.6 million) and a smaller decrease in deferred gas costs receivable (\$2.9 million). The increase in working capital requirements was due to changes in net balances of other current assets and liabilities (\$33.0 million) (see "Port of Portland Building," below), an increase in accounts receiv-



able compared to a decrease in 1999 (\$18.2 million) and an increase in accrued unbilled revenue compared to a decrease in 1999 (\$16.8 million), offset in part by a larger increase in accounts payable (\$25.6 million) and an increase in accrued interest and taxes compared to a decrease in 1999 (\$6.9 million).

Cash provided by continuing operations in 1999 was \$108.2 million compared to \$66.6 million in 1998. The 62 percent increase was due to increased cash from operations (\$6.8 million) and lower working capital requirements (\$34.8 million). The increase in cash from continuing operations before working capital changes compared to 1998 was primarily due to higher net income from continuing operations (\$18.0 million) and a greater reduction in deferred gas costs receivable (\$6.0 million), offset in part by non-cash investment losses in 1998 including the asset write-downs by Financial Corporation (\$16.1 million). The decrease in working capital requirements in 1999 was primarily due to an increase in accounts payable compared to a decrease in 1998 (\$19.6 million) and reductions in accrued unbilled revenue and accounts receivable compared to increases in 1998 (\$13.1 million and \$8.8 million, respectively). The decreases in working capital requirements were partially offset by a larger increase in inventories of gas, materials and supplies (\$8.8 million).

The Company has lease and purchase commitments relating to its operating activities which are financed with cash flows from operations (see Note 12).

#### *Port of Portland Building*

A large portion of the change in cash from continuing operations in 2000, compared to 1999, was due to cash flows relating to NW Natural's development contract for construction of a new headquarters building for the Port of Portland. The Port made construction progress payments totaling \$18.8 million in the second and third quarters of 1999. NW Natural recorded current liabilities in the amounts of these payments, pending closing on the sale of the building, with the effect of reducing working capital requirements in the first nine months of 1999. The Port made its final payment of \$1.2 million at closing on the sale of the building in the third quarter of 2000. At that time NW Natural reversed the balance of current liabilities relating to the building (\$19.3 million), with the effect of increasing working capital requirements by that amount in 2000.

Cash used in construction of the building was recorded in both periods as an investment in non-utility property (see "Investing Activities," below). NW Natural used a portion of the Port's progress payments to pay off the balance outstanding under a bank line of credit arranged for construction of the building (\$12.3 million), contributing to a reduction in short-term debt in 1999.

#### *Investing Activities*

Cash requirements for investing activities in 2000 totaled \$30.9 million, down from \$118.9 million in 1999. Cash requirements for utility construction totaled \$80.4 million, down \$28.7 million from 1999. The decrease in cash requirements for utility construction in 2000 resulted from lower expenditures for completion of another phase of the Company's gas storage expansion project (\$24.8 million); lower construction overhead (\$1.9 million); and reduced expenditures for computer hardware and software (\$1.6 million).

Cash requirements for NW Natural's capital program in 1999 totaled \$109.1 million, up \$29.1 million from 1998. The increase in cash requirements for utility construction in 1999 resulted from higher expen-

ditures for gas storage development (\$23.9 million); higher expenditures for computer hardware and software (\$2.3 million), communications technology (\$0.8 million) and large system improvement projects (\$1.3 million); and higher construction overhead (\$2.0 million).

NW Natural's construction expenditures are estimated to total \$75 million for 2001. Over the five-year period 2001 through 2005, these expenditures are estimated at between \$450 million and \$500 million. The level of capital expenditures over the next five years reflects projected high customer growth plus a major system reinforcement project and the development of additional underground gas storage facilities. An estimated 60 percent of the required funds is expected to be internally generated over the five-year period, with the remainder funded through a combination of long-term debt and equity securities with short-term debt providing liquidity and bridge financing.

Investments in non-utility property in 2000 included expenditures for completion of the portion of the Company's gas storage expansion project utilized for interstate storage (\$4.9 million) and final payments of \$2.6 million for the construction of the Port of Portland building. Total proceeds from the sale of the building in 2000 (\$20.0 million) were recognized as proceeds from sale of assets. Investments in non-utility property in 1999 were \$10.7 million, including \$9.7 million relating to the Port of Portland building.

There were no new capital investments in either of the Company's subsidiaries during 1999. Non-utility capital expenditures totaled \$19.8 million in 1998, including Canor's investments of \$13.5 million in Canadian exploration and production properties. NW Natural's non-utility expenditures in 1998 totaling \$6.3 million included expenditures relating to the Port of Portland building (\$6.0 million) and additions to existing facilities (\$0.3 million).

The sale of Canor provided net cash of \$34.8 million in 2000.

#### *Financing Activities*

Cash used in financing activities in 2000 totaled \$55 million, compared to cash provided by financing activities in 1999 of \$13 million. Factors contributing to the \$68 million difference were retirements of long-term debt of \$60 million in 2000 compared to \$10 million in 1999, and a reduction in short-term debt (\$38 million) in 2000 compared to an increase in short-term debt (\$13 million) in 1999, partially offset by an increase in long-term debt issued (\$35 million) in 2000.

NW Natural sold \$75 million of its Medium-Term Notes (MTNs) in 2000. It sold \$50 million of secured MTNs with a weighted average maturity of 28 years and a weighted average coupon rate of 7.75% and used the proceeds to redeem all \$50 million of the callable 9-3/4% Series of First Mortgage Bonds due 2015. The refunding will save the Company about \$0.8 million per year (net) in future interest expense. NW Natural used \$10 million from the remaining \$25 million of proceeds from sales of secured MTNs in 2000 to refund maturing long-term debt, and \$15 million to meet capital requirements for the Company's ongoing construction program or to reduce short-term debt.

In May 2000, the Company commenced a program to repurchase up to 2 million shares, or up to \$35 million in value, of NW Natural's common stock through a repurchase program to extend through May 2001. The purchases are made in the open market or through privately negotiated transactions. As of Dec. 31, 2000, the Company had repurchased 108,700 shares of common stock at a total cost of \$ 2.4 million.

Cash provided by financing activities in 1999 totaled \$13 million, down from \$32 million in 1998. The decrease was due to lower proceeds from sales of common stock (\$47 million), partially offset by



higher net proceeds from the issuance and retirement of long-term debt (\$13 million) and an increase in short-term debt (\$15 million). Proceeds from the sales of \$20 million of secured MTNs were used in part to refund maturing long-term debt (\$10 million).

#### **Stock Listing**

On July 27, 2000, the Company's Common Stock, \$3-1/6 par value, and the Common Share Purchase Rights appurtenant thereto, began trading on the New York Stock Exchange, Inc. under the symbol "NWN". The stock previously traded on the Nasdaq National Market with the symbol NWNNG.

#### **Ratios of Earnings to Fixed Charges**

For the years ended Dec. 31, 2000, 1999 and 1998, the Company's ratios of earnings to fixed charges, computed using the Securities and Exchange Commission method, were 3.14, 3.12 and 2.20, respectively. For this purpose, earnings consist of net income before taxes plus fixed charges. Fixed charges consist of interest on all indebtedness, the amortization of debt expense and discount or premium, and the estimated interest portion of rentals charged to income.

#### **► Contingent Liabilities**

##### **Environmental Matters**

Since 1993, NW Natural has recorded expenses of \$2.6 million for the costs of a continuing investigation of property it owns in Linnton, Oregon, that is the site of a former gas manufacturing plant that was closed in 1956 (the Linnton site). In 2000, NW Natural recorded an additional accrued liability of \$1.4 million representing the estimated costs of further investigation and interim remediation on this site. Correspondingly, the Company recorded a receivable for its estimated recovery of these additional costs from insurance or through future rates.

Also in 2000, NW Natural recorded expenses of \$0.4 million relating to an investigation of a site adjacent to the Linnton site that now is the location of a manufacturing plant (the Wacker site), and \$0.6 million relating to a segment of the Willamette River (the Portland Harbor) that includes the area adjacent to the Linnton site and the Wacker site. See Note 12.

#### **► Quantitative and Qualitative Disclosures about Market Risk**

The Company's primary market risk exposures associated with activities involving derivative financial instruments and other financial instruments are natural gas commodity price risk, foreign currency risk and interest rate risk. NW Natural uses derivative financial instruments as tools to mitigate certain of these market risks (see Note 11). NW Natural enters into such instruments for hedging purposes, not for trading purposes. Market risks associated with the derivative financial instruments are monitored by management personnel who do not directly enter into these contracts and by a committee of the Board of Directors.

##### **Physical and Financial Commodity, Foreign Currency and Interest Rate Transactions**

NW Natural enters into short-term and long-term natural gas purchase contracts with demand and commodity fixed-price and variable-price components, along with associated short-term and long-term natural gas transportation contracts. Many of the purchases made under these contracts are in Canadian dollars and NW Natural uses foreign currency forward contracts to hedge against foreign exchange rate fluctuations.

NW Natural historically has taken physical delivery of at least the minimum quantities specified in its natural gas purchase contracts. The contracts are subject to annual re-pricing, a process that is intended to reflect anticipated market price trends during the next year. NW Natural's PGA mechanism in Oregon provides for the recovery from customers of actual commodity costs in comparison with established benchmark costs, except that NW Natural absorbs 33 percent of the higher cost of gas sold, or retains 33 percent of the lower cost, in either case as compared to projections.

At Dec. 31, 2000, differences between notional values and fair values with respect to NW Natural's open positions in derivative financial instruments were not material to the Company's financial position or results of operations because of the treatment of these instruments in regulatory mechanisms relating to gas costs (see "Comparison of Gas Operations – Cost of Gas," above). However, to the degree that market risks exist due to potential adverse changes in commodity prices and foreign exchange rates in relation to these financial and physical contracts, the Company considers the risks to be:

##### **Commodity Price Risk**

The prices of natural gas commodity are subject to fluctuations due to unpredictable factors including weather, pipeline transportation congestion and other factors that affect short-term supply and demand. NW Natural uses natural gas commodity swap and cap agreements to convert certain long-term gas purchase contracts from floating prices to fixed prices. At Dec. 31, 2000 and 1999, the Company had notional amounts under natural gas commodity swap and cap agreements totaling \$157.8 million and \$57.7 million, respectively. As of Dec. 31, 2000, the Company had not entered into any financial derivative commodity agreements extending beyond Dec. 31, 2001. If all of the commodity swap and cap agreements had been settled on Dec. 31, 2000, NW Natural would have realized a gain of \$164.6 million.

##### **Foreign Currency Risk**

The costs of natural gas commodity and certain pipeline services purchased from Canadian suppliers are subject to changes in the value of Canadian currency in relation to U.S. currency. NW Natural uses foreign currency forward contracts to hedge against fluctuations in currency values with respect to its purchases of natural gas from suppliers in Canada. At Dec. 31, 2000 and 1999, the Company had notional amounts under foreign currency forward contracts of \$34.1 million and \$8.6 million, respectively. As of Dec. 31, 2000, the Company had not entered into any foreign currency forward contracts extending beyond Dec. 31, 2001. If all of the foreign currency forward contracts had been settled on Dec. 31, 2000, NW Natural would have realized a gain of \$0.4 million.

##### **Interest Rate Risk**

Interest rate risk relates to new debt financing needed to fund capital requirements, including maturing debt securities, and to the issuance of commercial paper. NW Natural manages interest rate risk through the issuance of fixed-rate debt with varying maturities and the refunding of debt through optional redemption when interest rates are favorable. NW Natural had no derivative financial instruments to hedge interest rates in place at Dec. 31, 2000.



## Management's Responsibility for Financial Statements

The financial statements in this report were prepared by management, which is responsible for their objectivity and integrity. The statements have been prepared in conformity with generally accepted accounting principles and, where appropriate, reflect informed estimates based on judgments of management. The responsibility of the Company's independent accountants is to render an independent report on the financial statements.

The Company's system of internal accounting controls is designed to provide reasonable assurance that assets are safeguarded and transactions are executed in accordance with management's authorizations, that transactions are recorded to permit the preparation of financial statements in conformity with orders of regulatory authorities and generally accepted accounting principles and that accountability for assets is maintained. The Company's system of internal controls has provided such reasonable assurances during the periods reported herein. The system includes written policies, procedures and guidelines, an organization structure that segregates duties and an established program for monitoring the system by internal auditors. In addition, the Company has prepared and annually distributes to its employees a Code of Ethics covering its policies for conducting business affairs in a lawful and ethical manner. Ongoing review programs are carried out to ensure compliance with these policies.

The Board of Directors, through its Audit Committee, oversees management's financial reporting responsibilities. The Committee meets regularly with management, the internal auditors, and representatives of the Company's independent accountants. Both internal auditors and external accountants have free and independent access to the Committee and the Board of Directors. No member of the Committee is an employee of the Company. The Committee reports the results of its activities to the full Board of Directors. Annually, the Committee recommends the nomination of independent accountants to the Board of Directors for shareholder approval.



Richard G. Reiten  
*President and Chief Executive Officer*



Bruce R. DeBolt  
*Senior Vice President, Finance, and Chief Financial Officer*

## Report of Independent Accountants

To the Board of Directors and  
Shareholders of NW Natural

In our opinion, the accompanying consolidated balance sheets and related consolidated statements of income, of earnings invested in the business, of cash flows and of capitalization present fairly, in all material respects, the financial position of Northwest Natural Gas Company (doing business as NW Natural) and its subsidiaries (the "Company") at December 31, 2000 and 1999, and the results of their operations and their cash flows for each of the three years in the period ended December 31, 2000, in conformity with accounting principles generally accepted in the United States of America. These financial statements are the responsibility of the Company's management; our responsibility is to express an opinion on these financial statements based on our audits. We conducted our audits of these statements in accordance with auditing standards generally accepted in the United States of America, which require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements, assessing the accounting principles used and significant estimates made by management, and evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for the opinion expressed above.

*PriceWaterhouseCoopers LLP*

**PRICEWATERHOUSECOOPERS** 

Portland, Oregon  
February 16, 2001



## Consolidated Statements of Income

<i>Thousands, except per share amounts (year ended December 31)</i>	2000	1999	1998
<b>Operating revenues:</b>			
Gross operating revenues	\$ 532,110	\$ 455,834	\$ 404,390
Cost of sales	<u>274,160</u>	<u>212,197</u>	<u>173,424</u>
Net operating revenues	257,950	243,637	230,966
<b>Operating expenses:</b>			
Operations and maintenance	77,817	73,209	78,226
Taxes other than income taxes	28,351	24,652	21,939
Depreciation, depletion and amortization	47,440	51,008	43,937
Total operating expenses	<u>153,608</u>	<u>148,869</u>	<u>144,102</u>
<b>Income from operations</b>	<u>104,342</u>	<u>94,768</u>	<u>86,864</u>
<b>Other income (expense)</b>	3,860	4,816	(13,723)
<b>Interest charges – net</b>	<u>33,561</u>	<u>30,052</u>	<u>31,586</u>
<b>Income before income taxes</b>	74,641	69,532	41,555
<b>Income taxes</b>	<u>26,829</u>	<u>24,591</u>	<u>14,604</u>
<b>Net income from continuing operations</b>	47,812	44,941	26,951
<b>Discontinued segment:</b>			
Income from discontinued segment – net of tax	–	355	350
Gain on sale of discontinued segment – net of tax	<u>2,412</u>	<u>–</u>	<u>–</u>
<b>Net income</b>	50,224	45,296	27,301
Redeemable preferred and preference stock dividend requirements	<u>2,456</u>	<u>2,515</u>	<u>2,577</u>
<b>Earnings applicable to common stock</b>	<u>\$ 47,768</u>	<u>\$ 42,781</u>	<u>\$ 24,724</u>
<b>Average common shares outstanding</b>	25,183	24,976	24,233
<b>Basic earnings per share of common stock:</b>			
From continuing operations	\$ 1.80	\$ 1.70	\$ 1.01
From discontinued segment	–	0.01	0.01
From gain on sale of discontinued segment	0.10	–	–
Total basic earnings per share	<u>\$ 1.90</u>	<u>\$ 1.71</u>	<u>\$ 1.02</u>
<b>Diluted earnings per share of common stock:</b>			
From continuing operations	\$ 1.79	\$ 1.69	\$ 1.01
From discontinued segment	–	0.01	0.01
From gain on sale of discontinued segment	0.09	–	–
Total diluted earnings per share	<u>\$ 1.88</u>	<u>\$ 1.70</u>	<u>\$ 1.02</u>
<b>Dividends per share of common stock</b>	<u>\$ 1.24</u>	<u>\$ 1.225</u>	<u>\$ 1.22</u>

See Notes to Consolidated Financial Statements.

## Consolidated Statements of Earnings Invested in the Business

<i>Thousands (year ended December 31)</i>	2000		1999		1998	
<b>Earnings invested in the business:</b>						
Balance at beginning of year	\$ 118,711		\$ 106,513		\$ 113,098	
Net income	50,224	\$ 50,224	45,296	\$ 45,296	27,301	\$ 27,301
Cash dividends paid:						
Redeemable preferred and preference stock	(2,466)		(2,525)		(2,587)	
Common stock	(31,198)		(30,569)		(29,615)	
Common stock repurchased	(1,080)		–		–	
Common stock expense	(2)		(4)		(1,684)	
Balance at end of year	<u>\$ 134,189</u>		<u>\$ 118,711</u>		<u>\$ 106,513</u>	
<b>Accumulated other comprehensive income (loss):</b>						
Balance at beginning of year	\$ (3,181)		\$ (2,460)		\$ (2,235)	
Other comprehensive income (loss) – net of tax:						
Foreign currency translation adjustments from discontinued segment	–	–	(721)	(721)	(225)	(225)
Recognition of foreign currency translation adjustment included in gain on sale of discontinued segment	3,181	3,181	–	–	–	–
Comprehensive income	<u>\$ 53,405</u>		<u>\$ 44,575</u>		<u>\$ 27,076</u>	
Balance at end of year	<u>\$ –</u>		<u>\$ (3,181)</u>		<u>\$ (2,460)</u>	

See Notes to Consolidated Financial Statements.

## Consolidated Balance Sheets

<i>Thousands (December 31)</i>	2000	1999
<b>Assets:</b>		
<b>Plant and property:</b>		
Utility plant	\$ 1,406,970	\$ 1,331,415
Less accumulated depreciation	478,138	436,386
Utility plant – net	<u>928,832</u>	<u>895,029</u>
Non-utility property	8,649	8,548
Less accumulated depreciation and depletion	3,451	7,654
Non-utility property – net	<u>5,198</u>	<u>894</u>
Total plant and property	<u>934,030</u>	<u>895,923</u>
<b>Investments and other</b>	<u>14,526</u>	<u>16,557</u>
<b>Current assets:</b>		
Cash and cash equivalents	11,283	10,013
Accounts receivable, less allowance for uncollectible accounts of \$1,867 in 2000 and \$1,669 in 1999	60,753	43,349
Accrued unbilled revenue	45,619	31,550
Inventories of gas, materials and supplies	46,883	33,919
Investment in discontinued segment	–	29,163
Property held for sale	–	16,712
Prepayments and other current assets	22,834	18,349
Total current assets	<u>187,372</u>	<u>183,055</u>
<b>Regulatory tax assets</b>	<u>49,515</u>	<u>51,060</u>
<b>Deferred gas costs receivable</b>	<u>16,973</u>	<u>20,950</u>
<b>Deferred debits and other</b>	<u>76,297</u>	<u>76,878</u>
<b>Total assets</b>	<u>\$ 1,278,713</u>	<u>\$ 1,244,423</u>
<b>Capitalization and liabilities:</b>		
<b>Capitalization (See Consolidated Statements of Capitalization):</b>		
Common stock	\$ 79,905	\$ 79,458
Premium on common stock	238,215	234,608
Earnings invested in the business	134,189	118,711
Accumulated other comprehensive income (loss)	–	(3,181)
Total common stock equity	<u>452,309</u>	<u>429,596</u>
Redeemable preference stock	25,000	25,000
Redeemable preferred stock	9,750	10,564
Long-term debt	400,790	396,379
Total capitalization	<u>887,849</u>	<u>861,539</u>
<b>Current liabilities:</b>		
Notes payable	56,263	94,149
Accounts payable	110,698	68,163
Long-term debt due within one year	20,000	10,000
Taxes accrued	8,066	4,101
Interest accrued	2,696	4,673
Other current and accrued liabilities	23,638	39,153
Total current liabilities	<u>221,361</u>	<u>220,239</u>
<b>Deferred investment tax credits</b>	<u>9,538</u>	<u>10,393</u>
<b>Deferred income taxes</b>	<u>141,656</u>	<u>136,150</u>
<b>Regulatory liabilities and other</b>	<u>18,309</u>	<u>16,102</u>
<b>Commitments and contingencies (see Note 12)</b>	–	–
<b>Total capitalization and liabilities</b>	<u>\$ 1,278,713</u>	<u>\$ 1,244,423</u>

See Notes to Consolidated Financial Statements.



## **1. Summary of Significant Accounting Policies**

### **Organization and Principles of Consolidation**

The consolidated financial statements include:

Regulated utility:

- Northwest Natural Gas Company (NW Natural)

Non-regulated subsidiary businesses:

- NNG Financial Corporation (Financial Corporation), a wholly-owned subsidiary
- Canor Energy, Ltd. (Canor), a majority-owned subsidiary reclassified as a discontinued segment in 1999 and sold in the first quarter of 2000

Together these businesses are referred to herein as the "Company." Intercompany accounts and transactions have been eliminated.

Investments in corporate joint ventures and partnerships in which the Company's ownership is 50 percent or less are accounted for by the equity method or the cost method (see Note 9).

Certain amounts from prior years have been reclassified to conform with the 2000 presentation. These reclassifications had no impact on prior year results of operations.

### **Use of Estimates**

The preparation of financial statements in conformity with generally accepted accounting principles requires management to make estimates and assumptions that affect reported amounts in the consolidated financial statements and accompanying notes. Changes in such estimates may affect amounts reported in future periods.

### **Industry Regulation**

The Company's principal business is the distribution of natural gas which is regulated by the Oregon Public Utility Commission (OPUC) and the Washington Utilities and Transportation Commission (WUTC). Accounting records and practices conform to the requirements and uniform system of accounts prescribed by these regulatory authorities in accordance with Statement of Financial Accounting Standards (SFAS) No. 71, "Accounting for the Effects of Certain Types of Regulation."

### **Utility Plant**

Utility plant for NW Natural is stated at cost (see table in Note 9). When a depreciable unit of property is retired, the cost is removed from both utility plant and the accumulated provision for depreciation together with the cost of removal, less any salvage. No gain or loss is recognized upon normal retirement.

NW Natural's provision for depreciation of utility property, which is computed under the straight-line, age-life method in accordance with independent engineering studies and as approved by regulatory authorities, approximated 3.5 percent of average depreciable plant in 2000, 4.0 percent in 1999 and 3.9 percent in 1998. The rate of depreciation approximates the economic life of the utility property.

Certain additions to utility plant include an allowance for funds used during construction (AFUDC), a non-cash item. AFUDC represents the cost of funds borrowed during construction and is calculated using actual commercial paper interest rates. If commercial paper borrowings are insufficient to finance the total work in progress, then a composite rate of interest on all debt, shown as a reduction to interest charges, and a return on equity funds, shown as other income, is used to compute

AFUDC. While cash is not realized currently from AFUDC, it is realized in the ratemaking process over the service life of the related property through increased revenues resulting from higher rate base and higher depreciation expense. NW Natural's weighted average AFUDC rates were 6.0 percent for both 2000 and 1999 and 5.5 percent for 1998.

### **Regulatory Accounts**

In applying SFAS No. 71, NW Natural has capitalized certain costs and benefits as regulatory assets and liabilities pursuant to orders of the state utility regulatory commissions, in general rate proceedings or expense deferral proceedings, in order to provide for recovery of revenues or expenses from, or refunds to, NW Natural's utility customers in future periods. At Dec. 31, 2000 and 1999, regulatory tax assets were \$49.5 million and \$51.1 million, respectively, while other regulatory assets and liabilities (net) were \$26.5 million and \$37.4 million, respectively.

If NW Natural should determine in the future that all or a portion of these regulatory assets and liabilities no longer meet the criteria for continued application of SFAS No. 71, then NW Natural would be required to write off that portion which it could not recover or refund.

### **Cash and Cash Equivalents**

For purposes of reporting cash flows, cash and cash equivalents include cash on hand and highly liquid temporary investments with expected maturity dates of three months or less.

### **Unbilled Revenue**

NW Natural accrues for gas deliveries not billed to customers from the meter reading dates to month end.

### **Inventories**

NW Natural's inventories of gas in storage and materials and supplies are stated at the lower of average cost or net realizable value.

### **Derivatives Policy**

NW Natural's "Derivatives Policy" allows up to a 100 percent hedge position in currency derivatives to match and lock in prices on individual Canadian natural gas purchase transactions; interest rate derivatives to match specific outstanding debt instruments maturing in less than five years; and natural gas commodity derivatives to lock in or cap prices on gas purchased for a future period under contracts with market-indexed pricing. The policy requires derivatives to be used within prescribed limitations and only in order to reduce price risk, so as to qualify for hedge accounting treatment. The Company's derivatives policy also has specific requirements in terms of counterparty credit-worthiness. Changes in market values of foreign currency contracts, and gains or losses on commodity derivative contracts, are deferred and recognized as adjustments to gas purchase costs upon concurrent settlement of these contracts (see Note 11).

In June 1998, the Financial Accounting Standards Board (FASB) issued SFAS No. 133, "Accounting for Derivative Instruments and Hedging Activities". This statement establishes accounting and reporting standards for derivative instruments, including certain derivative instruments embedded in other contracts and for hedge accounting. It requires that an entity recognize all derivatives as either assets or liabilities and measure those instruments at fair value. SFAS No. 133 requires that changes in the fair value of a derivative be recognized currently in earn-



ings, unless specific hedge accounting criteria are met. In June 2000, the FASB issued SFAS No. 138, "Accounting for Certain Derivative Instruments and Certain Hedging Activities", amending portions of SFAS No. 133. Among other things, SFAS No. 138 provides an exception for contracts intended for the normal purchase and normal sale of something other than a financial instrument or derivative instrument, for which physical delivery is probable. Some of the Company's gas supply and transportation contracts are derivative instruments as defined under SFAS No. 133. These standards will be effective for the Company beginning Jan. 1, 2001. Adoption of these new accounting standards, as of Jan. 1, 2001, is not expected to have a material effect on net income or financial position. The Company's primary derivatives hedging activities will be accounted for as cash flow hedges under SFAS No. 133. Due to the nature of the Company's hedging strategy, cash flow hedges are expected to be highly effective. Furthermore, because the results of the Company's hedging program are included in the regulated cost of gas, unrealized hedging gains or losses will be tracked in deferred gas costs rather than other comprehensive income.

### Segment Reporting

The Company principally operates in a single line of utility business consisting of distribution of natural gas. Other segments are primarily investments in alternative energy projects in California, the discontinued oil and gas exploration business, a Boeing 737-300 Aircraft which is leased to Continental Airlines and non-utility gas storage.

The following table presents information about reportable segments for 2000, 1999 and 1998. Inter-segment transactions are insignificant.

Thousands	Utility	Other	Total
<b>2000</b>			
Net operating revenues	\$ 257,361	\$ 589	\$ 257,950
Income from operations	103,902	440	104,342
Net income from continuing operations	47,519	293	47,812
Income from financial investments	-	103	103
Income from non-utility storage	-	102	102
Gain on sale of discontinued segment	-	2,412	2,412
Assets	1,260,013	18,700	1,278,713
<b>1999</b>			
Net operating revenues	\$ 243,269	\$ 368	\$ 243,637
Income from operations	94,744	24	94,768
Net income from continuing operations	44,323	618	44,941
Income (loss) from financial investments	-	(82)	(82)
Net income from discontinued segment	-	355	355
Assets	1,197,673	46,750	1,244,423
<b>1998</b>			
Net operating revenues	\$ 230,564	\$ 402	\$ 230,966
Income (loss) from operations	86,981	(117)	86,864
Net income (loss) from continuing operations	37,530	(10,579)	26,951
Income (loss) from financial investments	-	(17,192)	(17,192)
Net income from discontinued segment	-	350	350
Assets	1,120,706	71,030	1,191,736

### Income Taxes

NW Natural uses the balance sheet method of accounting for deferred income taxes. Deferred tax liabilities and assets reflect the expected future tax consequences, based on enacted tax law, of temporary differences between the tax basis of assets and liabilities and their financial reporting amounts (see Note 8).

Consistent with rate and accounting instructions of regulatory authorities, deferred income taxes are not currently collected for those temporary income tax differences where the prescribed regulatory accounting methods do not provide for current recovery in rates. NW Natural has recorded a regulatory tax asset for amounts pending recovery from customers in future rates. These amounts are primarily differences between the book and tax basis of net utility plant in service. This asset balance was \$49.5 million and \$51.1 million at Dec. 31, 2000 and 1999, respectively.

Investment tax credits on utility property additions and leveraged leases which reduce income taxes payable are deferred for financial statement purposes and are amortized over the life of the related property or lease. Investment and energy tax credits generated by non-regulated subsidiaries are amortized over a period of one to five years.

### Other Income (Expense)

Other income (expense) consists of interest income; gain on sale of assets; investment income (loss) of Financial Corporation, including write-downs due to asset impairments in 1998; and other miscellaneous income from merchandise sales, rents, an aircraft lease and other items.

### Earnings Per Share

Basic earnings per share are computed based on the weighted average number of common shares outstanding each year. Diluted earnings per share reflect the potential effects of the conversion of any outstanding convertible debentures and the exercise of outstanding stock options. Diluted earnings are calculated as follows:

Thousands, except per share amounts	2000	1999	1998
Earnings applicable to common stock	\$ 47,768	\$ 42,781	\$ 24,724
Debt interest less taxes	389	415	431
Net income available for diluted common stock	\$ 48,157	\$ 43,196	\$ 25,155
Average common shares outstanding	25,183	24,976	24,233
Stock options	13	21	41
Convertible debentures	442	471	489
Diluted average common shares outstanding	25,638	25,468	24,763
Diluted earnings per share of common stock	\$ 1.88	\$ 1.70	\$ 1.02

## 2. Consolidated Subsidiary Operations and Discontinued Segment

At Dec. 31, 2000, the Company had one active subsidiary, Financial Corporation, a wholly-owned subsidiary. One discontinued segment, Canor, a majority-owned subsidiary, was sold in January 2000.

### NNG Financial Corporation

Financial Corporation provided short-term financing for Canor and has several financial investments, including investments as a limited partner in solar electric generating systems, windpower electric generating projects, a hydroelectric facility and low-income housing projects. It also held interests in certain gas producing properties in the western United States (see Note 9). During the fourth quarter of 1998, Financial Corporation recorded asset impairment charges resulting from the application of an impairment model based on SFAS No. 121, "Accounting for the Impairment of Long-Lived Assets and for Long-Lived Assets to Be Disposed Of," to limited partnership investments in solar electric, wind-power electric and hydroelectric generation projects in California. The pre-tax write-down of \$16.6 million is included in other income (expense) in the consolidated statements of income.



**Canor Energy, Ltd.**

On Jan. 26, 2000, the Company sold its interest in Canor Energy Ltd. (Canor), an Alberta, Canada corporation engaged in natural gas and oil exploration, development and production in Alberta and Saskatchewan, Canada. The after-tax gain from the sale was \$2.4 million, net of Canadian tax on dividends (\$0.6 million) and U.S. income tax (\$2.8 million) and is shown as gain on sale of discontinued segment.

The consolidated financial statements of the Company have been restated to reflect Canor as a discontinued segment. Accordingly, Canor's operating revenues and expenses are included in net income from discontinued segment for 1999 and 1998, and its cash flows are reported as cash provided by discontinued segment for all periods presented. At Dec. 31, 1999, the Company's investment in Canor was \$29.2 million and is shown as investment in discontinued segment (in current assets).

Canor began operations in 1990 as a wholly-owned indirect subsidiary. In 1998, Canor acquired all of the capital stock of Southlake Energy, Inc. (Southlake), an indirect subsidiary of NIPSCO Industries, Inc. (NI), in exchange for shares of common stock representing a 34 percent interest in Canor. In January 2000, the Company acquired NI's interest in Canor and then sold 100 percent of Canor's stock.

During 1998, Canor recorded asset write-downs of \$4.2 million for its oil and gas production properties. Approximately half of the write-downs were due to impairment charges under SFAS No. 121 resulting from the impact of low oil prices on Canor's oil properties in Canada. The additional write-downs were due to determinations that some of Canor's oil and gas wells were no longer productive due to water encroachment.

**3. Capital Stock**

**Common Stock**

At Dec. 31, 2000, NW Natural had reserved 222,229 shares of common stock for issuance under the Employee Stock Purchase Plan, 153,577 shares under its Dividend Reinvestment and Stock Purchase Plan, 781,347 shares under its 1985 Stock Option Plan (see Note 4), 502,056 shares for future conversions of its 7-1/4% Convertible Debentures and 3,000,000 shares under the Shareholder Rights Plan.

**Redeemable Preference Stock**

The \$6.95 Series of Preference Stock is not redeemable prior to Dec. 31, 2002, but is subject to mandatory redemption on that date.

**Redeemable Preferred Stock**

The mandatory preferred stock redemption requirements aggregate \$0.8 million in 2001, 2002, 2003, 2004 and 2005. These requirements are non-cumulative. At any time NW Natural is in default on any of its obligations to make the prescribed sinking fund payments, it may not pay cash dividends on common stock or preference stock. Upon involuntary liquidation, all series of redeemable preferred stock are entitled to their stated value.

The remaining shares of the \$4.75 Series of redeemable preferred stock were redeemed on Sept. 1, 2000.

The redeemable preferred stock is callable at stipulated prices, plus accrued dividends. At Dec. 31, 2000, shares of the \$7.125 Series are redeemable on or after May 1, 2001 at a price of \$103.325 per share decreasing each year thereafter to \$100 per share on or after May 1, 2008.

**Stock Repurchase Program**

In May 2000, the Company commenced a program to repurchase up to 2 million shares, or up to \$35 million in value, of its common stock through a repurchase program to extend through May 2001. Purchases are made in the open market or through privately negotiated transactions. As of Dec. 31, 2000, the Company had repurchased 108,700 shares of common stock at a total cost of \$2.4 million.

The following table shows the changes in the number of shares of NW Natural's capital stock and the premium on common stock for the years 2000, 1999 and 1998:

	Common stock	Shares Redeemable preference stock	Redeemable preferred stock	Premium on common stock (thousands)
Balance, Dec. 31, 1997	22,864,328	250,000	124,285	\$ 182,998
Sales to the public	1,725,000	-	-	40,789
Sales to employees	17,637	-	-	366
Sales to stockholders	194,835	-	-	4,644
Exercise of stock options - net	22,946	-	-	377
Conversion of convertible debentures to common	28,375	-	-	475
Sinking fund purchases	-	-	(9,300)	1
Balance, Dec. 31, 1998	24,853,121	250,000	114,985	229,650
Sales to employees	13,619	-	-	295
Sales to stockholders	188,821	-	-	4,028
Exercise of stock options - net	18,355	-	-	334
Conversion of convertible debentures to common	18,022	-	-	301
Sinking fund purchases	-	-	(9,342)	-
Balance, Dec. 31, 1999	25,091,938	250,000	105,643	234,608
Sales to employees	14,696	-	-	278
Sales to stockholders	199,920	-	-	3,769
Exercise of stock options - net	5,990	-	-	81
Conversion of convertible debentures to common	29,580	-	-	495
Stock repurchase	(108,700)	-	-	(1,016)
Sinking fund purchases	-	-	(8,143)	-
<b>Balance, Dec. 31, 2000</b>	<b>25,233,424</b>	<b>250,000</b>	<b>97,500</b>	<b>\$ 238,215</b>

**4. Stock Option and Purchase Plans**

NW Natural's 1985 Stock Option Plan (Plan) authorizes an aggregate of 1,200,000 shares of common stock for issuance as incentive or non-statutory stock options. These options may be granted only to officers and key employees designated by a committee of NW Natural's Board of Directors.

All options are granted at an option price not less than the market value at the date of grant and may be exercised for a period not exceeding 10 years from the date of grant. Option holders may exchange shares they have owned for at least one year, at the current market price, to purchase shares at the option price.

Since the Plan's inception in 1985, options on 922,171 shares of common stock have been granted at prices ranging from \$11.75 to \$27.875 per share, and options on 79,296 shares have expired. NW Natural applies Accounting Principles Board (APB) Opinion No. 25, "Accounting for Stock Issued to Employees," and related interpretations in accounting for its stock-based compensation plans. Accordingly, no compensation cost has been recognized for either the Plan or the Employee Stock Purchase Plan. If compensation cost for awards under NW Natural's two stock-based



compensation plans had been determined based on the fair value at the grant dates using the method prescribed by SFAS No. 123, "Accounting for Stock-Based Compensation," net income and earnings per share would have been reduced to the pro forma amounts indicated below:

	2000	1999	1998
Earnings applicable to common stock (\$000):			
As reported	\$ 47,768	\$ 42,781	\$ 24,724
Pro forma	47,190	42,525	24,518
Basic earnings per share			
As reported	\$ 1.90	\$ 1.71	\$ 1.02
Pro forma	1.87	1.70	1.01
Diluted earnings per share			
As reported	\$ 1.88	\$ 1.70	\$ 1.02
Pro forma	1.86	1.69	1.01

For purposes of determining the pro forma expense, the fair value of each option is estimated on the grant date using the Black-Scholes option pricing model with the following weighted-average assumptions used for grants in 2000 and 1998, respectively: a dividend yield of 5.2 and 4.7 percent; expected volatility of 31.4 and 27 percent; risk-free interest rates of 5 and 5 percent; and expected lives of seven years. There were no new grants during 1999.

Information regarding the Plan is summarized as follows:

	Options		
	2000	1999	1998
Outstanding, beginning of year	290,212	320,032	227,733
\$16.59 Options:			
Exchanged by holder	-	-	(2,608)
Exercised	(88)	-	(2,264)
\$24.00 Options:			
Exchanged by holder	(6,305)	-	-
Exercised	(2,320)	(7,500)	(8,082)
Expired	(1,500)	-	-
\$20.17 Options:			
Exchanged by holder	(1,912)	(1,465)	-
Exercised	(582)	(5,755)	(247)
\$20.92 Options			
Exchanged by holder	-	-	(1,147)
Exercised	(3,000)	(5,100)	(12,353)
Expired	(3,000)	-	-
\$27.875 Options			
Granted	-	-	116,000
Expired	(6,000)	(10,000)	(1,000)
\$26.75 Options			
Granted	-	-	4,000
\$20.25 Options			
Granted	145,500	-	-
Expired	(2,500)	-	-
\$21.625 Options			
Granted	2,500	-	-
\$22.875 Options			
Granted	5,000	-	-
Outstanding, end of year	416,005	290,212	320,032
Available for grant, end of year	357,125	497,125	487,125

NW Natural's Employee Stock Purchase Plan, as amended in 2000, allows employees to purchase common stock at 85 percent of the average bid and ask market price on the subscription date which is set annually. Each eligible employee may purchase up to 900 shares through payroll deduction over a six to 12 month period.

## 5. Long-Term Debt

The issuance of first mortgage bonds, including secured medium-term notes, under the Mortgage and Deed of Trust (Mortgage) is limited by property, earnings and other provisions of the Mortgage. The Mortgage constitutes a first mortgage lien on substantially all of NW Natural's utility property.

The 7-1/4% Series of Convertible Debentures may be converted at any time into 50-1/4 shares of common stock for each \$1,000 face value (\$19.90 per share).

The maturities for the five years ending Dec. 31, 2005, on the long-term debt outstanding at Dec. 31, 2000 amount to: \$20 million in 2001, \$40 million in 2002, \$20 million in 2003, no maturity in 2004 and \$15 million in 2005.

## 6. Notes Payable and Lines of Credit

NW Natural has available through Sept. 30, 2001, committed lines of credit with four commercial banks totaling \$120 million which are used as backup lines for the commercial paper program. In addition, Financial Corporation has available through Sept. 30, 2001, committed lines of credit with two commercial banks totaling \$20 million. Financial Corporation's lines are supported by the guaranty of NW Natural.

Under the terms of these lines of credit, NW Natural and Financial Corporation pay commitment fees but are not required to maintain compensating bank balances. The interest rates on borrowings under these lines of credit are based on current market rates as negotiated. There were no outstanding balances on either the NW Natural or Financial Corporation lines of credit as of Dec. 31, 2000 or 1999.

The Company's primary source of short-term funds is commercial paper. Both NW Natural and Financial Corporation issue commercial paper under agency agreements with a commercial bank. The commercial paper is supported by the Company's lines of credit. Financial Corporation's commercial paper is supported by the guaranty of NW Natural. The amounts and average interest rates of commercial paper outstanding were as follows at Dec. 31:

Thousands	2000		1999	
	Amount	Rate	Amount	Rate
NW Natural	\$ 56,263	6.5%	\$ 94,149	5.8%
Financial Corporation	-	-	-	-
Total	\$ 56,263		\$ 94,149	



## Notes to Consolidated Financial Statements

### 7. Pension and Other Postretirement Benefits

NW Natural has two qualified non-contributory defined benefit plans covering all regular employees with more than one year of service, a non-qualified supplemental pension plan for eligible executive officers and other postretirement benefit plans for its employees. The following tables

provide a reconciliation of the changes in the plans' benefit obligations and fair value of assets over the three-year period ended Dec. 31, 2000 and a statement of the funded status as of Dec. 31, 2000, 1999 and 1998:

<i>Thousands</i>	Pension Benefits			Other Benefits		
	2000	1999	1998	2000	1999	1998
<b>Change in benefit obligation:</b>						
Benefit obligation at Jan. 1	\$136,198	\$ 142,619	\$ 127,879	\$ 11,902	\$ 15,717	\$ 12,332
Service cost	3,475	4,259	3,430	234	162	288
Interest cost	10,312	9,379	9,282	995	715	891
Expected benefits paid	(8,035)	(6,911)	(6,762)	(878)	(766)	(578)
Plan amendments	12	4,057	(2,948)	-	(1,583)	-
Net actuarial (gain) loss	4,840	(17,205)	11,738	1,816	(2,343)	2,784
Benefit obligation at Dec. 31	<u>146,802</u>	<u>136,198</u>	<u>142,619</u>	<u>14,069</u>	<u>11,902</u>	<u>15,717</u>
<b>Change in plan assets:</b>						
Fair value of plan assets at Jan. 1	193,427	175,554	158,118	-	-	-
Actual return on plan assets	4,351	24,104	23,532	-	-	-
Employer contributions	708	680	666	878	766	578
Benefits paid	(8,035)	(6,911)	(6,762)	(878)	(766)	(578)
Fair value of plan assets at Dec. 31	<u>190,451</u>	<u>193,427</u>	<u>175,554</u>	<u>-</u>	<u>-</u>	<u>-</u>
<b>Funded status:</b>						
Funded status at Dec. 31	43,649	57,229	32,935	(14,069)	(11,902)	(15,717)
Unrecognized transition obligation	701	1,035	1,072	5,232	5,667	7,896
Unrecognized prior service cost	8,022	9,184	5,601	191	210	-
Unrecognized net actuarial (gain) loss	(47,661)	(67,656)	(40,936)	1,061	(755)	1,553
Net amount recognized	<u>\$ 4,711</u>	<u>\$ (208)</u>	<u>\$ (1,328)</u>	<u>\$ (7,585)</u>	<u>\$ (6,780)</u>	<u>\$ (6,268)</u>
<b>Amounts recognized in the consolidated balance sheets:</b>						
Prepaid benefit cost	\$ 13,150	\$ 7,712	\$ 5,900	\$ -	\$ -	\$ -
Accrued benefit liability	(8,932)	(8,578)	(8,902)	(7,585)	(6,780)	(6,268)
Intangible asset	493	658	1,674	-	-	-
Net amount recognized	<u>\$ 4,711</u>	<u>\$ (208)</u>	<u>\$ (1,328)</u>	<u>\$ (7,585)</u>	<u>\$ (6,780)</u>	<u>\$ (6,268)</u>

The Company's non-qualified supplemental pension plan was the only pension plan with an accumulated benefit obligation in excess of plan assets. The plan's accumulated benefit obligation was \$10.4 million, \$9.8 million and \$11.1 million at Dec. 31, 2000, 1999 and 1998, respectively. There were no plan assets in the non-qualified plan due to the nature of the plan, but the Company funds its obligation with trust-owned life insurance. The amount of the life insurance coverage is designed to provide sufficient returns to recover all costs of the plan. The

Company's plans for postretirement benefits other than pensions also have no plan assets. The aggregate benefit obligation for those plans is \$14.1 million, \$11.9 million and \$15.7 million at Dec. 31, 2000, 1999 and 1998, respectively.

The following tables provide the components of net periodic cost (benefit) for the plans for the years ended Dec. 31, 2000, 1999 and 1998 and the assumptions used in the measurement of these costs and the Company's benefit obligations:

<i>Thousands</i>	Pension Benefits			Other Benefits		
	2000	1999	1998	2000	1999	1998
Service cost	\$ 3,475	\$ 4,259	\$ 3,430	\$ 234	\$ 162	\$ 288
Interest cost	10,312	9,379	9,282	995	715	890
Expected return on plan assets	(16,056)	(15,570)	(13,926)	-	-	-
Amortization of transition (asset) obligation	334	37	(45)	436	436	564
Amortization of prior service cost	1,174	827	1,481	19	-	-
Recognized actuarial (gain) loss	(3,449)	(781)	(969)	-	(35)	2
Special termination benefits	-	1,410	-	-	-	-
Net periodic cost (benefit)	<u>\$ (4,210)</u>	<u>\$ (439)</u>	<u>\$ (747)</u>	<u>\$ 1,684</u>	<u>\$ 1,278</u>	<u>\$ 1,744</u>
<b>Weighted average assumptions as of Dec. 31:</b>						
Discount rate	7.50%	7.75%	6.75%	7.50%	7.75%	6.75%
Expected return on plan assets	9.00%	10.00%	10.00%	n/a	n/a	n/a
Rate of compensation increase	4.25%-5.0%	4.25%-5.0%	4.50%	n/a	n/a	n/a



The assumed health care cost trend rate used in measuring the accumulated postretirement benefit obligation was 9.0 percent during 2000. The rate was assumed to decrease gradually each year to a rate of 4.5 percent for 2005 and remain at that level thereafter.

Assumed health care cost trend rates have a significant effect on the amounts reported for the health care plans. A one percent change in assumed health care cost trend rates would have the following effects:

Thousands	1% Increase	1% Decrease
Effect on the total service and interest cost components of net periodic postretirement health care benefit cost	\$ 50	\$ (48)
Effect on the health care component of the accumulated postretirement benefit obligation	\$ 459	\$ (460)

NW Natural also has a qualified defined benefit contribution plan under Internal Revenue Code Section 401(k) and a non-qualified deferred compensation plan for eligible employees. These plans are designed to enhance the retirement program of employees and to assist them in strengthening their financial security by providing an incentive to save and invest regularly. NW Natural's contributions to these plans were \$1.3 million in 2000, \$1.0 million in 1999 and \$1.1 million in 1998.

## 8. Income Taxes

A reconciliation between income taxes calculated at the statutory federal tax rate and the tax provision reflected in the financial statements is as follows:

Thousands	2000	1999	1998
Computed income taxes based on statutory federal income tax rate of 35%	\$ 26,124	\$ 24,336	\$ 14,544
Increase (reduction) in taxes resulting from:			
Difference between book and tax depreciation	222	222	310
Current state income tax, net of federal tax benefit	2,622	2,450	1,976
Federal income tax credits	(357)	(357)	(574)
Amortization of investment tax credits	(855)	(855)	(700)
Removal costs	(480)	(485)	(424)
Reversal of amounts provided in prior years	(25)	(655)	(361)
Gains on Company-owned life insurance	(611)	(703)	(504)
Other - net	189	638	337
Total provision for income taxes	\$ 26,829	\$ 24,591	\$ 14,604

The provision for income taxes consists of the following:

Thousands	2000	1999	1998
Income taxes currently payable:			
Federal	\$ 18,228	\$ 20,518	\$ 13,004
State	2,444	3,288	1,790
Total	20,672	23,806	14,794
Deferred taxes - net:			
Federal	7,495	1,283	(876)
State	(483)	357	1,386
Total	7,012	1,640	510
Investment and energy tax credits restored:			
From utility operations	(800)	(800)	(645)
From subsidiary operations	(55)	(55)	(55)
Total	(855)	(855)	(700)
Total provision for income taxes	\$ 26,829	\$ 24,591	\$ 14,604
Percentage of pretax income	35.9%	35.4%	35.1%

Deferred tax assets and liabilities are comprised of the following:

Thousands	2000	1999	1998
Deferred tax liabilities:			
Property, plant and equipment	\$ 123,559	\$ 114,664	\$ 112,495
Regulatory asset	14,349	15,894	21,388
Total	137,908	130,558	133,883
Deferred tax assets:			
Regulatory liability	(9,558)	(10,784)	(14,684)
Other deferred assets	5,810	5,192	8,257
Total	(3,748)	(5,592)	(6,427)
Net accumulated deferred income tax liability	\$ 141,656	\$ 136,150	\$ 140,310

## 9. Property and Investments

The following table sets forth the major classifications of NW Natural's utility plant and accumulated provision for depreciation at Dec. 31:

Thousands	2000		1999	
	Amount	Average Depreciation Rate	Amount	Average Depreciation Rate
Transmission and distribution	\$1,144,107	3.3%	\$ 1,086,891	3.3%
Storage	103,506	2.7%	98,750	2.6%
General	82,723	6.3%	80,509	4.7%
Intangible and other	46,344	5.5%	45,173	21.1%
Utility plant in service	1,376,680	3.5%	1,311,323	4.0%
Gas stored long-term	11,301		11,301	
Work in progress	18,989		8,791	
Total utility plant	1,406,970		1,331,415	
Less accumulated depreciation	478,138		436,386	
Utility plant - net	\$ 928,832		\$ 895,029	

The following table summarizes the Company's investments in non-utility plant at Dec. 31:

Thousands	2000	1999
Storage	\$ 4,929	\$ -
Dock, land and oil station	3,713	3,565
Other	7	4,983
Total non-utility plant	8,649	8,548
Less accumulated depreciation	3,451	7,654
Non-utility plant - net	\$ 5,198	\$ 894

Investments in Canadian oil and gas properties and the Port of Portland building were included in current assets at Dec. 31, 1999. The Canadian oil and gas properties were included in investment in a discontinued segment (see Note 2) and the Port of Portland building was classified as property held for sale. Both were sold in 2000. Also in 2000, Financial Corporation sold domestic oil and gas properties that had been included among other non-utility plant as of Dec. 31, 1999 (\$4.9 million).

The following table summarizes the Company's investments in affiliated entities accounted for under the equity and cost methods, and its investment in an aircraft leveraged lease at Dec. 31:

Thousands	2000	1999
Electric generation	\$ 4,898	\$ 5,165
Aircraft leveraged lease	7,479	7,925
Gas pipeline and other	1,776	2,919
Long-term notes receivable	373	548
Total investments and other	\$ 14,526	\$ 16,557

Financial Corporation has ownership interests ranging from 4.0 to 5.3 percent in solar electric generation plants located near Barstow, California. Power generated by these plants is sold to Southern California Edison Company under long-term contracts.



Financial Corporation also has ownership interests ranging from 8.5 to 41 percent in U.S. Windpower Partners electric generation projects located near Livermore and Palm Springs, California. The wind-generated power is sold to Pacific Gas and Electric Company and Southern California Edison Company under long-term contracts.

In 1987, the Company invested in a Boeing 737-300 aircraft which was leased to Continental Airlines for 20 years under a leveraged lease agreement.

### 10. Fair Value of Financial Instruments

The estimated fair values of NW Natural's financial instruments have been determined using available market information and appropriate valuation methodologies. The following is a list of financial instruments whose carrying values are sensitive to market conditions:

<i>Thousands</i>	— December 31, 2000 —		— December 31, 1999 —	
	Carrying Amount	Estimated Fair Value	Carrying Amount	Estimated Fair Value
Redeemable preference stock	\$ 25,000	\$ 22,750	\$ 25,000	\$ 23,500
Redeemable preferred stock	\$ 9,750	\$ 9,750	\$ 10,564	\$ 9,618
Long-term debt including amount due within one year	\$ 420,790	\$ 460,929	\$ 406,379	\$ 415,412

Fair value of the redeemable preference stock and the redeemable preferred stock was estimated using quoted market prices. Interest rates that are currently available to the Company for issuance of debt with similar terms and remaining maturities were used to estimate fair value for debt issues.

The carrying amount of long-term notes receivable approximates fair value at Dec. 31, 2000 and 1999.

### 11. Use of Financial Derivatives

In connection with its Canadian gas purchase commitments, NW Natural uses foreign currency forward contracts to hedge against fluctuations in currency values. The forward contracts have terms ranging up to 12 months. Such contracts are purchased in an amount up to 100 percent of estimated daily requirements for commodity gas purchased in Canadian currency from gas suppliers in Canada. The notional amount of these contracts at Dec. 31, 2000 and 1999, totaled \$34.1 million and \$8.6 million, respectively, and, if settled on those dates, NW Natural would have realized a gain of \$0.4 million in 2000 and a gain of \$0.2 million in 1999.

As part of an overall strategy to maintain an acceptable level of exposure to the risk of gas price fluctuation, NW Natural has developed a targeted mix of fixed-rate and cap-protected natural gas commodity contracts versus variable rate contracts. To efficiently manage this mix, NW Natural utilizes natural gas commodity swap and cap agreements to effectively convert the gas purchase commitments into an acceptable fixed-rate and capped rate mix. NW Natural uses natural gas commodity swap agreements to convert certain long-term gas purchase contracts from floating prices to fixed prices. Under the commodity swap agreements, NW Natural receives or makes payments based on the differential between a specified price and the actual price of natural gas as measured by price indices relating to the market area where it purchases the gas. The swap agreements have terms ranging up to 12 months. At Dec. 31, 2000 and 1999, the Company had swap agreements with broker-dealers to cover notional quantities of 30.9 million and 24.1 million MMBtu, respectively. Under the swap agreements in effect at Dec. 31,

2000 and 1999, the Company paid fixed prices averaging \$3.457 and \$2.396 per MMBtu, respectively. In return, it received a price that varied from month to month with market conditions. The notional amounts of the swap agreements at Dec. 31, 2000 and 1999 were \$106.7 million and \$57.7 million, respectively, and, if settled on those dates, NW Natural would have realized a gain of \$122.6 million and a loss of \$6.9 million, respectively. At Dec. 31, 2000, the Company had cap agreements with broker-dealers to cover notional quantities of 13.2 million MMBtu. Under the cap agreements in effect at Dec. 31, 2000, the Company paid fixed prices averaging \$3.862 per MMBtu. The notional amounts of the cap agreements at Dec. 31, 2000 were \$51.1 million, and, if settled on those dates, NW Natural would have realized a gain of \$42.0 million. (See Note 1 for a summary of accounting for gains and losses.)

Canor, a discontinued segment, also managed its commodity price risk through the use of gas and oil commodity swaps and collars. At Dec. 31, 1999, the notional amount of these contracts was \$4.3 million and, if settled, Canor would have realized a loss of \$0.8 million.

### 12. Commitments and Contingencies

#### Lease Commitments

The Company leases land, buildings and equipment under agreements that expire in various years through 2006. Rental expense under operating leases was \$4.9 million, \$5.2 million and \$6.0 million for the years ended Dec. 31, 2000, 1999 and 1998, respectively. The table below reflects the future minimum lease payments due under non-cancelable leases at Dec. 31, 2000. Such payments total \$19.6 million for operating leases. The net present value of payments on capital leases was \$1.6 million after deducting imputed interest of \$0.1 million. These commitments principally relate to the lease of the Company's office headquarters, underground gas storage facilities, vehicles and computer systems.

<i>Millions</i>	2001	2002	2003	2004	2005	Later years
Operating leases	\$ 4.3	\$ 4.0	\$ 2.7	\$ 2.3	\$ 2.3	\$ 4.0
Capital leases	\$ 0.8	\$ 0.8	\$ 0.1	\$ -	\$ -	\$ -
Minimum lease payments	\$ 5.1	\$ 4.8	\$ 2.8	\$ 2.3	\$ 2.3	\$ 4.0

#### Purchase Commitments

NW Natural has signed agreements providing for the availability of firm pipeline capacity under which it must make fixed monthly payments for contracted capacity. The pricing component of the monthly payment is established, subject to change, by U.S. or Canadian regulatory bodies. In addition, NW Natural has entered into long-term agreements to release firm pipeline capacity. The aggregate amounts of these agreements were as follows at Dec. 31, 2000:

<i>Thousands</i>	Capacity Purchase Agreements	Capacity Release Agreements
2001	\$ 84,493	\$ 3,840
2002	80,943	3,840
2003	75,919	3,840
2004	50,458	3,840
2005	48,153	3,840
2006 through 2023	313,144	18,537
Total	653,110	37,737
Less: Amount representing interest	174,530	9,322
Total at present value	<u>\$ 478,580</u>	<u>\$ 28,415</u>



NW Natural's total payments of fixed charges under capacity purchase agreements in 2000, 1999 and 1998 were \$81.5 million, \$78.2 million and \$76.2 million, respectively. Included in the amounts for 2000, 1999 and 1998 were reductions for capacity release sales totaling \$3.8 million, \$3.8 million and \$3.9 million, respectively. In addition, NW Natural is required to pay per-unit charges based on the actual quantities shipped under the agreements. In certain of NW Natural's take-or-pay purchase commitments, annual deficiencies may be offset by prepayments subject to recovery over a longer term if future purchases exceed the minimum annual requirements.

#### **Environmental Matters**

The Company owns property in Linnton, Oregon that is the site of a former gas manufacturing plant that was closed in 1956 (the Linnton site). The Linnton site has been under investigation by the Company in recent years under program oversight by the Oregon Department of Environmental Quality (ODEQ). Since 1993, NW Natural has recorded expenses of \$2.6 million for its costs of the voluntary investigation including consultants' fees, ODEQ oversight reimbursement and legal fees. In 2000, NW Natural recorded an additional accrued liability and corresponding receivable of \$1.4 million representing the estimated costs of further investigation and interim remediation on this site. The Company expects that it will be able to recover its costs of further investigation and any remediation for which it may be responsible with respect to the Linnton site from insurance or through future rates.

The Company previously owned property adjacent to the Linnton site that now is the location of a manufacturing plant owned by Wacker Siltronic Corporation (the Wacker site). In October 2000, the ODEQ issued an order requiring Wacker and NW Natural to determine the nature and extent of releases of hazardous substances to Willamette River sediments from the Wacker site. The Company recorded a liability of \$0.4 million for the estimated costs of the investigation and initial remediation on the Wacker site.

In 1998, the ODEQ and the U.S. Environmental Protection Agency (EPA) completed a study of sediments in a 5.5 mile segment of the Willamette River (the Portland Harbor) that includes the area adjacent to the Linnton site and the Wacker site. In 2000, the EPA listed the Portland Harbor as a Superfund site and notified the Company that it is a potentially responsible party. In 2000, NW Natural recorded an expense of \$0.6 million for its estimated share of the costs of remedial investigation of the Portland Harbor. Although available information is insufficient to determine either the total amount of liability for investigation and remediation of the Portland Harbor or the Company's share of that liability, this amount is an estimate of NW Natural's share of the lower end of a range of probable liability.

NW Natural expects that its costs of investigation and any remediation for which it may be responsible with respect to the Wacker site and the Portland Harbor Superfund site should be recoverable, in large part, from insurance. In the event these costs are not recovered from insurance, NW Natural will seek recovery through future rates.

#### **Litigation**

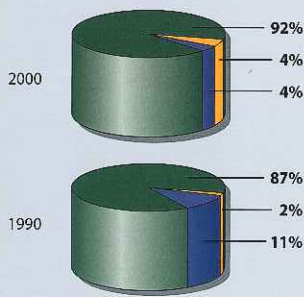
In July 1995, a jury in an Oregon state court returned a verdict against NW Natural in the case of Northwest Natural Gas Company v. Chase Gardens, Inc. (Lane County Circuit Court Case No. 16-91-01370). In 1996, after the Oregon Court of Appeals affirmed the trial court decision, NW Natural recorded charges to operating expense and interest expense equivalent to 15 cents per share as a reserve against payment of the judgment, related costs and post-judgment interest. In May 1999, the Oregon Supreme Court reversed the Court of Appeals' decision, overturned the trial court verdict on the larger of the two claims in the case and remanded the case to the Court of Appeals for further proceedings on NW Natural's appeal of the judgment on the smaller (contract) claims in the case. Reflecting the Supreme Court's decision, NW Natural reduced the litigation reserve by a total of \$3.9 million in the second quarter of 1999, reducing operating expense by \$3.0 million and interest expense by \$0.9 million. The Court of Appeals subsequently issued an opinion in favor of NW Natural on the contract claims. Based on that decision, NW Natural reversed the remaining reserve balance of \$2.7 million at Dec. 31, 1999, further reducing operating expense for 1999 by \$1.9 million and interest expense by \$0.8 million. The Oregon Supreme Court initially declined to review the Court of Appeals' decision in favor of NW Natural on the contract claims, including a verdict against the Company in the amount of \$2.0 million plus interest. On reconsideration, however, in December 2000 the Supreme Court agreed to review the Court of Appeals' decision on the contract claims and is expected to issue an opinion in 2001.

The Company is party to certain other legal actions in which claimants seek material amounts. Although it is impossible to predict the outcome with certainty, based upon the opinions of legal counsel, management does not expect disposition of these matters to have a materially adverse effect on the Company's financial position, results of operations or cash flows.



# Comparative Consolidated Income Statements

## Utility gas revenues (BY CUSTOMER CLASS)

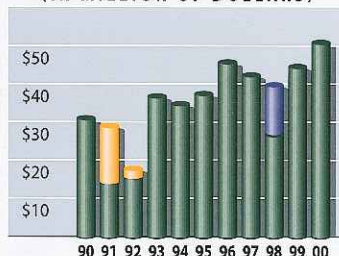


■ RESIDENTIAL, COMMERCIAL AND INDUSTRIAL FIRM  
■ INDUSTRIAL INTERRUPTIBLE  
■ TRANSPORTATION

Revenues from residential, commercial and industrial firm sales customers have consistently exceeded 87 percent of total gas revenues since 1990.

## Net income

(IN MILLION OF DOLLARS)



■ NET INCOME  
■ REDUCTION OF \$2.8 MILLION NET INCOME IN 1992 AND \$14.4 MILLION NET INCOME IN 1991 FROM THE LOSS ON AGRICO COGENERATION CORPORATION  
■ REDUCTION OF \$10.8 MILLION NET INCOME FOR FINANCIAL CORPORATION AND \$1.7 MILLION FOR CANOR FROM ASSET IMPAIRMENT CHARGES IN 1998

The Company earned \$50.2 million in net income in 2000, the highest in the Company's history.

Thousands, except per share amounts (year ended December 31)

	2000	1999 <sup>†</sup>
<b>Operating revenues:</b>		
Gross operating revenues*	\$ 532,110	\$ 455,834
Cost of sales*	<u>274,160</u>	<u>212,197</u>
Net operating revenues*	257,950	243,637
<b>Operating expenses:</b>		
Operations and maintenance	77,817	73,209
Taxes other than income taxes	28,351	24,652
Depreciation, depletion and amortization	47,440	51,008
Loss on cogeneration facility	-	-
Total operating expenses	<u>153,608</u>	<u>148,869</u>
<b>Income from operations*</b>	<b>104,342</b>	<b>94,768</b>
<b>Other income (expense)*</b>	<b>3,860</b>	<b>4,816</b>
<b>Interest charges – net</b>	<b>33,561</b>	<b>30,052</b>
<b>Income before income taxes</b>	<b>74,641</b>	<b>69,532</b>
<b>Income taxes</b>	<b>26,829</b>	<b>24,591</b>
<b>Net income from continuing operations</b>	<b>47,812</b>	<b>44,941</b>
<b>Discontinued segment:</b>		
Income from discontinued segment – net of tax	-	355
Gain on sale of discontinued segment – net of tax	<u>2,412</u>	<u>-</u>
<b>Net income</b>	<b>50,224</b>	<b>45,296</b>
Redeemable preferred and preference stock dividend requirements	<u>2,456</u>	<u>2,515</u>
<b>Earnings applicable to common stock</b>	<b>\$ 47,768</b>	<b>\$ 42,781</b>
<b>Average common shares outstanding</b>	<b>25,183</b>	<b>24,976</b>
<b>Basic earnings per share of common stock</b>		
From continuing operations	\$ 1.80	\$ 1.70
From discontinued segment	-	0.01
From gain on sale of discontinued segment	<u>0.10</u>	<u>-</u>
Total basic earnings per share	<u>\$ 1.90</u>	<u>\$ 1.71</u>
<b>Diluted earnings per share of common stock</b>		
From continuing operations	\$ 1.79	\$ 1.69
From discontinued segment	-	0.01
From gain on sale of discontinued segment	<u>0.09</u>	<u>-</u>
Total diluted earnings per share	<u>\$ 1.88</u>	<u>\$ 1.70</u>
<b>Dividends per share of common stock</b>	<b>\$ 1.24</b>	<b>\$ 1.225</b>

See Notes to Consolidated Financial Statements

\* Interest on deferred regulatory accounts for years prior to 1998 was reclassified from gross operating revenues or cost of sales to other income (expense).

<sup>†</sup> Net income from discontinued segment prior to 1996 is not available.

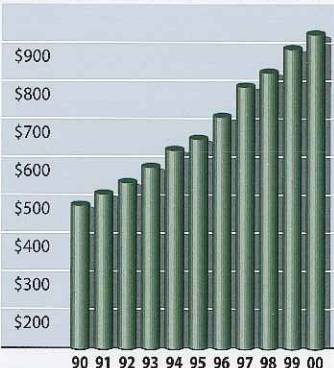
	1998†	1997†	1996†	1995	1994	1993	1992	1991	1990
\$	404,390	\$ 351,709	\$ 370,826	\$ 355,627	\$ 367,861	\$ 358,452	\$ 274,397	\$ 295,933	\$ 296,281
	<u>173,424</u>	<u>130,599</u>	<u>141,842</u>	<u>142,025</u>	<u>162,199</u>	<u>138,751</u>	<u>101,672</u>	<u>110,294</u>	<u>113,984</u>
	230,966	221,110	228,984	213,602	205,662	219,701	172,725	185,639	182,297
	78,226	73,864	76,204	72,018	70,881	70,723	64,249	65,529	64,746
	21,939	19,952	21,597	24,181	24,263	25,561	20,865	21,104	21,288
	43,937	39,051	37,971	40,594	38,058	39,683	33,035	33,623	27,967
	-	-	-	-	-	-	4,575	23,200	-
	<u>144,102</u>	<u>132,867</u>	<u>135,772</u>	<u>136,793</u>	<u>133,202</u>	<u>135,967</u>	<u>122,724</u>	<u>143,456</u>	<u>114,001</u>
	86,864	88,243	93,212	76,809	72,460	83,734	50,001	42,183	68,296
	(13,723)	4,138	6,891	9,055	8,393	1,116	(542)	1,106	390
	<u>31,586</u>	<u>28,469</u>	<u>26,711</u>	<u>25,679</u>	<u>24,919</u>	<u>25,107</u>	<u>26,733</u>	<u>26,591</u>	<u>24,333</u>
	41,555	63,912	73,392	60,185	55,934	59,743	22,726	16,698	44,353
	<u>14,604</u>	<u>21,034</u>	<u>27,118</u>	<u>22,120</u>	<u>20,473</u>	<u>22,096</u>	<u>6,951</u>	<u>2,321</u>	<u>13,629</u>
	26,951	42,878	46,274	38,065	35,461	37,647	15,775	14,377	30,724
	350	181	519	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-
	<u>27,301</u>	<u>43,059</u>	<u>46,793</u>	<u>38,065</u>	<u>35,461</u>	<u>37,647</u>	<u>15,775</u>	<u>14,377</u>	<u>30,724</u>
	2,577	2,646	2,723	2,806	2,983	3,488	2,560	2,593	2,729
\$	<u>24,724</u>	<u>\$ 40,413</u>	<u>\$ 44,070</u>	<u>\$ 35,259</u>	<u>\$ 32,478</u>	<u>\$ 34,159</u>	<u>\$ 13,215</u>	<u>\$ 11,784</u>	<u>\$ 27,995</u>
	24,233	22,698	22,391	21,817	19,943	19,611	17,864	17,547	17,283
\$	1.01	\$ 1.77	\$ 1.95	\$ 1.62	\$ 1.63	\$ 1.74	\$ 0.74	\$ 0.67	\$ 1.62
	0.01	0.01	0.02	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-
\$	<u>1.02</u>	<u>\$ 1.78</u>	<u>\$ 1.97</u>	<u>\$ 1.62</u>	<u>\$ 1.63</u>	<u>\$ 1.74</u>	<u>\$ 0.74</u>	<u>\$ 0.67</u>	<u>\$ 1.62</u>
\$	1.01	\$ 1.75	\$ 1.92	\$ 1.60	\$ 1.61	\$ 1.72	\$ 0.74	\$ 0.67	\$ 1.59
	0.01	0.01	0.02	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-
\$	<u>1.02</u>	<u>\$ 1.76</u>	<u>\$ 1.94</u>	<u>\$ 1.60</u>	<u>\$ 1.61</u>	<u>\$ 1.72</u>	<u>\$ 0.74</u>	<u>\$ 0.67</u>	<u>\$ 1.59</u>
\$	<u>1.22</u>	<u>\$ 1.205</u>	<u>\$ 1.20</u>	<u>\$ 1.18</u>	<u>\$ 1.173</u>	<u>\$ 1.167</u>	<u>\$ 1.147</u>	<u>\$ 1.127</u>	<u>\$ 1.10</u>



## Comparative Consolidated Balance Sheets

### Net utility plant

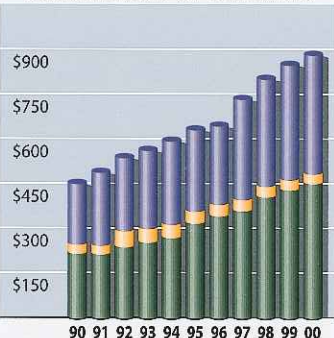
(IN MILLIONS OF DOLLARS)



Utility plant continued to increase in 2000 as a result of customer growth and investments in technology and gas storage.

### Capitalization

(IN MILLIONS OF DOLLARS)



■ COMMON EQUITY  
■ PREFERRED AND PREFERENCE STOCK  
■ LONG-TERM DEBT

\$31.2 million in cash dividends were paid to common shareholders in 2000, \$75 million in Medium-Term Notes were issued and \$60 million in Medium-Term Notes were retired.

Thousands of dollars (December 31)

2000

1999

#### Assets:

##### Plant and property:

Utility plant	\$ 1,406,970	\$ 1,331,415
Less accumulated depreciation	478,138	436,386
Utility plant – net	<u>928,832</u>	<u>895,029</u>
Non-utility property	8,649	8,548
Less accumulated depreciation and depletion	3,451	7,654
Non-utility property – net	<u>5,198</u>	<u>894</u>
Total plant and property	<u>934,030</u>	<u>895,923</u>

##### Investments and other

14,526      16,557

#### Current assets:

Cash and cash equivalents	11,283	10,013
Accounts receivable – net	60,753	43,349
Accrued unbilled revenue	45,619	31,550
Inventories of gas, materials and supplies	46,883	33,919
Investment in discontinued segment	–	29,163
Property held for sale	–	16,712
Prepayments and other current assets	<u>22,834</u>	<u>18,349</u>
Total current assets	<u>187,372</u>	<u>183,055</u>

#### Regulatory tax assets

49,515      51,060

#### Deferred gas costs receivable

16,973      20,950

#### Deferred debits and other

76,297      76,878

#### Total assets

\$ 1,278,713      \$ 1,244,423

#### Capitalization and liabilities:

##### Capitalization:

Common stock equity	\$ 452,309	\$ 429,596
Redeemable preference stock	25,000	25,000
Redeemable preferred stock	<u>9,750</u>	<u>10,564</u>
Total capital stock	<u>487,059</u>	<u>465,160</u>
First mortgage bonds	382,000	377,000
Unsecured debt	18,790	19,379
Secured debt	–	–
Total long-term debt	<u>400,790</u>	<u>396,379</u>
Total capitalization	<u>887,849</u>	<u>861,539</u>

##### Minority interest

–      –

#### Current liabilities:

Notes payable	56,263	94,149
Accounts payable	110,698	68,163
Long-term debt due within one year	20,000	10,000
Taxes accrued	8,066	4,101
Interest accrued	2,696	4,673
Other current and accrued liabilities	<u>23,638</u>	<u>39,153</u>
Total current liabilities	<u>221,361</u>	<u>220,239</u>

#### Deferred investment tax credits

9,538      10,393

#### Deferred income taxes

141,656      136,150

#### Deferred gas costs liability

–      –

#### Regulatory liabilities and other

18,309      16,102

#### Total capitalization and liabilities

\$ 1,278,713      \$ 1,244,423

\* Deferred gas costs were included in deferred debits or regulatory accounts prior to 1995.

1998	1997	1996	1995	1994	1993	1992	1991	1990
\$ 1,239,690	\$ 1,164,499	\$ 1,055,112	\$ 969,075	\$ 908,238	\$ 840,030	\$ 779,274	\$ 722,069	\$ 668,664
404,117	366,607	336,141	308,702	279,112	255,282	233,385	207,165	183,404
835,573	797,892	718,971	660,373	629,126	584,748	545,889	514,904	485,260
89,050	52,422	45,689	53,807	49,586	42,764	44,629	51,265	70,316
29,927	22,843	19,388	16,997	24,456	20,646	15,480	13,161	10,023
59,123	29,579	26,301	36,810	25,130	22,118	29,149	38,104	60,293
894,696	827,471	745,272	697,183	654,256	606,866	575,038	553,008	545,553
16,714	35,126	34,723	37,882	37,097	34,574	40,336	33,145	30,286
7,383	6,731	8,219	7,782	8,068	4,198	7,537	46,465	2,797
47,476	39,420	40,833	34,385	42,152	43,972	33,008	27,752	31,696
34,258	23,911	22,340	21,493	20,320	25,890	20,738	18,135	27,497
21,258	17,385	14,439	14,254	14,958	16,838	15,797	17,294	16,875
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
16,105	17,226	12,483	12,396	10,041	16,412	8,220	8,248	9,553
126,480	104,673	98,314	90,310	95,539	107,310	85,300	117,894	88,418
56,860	56,860	57,940	60,430	60,430	62,130	-	-	-
27,795	28,628	-	-	*	*	*	*	*
69,191	58,859	52,620	43,472	41,982	38,156	31,160	27,447	23,578
\$ 1,191,736	\$ 1,111,617	\$ 988,869	\$ 929,277	\$ 889,304	\$ 849,036	\$ 731,834	\$ 731,494	\$ 687,835

\$ 412,404	\$ 366,265	\$ 346,778	\$ 323,552	\$ 274,408	\$ 258,565	\$ 241,538	\$ 216,280	\$ 219,446
25,000	25,000	25,000	25,000	26,252	26,633	26,766	1,869	2,025
11,499	12,429	13,749	14,840	15,950	17,041	28,218	29,148	30,102
448,903	403,694	385,527	363,392	316,610	302,239	296,522	247,297	251,573
347,000	324,000	236,000	238,000	234,000	215,000	205,458	197,596	187,606
19,738	20,303	35,838	41,945	57,076	57,931	48,308	43,499	14,024
-	-	-	-	-	-	-	11,900	13,600
366,738	344,303	271,838	279,945	291,076	272,931	253,766	252,995	215,230
815,641	747,997	657,365	643,337	607,686	575,170	550,288	500,292	466,803
16,322	-	-	-	-	-	-	-	-
87,264	89,317	50,058	28,832	53,654	72,548	47,109	88,619	74,408
56,039	58,775	64,795	41,784	48,517	44,318	40,282	43,789	38,074
10,000	16,000	26,000	21,000	1,000	-	2,138	2,125	11,068
7,486	4,656	3,196	10,281	6,584	6,757	4,790	3,631	5,570
6,204	6,058	5,396	4,617	4,570	4,438	6,792	7,070	6,897
23,477	21,390	19,418	13,204	11,757	10,180	9,387	6,742	5,546
190,470	196,196	168,863	119,718	126,082	138,241	110,498	151,976	141,563
11,248	11,949	11,668	12,493	13,530	14,567	15,603	16,658	18,648
140,310	139,953	123,625	118,692	112,433	104,300	34,929	34,989	38,783
-	-	8,058	19,914	*	*	*	*	*
17,745	15,522	19,290	15,123	29,573	16,758	20,516	27,579	22,038
\$ 1,191,736	\$ 1,111,617	\$ 988,869	\$ 929,277	\$ 889,304	\$ 849,036	\$ 731,834	\$ 731,494	\$ 687,835



## Comparative Financial Statistics

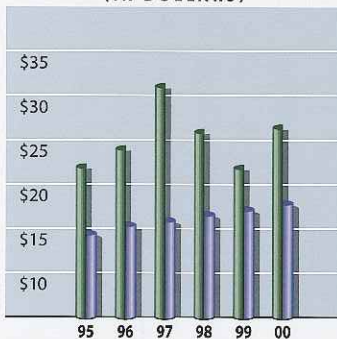
### Earnings per share (IN DOLLARS)



- DILUTED EARNINGS PER SHARE
- REDUCTION OF 16 CENTS PER SHARE IN 1992 AND 82 CENTS PER SHARE IN 1991 FROM THE LOSS ON AGRICO COGENERATION CORPORATION
- LOSS OF 50 CENTS PER SHARE IN 1998 DUE TO ASSET IMPAIRMENT CHARGES

Diluted earnings of \$1.88 per share in 2000 were the second highest in the Company's history.

### Year-end market price and book value per share (IN DOLLARS)



- MARKET PRICE PER SHARE
- BOOK VALUE PER SHARE

The year-end market-to-book ratio averaged 1.56x over the past five years. Total return to shareholders from dividends paid and market appreciation averaged 9.1 percent per year for this period.

	2000	1999
<b>Common stock</b>		
<b>Ratios – year-end:</b>		
Price/earnings ratio	13.9	12.9
Dividend yield at year-end rate – %	4.7	5.6
Dividend payout – %	65.3	71.6
Return on average common equity – %	10.8	10.2
<b>Per share data – (\$):</b>		
Basic earnings	1.90	1.71
Diluted earnings	1.88	1.70
Dividends paid	1.240	1.225
Dividend rate at year-end	1.24	1.24
Book value at year-end	17.93	17.12
<b>Market price:</b>		
High	27.50	27.875
Low	17.75	19.50
Year-end	26.50	21.938
Average	22.147	24.629
Number of shares of common stock outstanding (000):		
Year-end	25,233	25,092
Average	25,183	24,976
<b>Coverage data – times earned</b>		
Fixed charges – Securities and Exchange Commission	3.14	3.12
Fixed charges – Standard & Poor's	3.16	3.19
<b>Utility plant</b>		
Capital expenditures (000)	\$ 80,444	\$ 109,144
Depreciation – % of average depreciable utility plant	3.5	4.0
Accumulated depreciation – % of depreciable utility plant	34.9	33.4
<b>Capital structure – year-end (%) (Exclusive of current portion of long-term debt)</b>		
First mortgage bonds	44.1	43.6
Unsecured debt	1.0	2.3
Secured debt	–	–
Total long-term debt	<u>45.1</u>	<u>45.9</u>
Redeemable preferred stock	1.1	1.2
Redeemable preference stock	2.8	2.9
Common stock equity	<u>51.0</u>	<u>50.0</u>
Total capital stock	<u>54.9</u>	<u>54.1</u>
Total capital structure	<u><u>100.0</u></u>	<u><u>100.0</u></u>
<b>Effective tax rate</b>		
Effective tax rate – % of pretax income	36	35

\* Includes losses of \$0.16 per share in 1992 and \$0.82 per share in 1991 on Agrico Cogeneration Corporation, and losses of \$0.50 per share in 1998 due to asset write-downs for Financial Corporation and Canor.

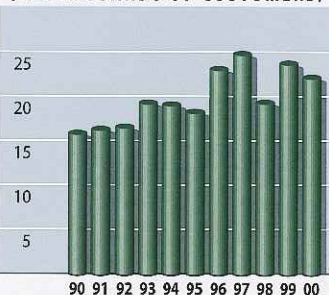
	1998	1997	1996	1995	1994	1993	1992	1991	1990
	25.4*	17.4	12.2	13.6	12.1	13.1	25.7*	28.5*	10.6
	4.7	3.9	5.0	5.5	6.0	5.1	6.0	6.0	6.5
	119.6*	67.7	60.9	73.1	72.1	67.0	155.0*	167.3*	67.9
	6.4*	11.3	13.0	11.8	12.2	13.7	5.8*	5.4*	13.1
	1.02*	1.78	1.97	1.62	1.63	1.74	0.74*	0.67*	1.62
	1.02	1.76	1.94	1.60	1.61	1.72	0.74	0.67	1.59
	1.22	1.205	1.20	1.18	1.173	1.167	1.147	1.127	1.10
	1.22	1.22	1.20	1.20	1.173	1.173	1.147	1.147	1.12
	16.59*	16.02	15.37	14.55	13.63	13.08	12.41*	12.23*	12.60
	30.75	31.25	25.75	22.667	24.333	25.333	22.50	22.167	17.667
	24.25	23.125	20.833	18.667	19.00	19.00	17.667	16.833	14.083
	25.875	31.00	24.00	22.00	19.667	22.833	19.00	19.167	17.167
	27.248	25.292	23.054	20.75	21.25	22.167	20.00	18.917	16.417
	24,853	22,864	22,555	22,243	20,129	19,766	19,460	17,678	17,406
	24,233	22,698	22,391	21,817	19,943	19,611	17,864	17,547	17,283
	2.20*	2.99	3.53	3.15	3.08	3.22	1.81*	1.59*	2.64
	2.72	3.05	3.71	2.87	2.98	3.47	2.08	2.51	2.88
\$	80,022	\$ 115,886	\$ 83,400	\$ 67,163	\$ 77,668	\$ 70,404	\$ 60,709	\$ 58,362	\$ 50,529
	3.9	3.8	3.8	4.2	4.1	4.1	4.0	4.2	3.9
	33.2	32.6	33.2	32.8	31.7	31.1	30.4	29.3	28.1
	42.6	43.3	35.9	37.0	38.5	37.4	37.3	39.5	40.2
	2.4	2.7	5.5	6.5	9.4	10.1	8.8	8.7	3.0
	-	-	-	-	-	-	-	2.4	2.9
	<u>45.0</u>	<u>46.0</u>	<u>41.4</u>	<u>43.5</u>	<u>47.9</u>	<u>47.5</u>	<u>46.1</u>	<u>50.6</u>	<u>46.1</u>
	1.4	1.7	2.1	2.3	2.6	3.0	5.1	5.8	6.5
	3.1	3.3	3.8	3.9	4.3	4.6	4.9	0.4	0.4
	<u>50.5</u>	<u>49.0</u>	<u>52.7</u>	<u>50.3</u>	<u>45.2</u>	<u>44.9</u>	<u>43.9</u>	<u>43.2</u>	<u>47.0</u>
	<u>55.0</u>	<u>54.0</u>	<u>58.6</u>	<u>56.5</u>	<u>52.1</u>	<u>52.5</u>	<u>53.9</u>	<u>49.4</u>	<u>53.9</u>
	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>
	35	33	37	37	37	37	31	14	31



## Comparative Operating Statistics

### Customer growth 1990-2000

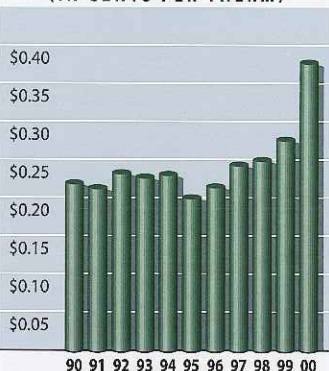
(IN THOUSANDS OF CUSTOMERS)



The Company added 22,243 new customers in 2000. The customer base has grown at a compound annual rate of 5 percent over the past 10 years.

### Cost of gas purchased

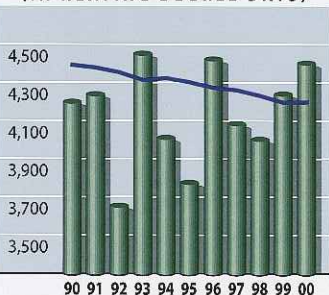
(IN CENTS PER THERM)



Cost of gas, including demand charges, increased 35 percent in 2000 and was 66 percent higher than 10 years ago.

### Heat requirements

(IN HEATING DEGREE DAYS)



Weather conditions in NW Natural's service area have been warmer than the rolling 20-year average in six of the past 10 years.

#### Selected utility data

	2000	1999
<b>Customers at year-end</b>		
Residential	468,087	447,659
Commercial	54,684	52,870
Industrial firm	384	388
Industrial interruptible	126	115
	<u>523,281</u>	<u>501,032</u>
Transportation customers	125	131
<b>Total customers</b>	<u><u>523,406</u></u>	<u><u>501,163</u></u>

#### Gas sales and transportation deliveries (000 therms)

Residential	356,375	352,969
Commercial	250,380	252,382
Industrial firm	76,559	84,630
Industrial interruptible	56,632	52,938
<b>Total gas sales</b>	<u>739,946</u>	<u>742,919</u>
Transportation	431,136	480,570
Unbilled therms	8,691	(9,343)
<b>Total volumes delivered</b>	<u><u>1,179,773</u></u>	<u><u>1,214,146</u></u>

#### Operating revenues and cost of sales (000)

<b>Sales revenues:</b>		
Residential	\$ 280,642	\$ 242,952
Commercial	159,660	139,425
Industrial firm	37,378	35,857
Industrial interruptible	23,483	17,182
<b>Total gas sales revenues</b>	<u>501,163</u>	<u>435,416</u>
Transportation	21,491	21,351
Unbilled revenues	12,661	(2,671)
Other*	(3,976)	1,194
<b>Total utility operating revenues*</b>	<u>531,339</u>	<u>455,290</u>
Cost of gas*	<u>273,978</u>	<u>212,021</u>
<b>Net utility operating revenues*</b>	<u>257,361</u>	<u>243,269</u>
Non-utility net operating revenues	589	368
<b>Net operating revenues</b>	<u><u>\$ 257,950</u></u>	<u><u>\$ 243,637</u></u>

#### Customer data

<b>Heat requirements:</b>		
Actual degree days	4,418	4,256
20-year average degree days	4,197	4,193
<b>Average use per customer in therms:</b>		
Residential	781	810
Commercial	4,670	4,851
<b>Average rate per therm (cents):</b>		
Residential	78.7	68.8
Commercial	63.8	55.2
Industrial firm	48.8	42.4
Industrial interruptible	41.5	32.5
<b>Total sales</b>	67.7	58.6

<b>Gas purchases (000 therms)</b>	745,582	773,258
<b>Gas purchased cost per therm - net (cents)</b>	37.68	27.85
<b>Average sendout cost of gas (cents)*</b>	36.60	28.90
<b>Maximum day firm sendout (000 therms)</b>	4,071	4,170
<b>Maximum day total sendout (000 therms)</b>	5,759	6,211

#### Payroll (000)

Operating	\$ 38,979	\$ 38,066
Construction and other	24,756	24,322
<b>Total</b>	<u><u>\$ 63,735</u></u>	<u><u>\$ 62,388</u></u>

#### Utility employees

<b>Number of customers served by each operating employee</b>	646	643
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\* Interest on deferred regulatory accounts for years prior to 1998 was reclassified from gross operating revenues or cost of sales to other income (expense).



1998	1997	1996	1995	1994	1993	1992	1991	1990
425,606	407,061	385,213	363,903	346,950	329,157	311,216	295,955	281,265
51,159	50,315	47,309	45,402	44,078	42,657	41,156	39,805	38,102
411	403	407	410	401	396	381	367	364
108	122	119	143	142	153	90	60	54
477,284	457,901	433,048	409,858	391,571	372,363	352,843	336,187	319,785
123	120	121	91	67	64	135	171	177
<u>477,407</u>	<u>458,021</u>	<u>433,169</u>	<u>409,949</u>	<u>391,638</u>	<u>372,427</u>	<u>352,978</u>	<u>336,358</u>	<u>319,962</u>

315,686	306,356	306,310	256,462	260,218	267,818	206,131	233,079	208,940
229,124	225,249	225,115	196,723	201,925	209,642	169,406	189,384	173,508
87,275	84,523	91,122	82,958	81,348	80,588	67,847	65,535	62,252
51,521	53,929	63,261	84,173	89,899	66,370	22,399	13,155	13,554
683,606	670,057	685,808	620,316	633,390	624,418	465,783	501,153	458,254
446,165	440,452	410,062	379,116	364,461	415,367	595,397	591,171	532,703
8,645	3,615	3,759	4,946	(7,519)	3,844	4,163	(16,943)	18,774
<u>1,138,416</u>	<u>1,114,124</u>	<u>1,099,629</u>	<u>1,004,378</u>	<u>990,332</u>	<u>1,043,629</u>	<u>1,065,343</u>	<u>1,075,381</u>	<u>1,009,731</u>

\$ 205,388	\$ 177,835	\$ 183,802	\$ 165,662	\$ 176,510	\$ 168,217	\$ 124,834	\$ 142,056	\$ 129,830
117,889	100,677	104,582	99,079	108,452	103,476	78,614	90,263	84,463
34,303	27,025	30,672	31,268	34,443	31,340	24,867	25,222	24,603
15,337	13,944	17,097	24,113	27,361	18,884	6,920	3,352	5,273
372,917	319,481	336,153	320,122	346,766	321,917	235,235	260,893	244,169
19,958	22,029	22,533	16,650	14,702	17,892	25,564	29,424	30,423
8,314	1,647	1,627	1,173	(5,571)	5,153	2,603	(9,362)	9,268
2,617	7,884	9,824	9,411	429	2,625	2,812	113	66
403,806	351,041	370,137	347,356	356,326	347,587	266,214	281,068	283,926
173,242	130,381	141,789	142,025	162,437	138,751	101,489	107,093	110,534
230,564	220,660	228,348	205,331	193,889	208,836	164,725	173,975	173,392
402	450	636	8,271	11,773	10,865	8,000	11,664	8,905
<u>\$ 230,966</u>	<u>\$ 221,110</u>	<u>\$ 228,984</u>	<u>\$ 213,602</u>	<u>\$ 205,662</u>	<u>\$ 219,701</u>	<u>\$ 172,725</u>	<u>\$ 185,639</u>	<u>\$ 182,297</u>

4,011	4,092	4,427	3,779	4,020	4,452	3,662	4,248	4,208
4,234	4,264	4,273	4,306	4,324	4,313	4,354	4,379	4,391
749	777	823	726	776	844	685	812	769
4,540	4,670	4,874	4,420	4,680	5,029	4,214	4,874	4,670
65.1	58.0	60.0	64.6	67.8	62.8	60.6	60.9	62.1
51.5	44.7	46.5	50.4	53.7	49.4	46.4	47.7	48.7
39.3	32.0	33.7	37.7	42.3	38.9	36.7	38.5	39.5
29.6	25.9	27.0	28.6	30.4	28.5	30.9	25.5	38.9
54.6	47.7	49.0	51.6	54.7	51.6	50.5	52.1	53.3
712,602	702,820	692,894	640,976	642,607	628,172	455,343	498,916	489,768
25.09	24.05	22.25	20.67	23.44	23.11	23.76	21.91	22.67
25.03	19.35	20.56	22.71	25.95	22.08	21.60	22.12	23.17
6,260	4,450	6,020	4,359	3,913	4,047	3,432	3,390	5,019
7,526	5,746	7,446	5,701	5,285	5,479	5,300	4,696	6,154

\$ 37,573	\$ 35,669	\$ 34,037	\$ 33,669	\$ 33,888	\$ 33,539	\$ 30,398	\$ 28,898	\$ 26,929
24,625	24,630	22,920	22,074	20,795	21,056	19,802	18,392	15,881
<u>\$ 62,198</u>	<u>\$ 60,299</u>	<u>\$ 56,957</u>	<u>\$ 55,743</u>	<u>\$ 54,683</u>	<u>\$ 54,595</u>	<u>\$ 50,200</u>	<u>\$ 47,290</u>	<u>\$ 42,810</u>
1,303	1,337	1,304	1,288	1,338	1,293	1,328	1,276	1,261
611	583	560	533	478	469	437	431	403





Officers of NW Natural gather on a pathway at Portland's landmark Classical Chinese Garden, completed in 2000. NW Natural (headquarters building, middle of background) donated the land for the one-block garden, one of the largest of its kind outside China. From left to right are W.R. Harper, Michael S. McCoy, Bruce R. DeBolt, Richard G. Reiten, Mark S. Dodson, Gregg S. Kantor, Diana J. Johnston, C.J. Rue and Stephen P. Feltz.



**Bruce R. DeBolt, 53** [1980]  
**Senior Vice President, Finance,  
and Chief Financial Officer (1990- )**  
Senior Vice President, Finance and  
Administration and General Counsel (1987-90)  
Vice President and General Counsel (1983-87)

**Mark S. Dodson, 56** [1997]  
**Senior Vice President, Public Affairs,  
and General Counsel (1998- )**  
Senior Vice President (1997-98)  
Partner, Ater Wynne Hewitt Dodson &  
Skerritt LLP (1981-97)

**Lea Anne Doolittle, 45** [2000]  
(Not Pictured)  
**Vice President, Human Resources  
(December 2000- )**  
Director of Compensation, PacifiCorp  
(1993-2000)  
Director of Human Resources, Planning and  
Development, PacifiCorp (1990-1993)

**Stephen P. Feltz, 45** [1982]  
**Treasurer and Controller (1999- )**  
Assistant Treasurer and Manager,  
General Accounting (1996-99)

**W. R. Harper, 47** [1992]  
**Senior Vice President, Market Services  
and Gas Supply (2000- )**  
Vice President, Market Services (1999-2000)  
Vice President, Energy Marketing and Supply  
(1997-99)

**Diana J. Johnston, 56** [1966]  
(Retired November 2000)  
**Vice President, Human Resources and  
Administrative Services (1996-2000)**  
Vice President, Human Resources (1992-96)

**Gregg S. Kantor, 43** [1996]  
**Vice President, Public Affairs and  
Communications (1998- )**  
Director, Public Affairs and Communications  
(1996-97)  
Principal, Kantor & Associates (1994-96)

**Michael S. McCoy, 57** [1969]  
**Executive Vice President, Customer  
and Utility Operations (2000- )**  
Senior Vice President, Customer and  
Utility Operations (1999-2000)  
Senior Vice President, Customer Services  
(1992-99)

**Richard G. Reiten, 61** [1995]  
**Chairman of the Board (2000- )**  
President (1996- )  
Chief Executive Officer (1997- )  
President and Chief Operating Officer,  
Portland General Electric Company  
(1992-95)

**C. J. Rue, 55** [1974]  
Secretary (1982- )  
Assistant Treasurer (1987- )

[Date joined NW Natural]

## ***NW Natural Energy Efficiency Policy***

**NW Natural supports responsible stewardship of energy resources and the environment. In addition, the Company is committed to helping its customers gain maximum value from their energy investments as a means of sustaining customer satisfaction. The Company believes that the efficient use of energy is an important criterion in its operational and marketing decisions.**

**Accordingly, NW Natural will:**

- **Communicate the high value it places on the responsible use of energy to its customers, employees, investors and the public.**
- **Strive to use energy and natural resources responsibly in its own facilities thereby modeling the values of good stewardship.**
- **Educate its customers and trade allies about the efficient use of energy.**
- **Seek opportunities to provide cost-effective energy efficiency products and services to customers.**
- **Work constructively with public agencies charged with the oversight of energy issues, seeking to influence policy in ways that support stewardship of natural resources and efficient use of energy.**
- **Work cooperatively with organizations promoting energy efficiency to develop programs that will benefit our customers, communities and the region.**

**Energy Efficiency Policy Statement  
Adopted by NW Natural Board of Directors  
February 22, 2001**



## Board of Directors

**Mary Arnstad, 52**  
 Managing Director  
 The Cascade Festival of Music  
 Bend, Oregon  
 [1992] (2) (5)



**Robert L. Ridgley, 67**  
 Retired Chairman of the Board  
 NW Natural  
 Vancouver, Washington  
 [1984] (1) (4) (5) (6)

**Thomas E. Dewey, Jr., 68**  
 Member  
 McFarland Dewey & Co., LLC  
 (Investment banking firm)  
 New York, N.Y.  
 [1986] (2) (6)



**Dwight A. Sangrey, 60**  
 Business Development Consultant  
 (Information technology, engineering and  
 health care)  
 Portland, Oregon  
 [1992] (2) (5)

**Tod R. Hamachek, 55**  
 Chairman and Chief Executive Officer  
 Penwest Pharmaceuticals Company  
 (Development of pharmaceutical drug delivery  
 products and technologies)  
 Patterson, New York  
 [1986] (3) (4)



**Melody C. Teppola, 58**  
 Managing Partner  
 National Builders Hardware Company  
 (Regional and national distributor  
 of builders hardware, decorative  
 plumbing and woodworking machinery)  
 Portland, Oregon  
 [1987] (1) (4) (5)

**Richard B. Keller, 72**  
 President and CEO  
 Keller Enterprises Inc.  
 (A family holding company)  
 Vancouver, Washington  
 [1983] (1) (3) (4)



**Russell F. Tromley, 61**  
 President and Chief Executive Officer  
 Tromley Industrial Holdings, Inc.  
 (Manufacturer of foundry equipment and  
 distribution of nonferrous metals)  
 Tualatin, Oregon  
 [1994] (2) (6)

**Wayne D. Kuni, 70**  
 Chairman  
 Kuni Enterprises  
 (Automobile dealerships)  
 Beaverton, Oregon  
 [1980] (1) (2) (3) (6)



**Benjamin R. Whiteley, 71**  
 Chairman and CEO Retired  
 Standard Insurance Company  
 (A financial services company)  
 Portland, Oregon  
 [1989] (1) (3)

**Randall C. Papé, 50**  
 President and Chief Executive Officer  
 The Papé Group, Inc.  
 (Sales and service of capital equipment)  
 Eugene, Oregon  
 [1996] (3) (4) (5)



**Richard L. Woolworth, 59**  
 Chairman and CEO  
 The Regence Group  
 (Regional affiliation of health plans)  
 Portland, Oregon  
 [2000] (2) (6)

**Richard G. Reiten, 61**  
 Chairman, President and Chief Executive Officer  
 NW Natural  
 Portland, Oregon  
 [1996] (1)



*[Year elected to the Board]*  
 (1) Executive Committee  
 (2) Audit Committee  
 (3) Organization and Executive Compensation Committee  
 (4) Retirement and Pension Committees  
 (5) Environmental Policy Committee  
 (6) Finance Committee



## Corporate Information

### Notice of Annual Meeting

The 2001 Annual Meeting will be held at 2 p.m. Thursday, May 24, at the DoubleTree Hotel-Portland-Lloyd Center, 1000 N.E. Multnomah Street, Portland, Oregon. A meeting notice and proxy statement will be sent to all shareholders in mid-April.

### Form 10-K

The Company will provide its shareholders, without charge, a copy of the 2000 Annual Report on Form 10-K to the Securities and Exchange Commission. Requests should be made to the Corporate Secretary.

### Stock Transfer Agent and Registrar

For all Preferred, Preference and Common Stock Issues:

NW Natural  
220 N.W. Second Avenue  
Portland, Oregon 97209  
Attention: Shareholder Services

### Trustee, Conversion and Interest Paying Agent

For Convertible Debentures:

The Bank of New York  
Corporate Debt Operations, Floor 7-E  
101 Barclay Street  
New York, New York 10286  
(800) 254-2826

### Trustee and Bond Paying Agent

For all bond issues:

BT Services Tennessee Inc.  
Security Holder Relations  
P.O. Box 305050  
Nashville, Tennessee 37230  
(800) 735-7777

### Common Stock Prices

Through July 26, 2000, the Company's common stock was traded on the Nasdaq National Market System using the symbol NWNG. On July 27, 2000, the common stock was listed and began trading on the New York Stock Exchange using the symbol NWN. The quarterly high and low trading range during 1999 and 2000 was:

2000		
Quarter	High	Low
1	22.500	17.750
2	23.875	18.875
3	24.625	21.625
4	27.500	21.875

1999		
Quarter	High	Low
1	27.000	21.000
2	27.000	19.500
3	27.875	23.313
4	27.000	21.125

### Dividend Reinvestment Plan

Common shareholders of record may reinvest all or part of their dividends in additional shares under the Company's plan. Cash purchases also may be made at the current market price under this plan, and no brokerage fees will be charged. A prospectus will be sent to any registered shareholder on request.

### Dividend Payment Dates

February 15, 2001  
May 15, 2001  
August 15, 2001  
November 15, 2001

## Quarterly Financial Information (unaudited)

Dollars (thousands except per share amounts)	Quarter ended				Total
	March 31	June 30	Sept. 30	Dec. 31	
<b>2000</b>					
Operating revenues	186,649	86,136	61,255	198,070	532,110
Net operating revenues	93,088	45,886	35,566	83,410	257,950
Net income (loss) from continuing operations	29,192	2,498	(4,868)	20,990	47,812
Gain (loss) on sale of discontinued segment	2,470	(35)	(17)	(6)	2,412
Net income (loss)	31,662	2,463	(4,885)	20,984	50,224
Basic earnings (loss) per share	1.24	0.07	(0.22)	0.81	1.90*
Diluted earnings (loss) per share	1.22	0.07	(0.22)	0.80	1.88*
<b>1999</b>					
Operating revenues	167,873	94,252	55,737	137,972	455,834
Net operating revenues	85,905	55,241	33,605	68,886	243,637
Net income (loss) from continuing operations	24,184	10,529	(3,608)	13,836	44,941
Net income (loss) from discontinued segment	(141)	255	48	193	355
Net income (loss)	24,043	10,784	(3,560)	14,029	45,296
Basic earnings (loss) per share	0.94	0.41	(0.17)	0.53	1.71*
Diluted earnings (loss) per share	0.93	0.40	(0.17)	0.53	1.70*

\* Quarterly earnings per share are based upon the average number of common shares outstanding during each quarter. Because the average number of shares outstanding has increased in each quarter shown, the sum of quarterly earnings may not equal earnings per share for the year. Variations in earnings between quarterly periods are due primarily to the seasonal nature of the Company's business.



**James R. Boehlke**  
Investor Relations  
(503) 721-2451  
(800) 422-4012,  
Ext. 2451  
jrb@nwnatural.com



**Linda R. Williams**  
Shareholder Services  
(503) 220-2590  
(800) 422-4012,  
Ext. 3402  
lrw@nwnatural.com



## NW Natural

220 N.W. Second Avenue  
Portland, Oregon 97209  
(503) 226-4211  
(800) 422-4012  
www.nwnatural.com

### Forward-looking statements

The Company's future operating results will be affected by various uncertainties and risk factors, many of which are beyond the Company's control, including governmental policy and regulatory action, the competitive environment, economic factors and weather conditions. Some statements in this annual report may be forward-looking, and actual results may differ materially as a result of these uncertainties. For a more complete description of these uncertainties and risk factors, please refer to the Company's filings with the Securities and Exchange Commission on Forms 10-K and 10-Q.

Design Graphic Solutions, Feature Photography Charlie Bostand, Portrait/Shareholder Letter, Mel Nadelman, NYSE, Portraits: Board & Officers Bruce Beaton, P6&7 Dennis Frates, P12 Steve Wanke, P15 Craig Tuttle, Printed on recycled stock



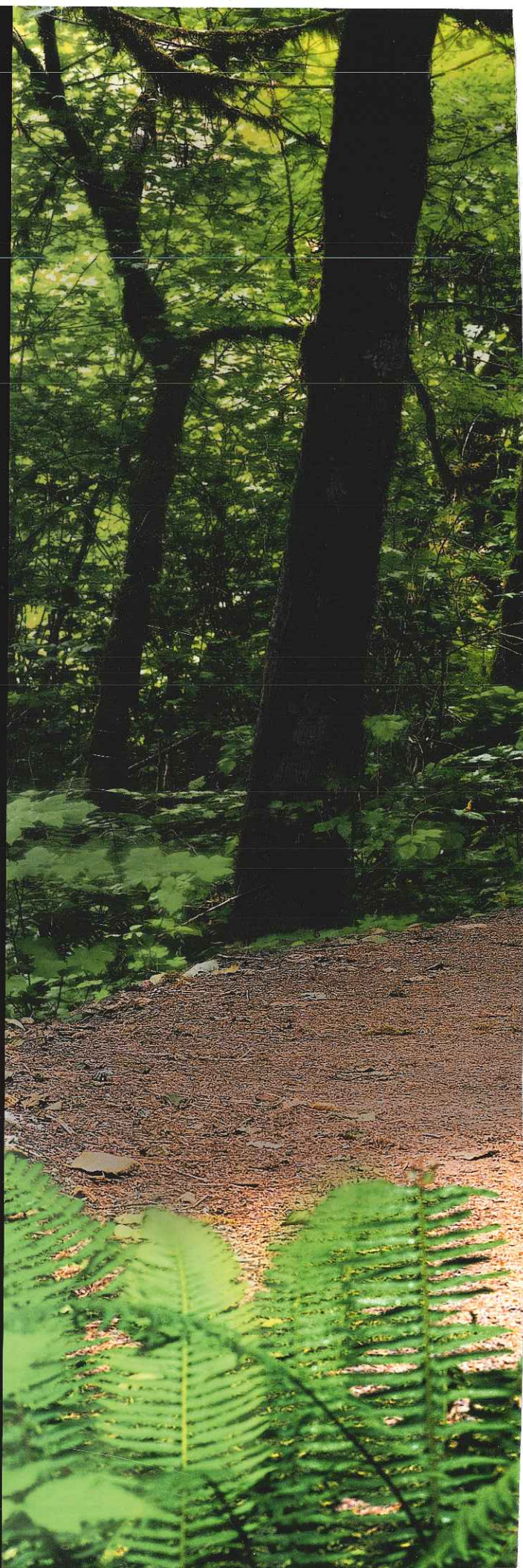


## NW Natural

220 NW Second Avenue  
Portland, Oregon 97209



For more information on NW Natural's  
services, policies and programs, visit  
our web site at [www.nwnatural.com](http://www.nwnatural.com)



**COLUMBIA COUNTY  
SHERIFF**

PHILIP W. DERBY

EXHIBIT

tabbles

6

July 30, 2001

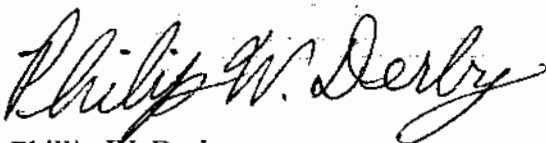
Todd Thomas  
Northwest Natural Gas Co.  
221 NW 2<sup>nd</sup> Avenue  
Portland, Oregon 97209

Dear Mr. Thomas,

This short letter is to inform that I can see no reason why your construction project scheduled for August 2001 through December 2001 will negatively impact Columbia County. I believe that this project will positively impact our County as approximately 50 to 60 employees will work on the project.

I can see no reason why this project will create any adverse problems for local law enforcement in Columbia County.

Sincerely,



Phillip W. Derby  
Columbia County Sheriff  
901 Port Avenue  
St Helens, Oregon 97051



**MIST-BIRKENFELD RURAL FIRE PROTECTION DISTRICT**  
**12525 Highway 202 Mist, OR 97016**  
**(503)755-2710 or (503)755-0510**  
**Fax (503)755-2556**

July 26, 2001

Mr. Todd Thomas  
Northwest Natural Gas Company  
220 N/W Second Avenue  
Portland, Oregon 97209

RE: 317 MMCFD Project

Dear Mr. Thomas

This letter addresses the 317 MMCFD Project, the latest in a series of storage and transmission projects designed to expand the capabilities of Miller Station and its surrounding storage fields. As I understand it, the project will include one additional well in the field, an additional gas turbine compressor located at Miller station, and the various pressure vessels required to add them into the system. Discussions with NNG personnel and a review of planned on-site safety precautions indicate that the project will have minimal impact on district operations. We have no objection to it's going forward as planned.

We appreciate the invitation to the project safety meeting. Information regarding the current construction activities in the fire district is critical to our ability to provide fast, effective service. You have done a great job of keeping us informed of work locations and any special hazards we might encounter in past projects. As in the past, we request this information be provided at least weekly and more often if a major change in work location occurs. A phone message will suffice.

We look forward to working with you over the next few months in our community. The cooperation demonstrated by NNG with our fire district and the community spirit we share as neighbors has been exemplary. Please do not hesitate to contact me if we may be of further service to you.

Than you for including the fire district in this process.

Sincerely,  
  
Chief Dave Crawford

JAMES L. WALTERS  
CHIEF OF POLICE

VERNONIA POLICE DEPARTMENT  
1001 BRIDGE STREET  
VERNONIA, OREGON 97064



503-429-7335 OFFICE  
1-800-896-7795 DISPATCH  
503-429-5141 FAX

EMG 911

*In Service To Our Community*

07/26/01

Todd Thomas  
Construction Manager  
NW Natural

Dear Mr. Thomas,

During our conversation on July 25, 2001, you informed me of a upcoming construction project in the Mist area with in the next couple of months involving NW Natural. Your concern with the influx of NW Natural personnel and outside contractors in our area and the impact it may have on our community and Law Enforcement is very much appreciated.

We feel this will not create any problems for our department. If any problems do arise we would appreciate NW Natural's cooperation with the resolution of those issues.

We look forward to serving you and your employee's.

Sincerely,

A handwritten signature in black ink, appearing to read "J. Walters". The signature is written in a cursive style with a long horizontal stroke at the end.

James L Walters  
Chief of Police  
Vernonia Police Dept.



## DESIGN INFORMATION REPORT

NW Natural has evaluated several gas turbine- compressor combinations and has selected a unit built by Rolls Royce Energy Systems, Inc. for the Miller Station facility expansion. The 501-KC7 DLE gas generator/turbine is a single fuel, natural gas fired unit. The 501-KC7 DLE gas turbine will be attached to a Rolls Royce RF2BB20 compressor. This combination was selected because of the ultra low NOx and CO emission levels, high operating efficiencies and wide range of operation.

The 501-KC7 DLE will provide a Dry Low Emissions fuel system for gaseous fuel. The gas fuel system includes combustion system components to control and modulate fuel flow during start-up and operation. The combustion system includes hardware to premix the fuel for lean burn operation as well as additional control software for fuel staging between the pilot and main fuel circuits. The fuel system includes a 14<sup>th</sup> stage bleed valve to allow simultaneous achievement of low NOx and CO.

The 501- KC7 DLE unit offers the largest stable turndown in the industry of any dry low emissions gas turbine engine in its size. The engine can be operated in Dry Low Emissions mode at a fraction of its rated power without combustion noise and without risk of flame out at low load levels. The gas generator can accommodate both soak and fired wash of the gas generator compressor section to facilitate optimum output efficiency.

The following explanation is based upon actual test data from Rolls Royce on an identical gas generator/turbine & compressor combination. For the purposes of this analysis, a gas temperature of 50 deg F was used. It should be pointed out that the 50 deg F temperature is cooler than our historical average temperature of 54 deg F and will result in a more conservative fuel consumption values.

Fuel consumption is directly related to the output shaft horsepower of the gas generator/turbine. As the percentage of load required from the compressor increases, so does the output shaft requirement from the gas generator/turbine. The Rolls Royce gas generator/compressor unit is specifically designed for operation between 50% and 100% of full load. The following calculations represent the rate of fuel consumption for the maximum and minimum operating conditions for a 21-day period.

### **21 Day Fuel Consumption at 50% loading**

$$35.3807 \frac{\text{MMBTU}}{\text{hr}} \times \frac{24\text{hr}}{\text{day}} \times 21 \text{ days} = \underline{\underline{17,831 \text{ MMBTU}}}$$

### **21 Day Fuel Consumption at 100% loading**

$$56.3129 \frac{\text{MMBTU}}{\text{hr}} \times \frac{24\text{hr}}{\text{day}} \times 21 \text{ days} = \underline{\underline{28,382 \text{ MMBTU}}}$$