**EXHIBIT NO. ___(SML-1CT)**
**DOCKET NO. UE-07___/UG-07___**
**2007 PSE GENERAL RATE CASE**
**WITNESS: SUSAN McLAIN**

**BEFORE THE**
**WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION**

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| **WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION,**<br><br>**Complainant,**<br><br>**v.**<br><br>**PUGET SOUND ENERGY, INC.,**<br><br>**Respondent.** | **Docket No. UE-07____**<br>**Docket No. UG-07____** |

# PREFILED DIRECT TESTIMONY (CONFIDENTIAL) OF SUSAN McLAIN ON BEHALF OF PUGET SOUND ENERGY, INC.

**REDACTED VERSION**

**DECEMBER 3, 2007**

**PUGET SOUND ENERGY, INC.**

**PREFILED DIRECT TESTIMONY (CONFIDENTIAL) OF SUSAN McLAIN**

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**PUGET SOUND ENERGY, INC.**

**PREFILED DIRECT TESTIMONY (CONFIDENTIAL) OF SUSAN McLAIN**

## I. INTRODUCTION

**Q. Please state your name, business address, and position with Puget Sound Energy, Inc.**

A. My name is Susan McLain. My business address is 10885 N.E. Fourth Street Bellevue, WA 98004. I am the Senior Vice President Operations for Puget Sound Energy, Inc. ("PSE").

**Q. Have you prepared an exhibit describing your education, relevant employment experience, and other professional qualification?**

A. Yes, I have. It is Exhibit No. ___(SML-2).

**Q. What are your duties as Senior Vice President Operations for PSE?**

A. I am responsible for all activities associated with the design, construction, operation and maintenance of PSE's electric and gas delivery systems. This includes: Gas Operations, Electric Operations, Customer Construction Services, Project Management, Engineering and Contractor Management. Additionally, I

am responsible for the selling of excess bulk transmission services as well as purchasing, materials and fleet services for the Company.

**Q. What is the nature of your testimony in this proceeding?**

A. My testimony describes the operational challenges that PSE faces in its mission to maintain high levels of service quality in delivering electricity and natural gas to a growing customer base. The challenges facing the Company include:

- Managing or improving service quality to our customers;
- The need to make substantial energy delivery system investments to serve a rapidly expanding customer base and to replace aging gas and electric energy delivery system;
- Meeting new regulatory requirements, such as the mandatory electric reliability standards implemented by the Energy Policy Act of 2005;
- Securing appropriate resources and talent in order to perform necessary work as PSE's existing workforce retires;
- Managing cost increases in a period of heavy infrastructure demand; and
- Preparing for unforeseen events, such as storms, that impact the Company's infrastructure.

These challenges are occurring simultaneously and have a direct impact on our costs and to address these matters, significant capital is required. Even with these cost pressures on Operation and Maintenance (O&M) and capital expenditures, PSE is one of the lowest cost providers nationally, as I discuss later in my testimony.

**Q. Has the Company made any organizational changes in response to these challenges?**

A. Yes. In an effort to drive integration across key operational functions, further strengthen the Company's focus on safety, compliance and core operations, and enhance system performance, a number of organizational changes were implemented in the Operations area. The changes establish an organizational structure that will allow PSE to realize four goals that are critical to the Company's success: (1) provide a high level of customer service that will differentiate PSE from its peers; (2) remain in full compliance with evolving regulatory requirements; (3) maintain efficient operations; and (4) offer developmental opportunities for the next generation of workers and leaders.

**Q. How will your testimony be presented?**

A. My testimony will expand on the observations I made above. It will cover the electric and gas delivery systems and highlight each system's specific issues, requirements and implications for future capital and operation and maintenance expenditures. My testimony will include a discussion of several broad areas:

- Changing customer expectations and growth demographics;
- PSE's aging electric and gas infrastructure;
- Compliance and the cost impacts of meeting stricter gas and electric regulations; and finally,
- Cost management, a component that covers planned expenditures, cost management, resource constraints and other financial issues.

Additionally, I will reference the aging workforce issue discussed by Tom Hunt and PSE's electric system storm costs, which are discussed by Greg Zeller.

## II. CHANGING CUSTOMER EXPECTATIONS

**Q. What trends are you observing that are likely to impact customer expectations of reliable electric service?**

A. Telecommuting is an example of a trend that is increasing customers' expectations of reliable electric service. Washington's Commute Trip Reduction program ("CTR") compiles statistics from surveys of companies with 100 or more employees who report to work from 6 a.m.-9 a.m. In 2000, CTR data indicated that 4.3% of Washingtonians worked from home ("telework," in CTR terminology). CTR data through August 1, 2007 indicates the telework percentage had more than doubled, to 9.2%.

To further illustrate, within PSE's workforce, 30 customer service agents (out of a total of approximately 200 total customer service agents) currently work from their homes and provide the same, prompt service to customers as their counterparts working in PSE's Bothell and Bellevue call centers.

PSE is also finding that customers' expectations for reliable electric service do not necessarily take into consideration that they may live and telecommute from a rural and more difficult to serve area.

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**Q. Are other trends affecting customer expectations?**

A. Yes. It appears that the availability of real-time information via hand-held wireless devices and frequently updated news on local media Web sites, as well as 24-hour news stations, may be impacting customer expectations. Evidence of changing customer expectations is apparent in increases in the number of calls made to PSE's Access Center and in the number, timing and frequency of media calls made to PSE's media relations line regarding a wide variety of matters relating to PSE's service – whether outages or gas odor/dig-up incidents. In addition to calling the PSE Access Center directly for information, customers increasingly are calling local newspapers and television and radio stations seeking up-to-the-minute information on power outages and other breaking service-related news.

**Q. What actions are you taking to meet these expectations?**

A. PSE has hired a customer communications program manager at the Access Center whose responsibilities include quickly obtaining and disseminating to all Call Center agents accurate, up-to-date information on service interruptions, proposed changes in rates, and other important news. In addition, during major power outages, PSE has implemented new procedures to provide frequent Web site Service Alert updates to customers and the media on the extent of storm damage/outages and when they can expect service to be restored. Additionally,

later in my testimony I describe the actions we are taking to address aging infrastructure, which are fundamental in addressing customer expectations.

## III. PSE'S GROWING CUSTOMER BASE

**Q. Has PSE experienced an increase in new gas and electric customers?**

**A.** The Company continues to experience strong customer growth in its service territory for both electric and gas customers, and the growth in gas customers has consistently outpaced the growth in electric customers.

Over the three-year period between December 31, 2003, and December 31, 2006, the average number of PSE's electric customers increased by 6.1%, from approximately 969,000 to approximately 1,028,000 customers. Over the same three-year period, the average number of PSE's gas customers increased by 11.0%, from approximately 634,000 to approximately 704,000. This compares to national growth rates of approximately 4.4% for electric and 3.9% for gas customers over those same periods.

**Q. How does a growing customer base impact PSE's operations?**

A. As a result of customer growth, the Company has a much larger system to operate, inspect and maintain, and more customers who will require customer service interaction. This places increasing pressure on the Company's O&M spending. Additionally, customer growth ultimately results in the need for

additional system capacity and the need for large capital investments, such as the $9 million Kent-Black Diamond Phase 1B and the $3 million Snoqualmie Phase 3 gas main projects. The Kent-Black Diamond Phase 1B project installed over five miles of 16-inch high pressure gas line from PSE's existing Sequoia Distribution Regulator east of Kent to a new Limit Station in downtown Kent. The Snoqualmie Phase 3 project installed over two miles of 12-inch high pressure gas line to replace existing 4-inch line from south of Fall City to the City of Snoqualmie, increasing gas deliverability to Snoqualmie and North Bend. These types of projects are required in order to support customer growth and to maintain reliable service to existing customers during peak conditions.

**Q. Please describe how PSE recovers its costs related to new customer growth.**

A. Both of PSE's line extension tariffs, Electric Schedule 85 and Gas Rule 7 (and the related Gas Schedule 7) recover only the costs related to the extension of PSE's delivery system to the new customer over the life of the extension. The customer pays for the cost of the extension, with an offset for the net present value of revenues (based on gas usage) or a margin allowance (for electric) that are expected to be received from the new customer over the life of the plant. These tariffs only partially offset the front-end loaded costs of new investment. Also, neither line extension tariff provides for recovery of costs for backbone system improvements needed to support growth. As an example, the cost of a typical substation ranges from $3 million to $5 million (often excluding property purchase) and can take two to four years to design, permit and construct. It would

be very difficult to isolate and associate which costs are specific to new customers. Additionally, there are often reliability or system performance benefits associated with such improvements that are shared by existing, as well as newer, PSE customers.

**Q. How does PSE recover the cost of these backbone system improvements?**

A. PSE recovers these costs through rates based on average historical costs; however, recovery of costs in excess of these average costs does not start until after the new plant is put in service and the Company gets the approval of these costs in a general rate case. This places financial strain on PSE as a general rate case process can take nearly a year to complete and it is highly likely that backbone system improvements were placed in service well before the start of a particular general rate case filing.

**Q. Are there any indicators that show PSE is controlling its costs?**

A. Yes. As shown in Exhibit No. ___(SML-3), when looking at all non-production/generation operations and maintenance expenses on a cost-per-customer basis, PSE remains one of the lowest cost providers among investor-owned combined electric and gas utilities in the United States. In short, the Company continues to make its expenditures go farther through operational efficiencies. The most significant drivers of cost increases (e.g., regional growth, changing customer expectations, aging infrastructure, aging workforce, and

mandatory compliance requirements) are largely beyond the Company's control. Nonetheless, they are the realities PSE must face. Without rate relief, the Company will be hindered in its ability to continue to provide quality service to its customers.

## IV. AGING INFRASTRUCTURE – NEED FOR INVESTMENT

**Q. Please describe PSE's plans to replace aging infrastructure in its electric delivery system.**

A. PSE maintains its assets in proper working condition, but when equipment is approaching the end of its useful life, PSE endeavors to proactively replace the equipment. Replacing aging equipment in this manner maintains reliability of the electric delivery system and avoids having to rapidly replace large quantities of equipment due to a sudden decline in performance. PSE has a number of proactive programs that PSE believes benefit customers by increasing system reliability.

**Q. What types of equipment are included in PSE's proactive aging electric infrastructure replacement plans?**

A. PSE's aging electric infrastructure includes, among other things, substation equipment, transmission and distribution poles, transmission pole crossarms, and cable remediation or replacement.

**Q. How does PSE determine when aging substation equipment needs to be replaced?**

A. PSE relies on many variables when considering the replacement of significant substation equipment beyond just the age of the equipment itself. For example, performance history is reviewed. Load-tap changing transformers are evaluated for their performance history. A transformer with a history of poor performance is replaced before one with a more favorable performance history. Similarly, the model or brand of the equipment influences the replacement decision because some models have differing performance patterns. The availability of replacement parts for equipment is also taken into consideration.

**Q. What actions are taken to support these types of substation equipment replacement decisions?**

A. PSE conducts regular field inspections to assess equipment condition. Electrical testing, oil analysis, remote monitoring and engineering reviews of past performance are completed to assess equipment.

**Q. Does age of equipment have a major impact on other parts of the electrical system?**

A. Yes. PSE has been replacing high maintenance transmission switches that are 30 to 45 years old since 2004. These switches have a failure rate that is higher than that for newer switch models, and they are difficult to maintain because

replacement parts are either very expensive or no longer available from the manufacturer.

Likewise, PSE has approximately 325,000 distribution poles and 32,000 transmission poles, the average age of which is approximately 29 years. PSE performs pole inspections to assess the condition of the poles and identify those that are degraded and in need of replacement.

Additionally, PSE's cable remediation program was started in 1990 to treat aging underground cable systems. It involves either replacing a cable with a history of outage faults or using silicone injection to restore the cable's insulation to a newer condition, thereby extending the life of the cables for 20 years or more and greatly reducing outages. PSE customers have experienced a reduction in the number of cable-related outages from 1,400 in 2003 to less than 1,100 in 2006. Through 2006, 1,917 miles of cable have been either remediated or replaced and 2,900 miles remain.

**Q. Is aging infrastructure also a factor with PSE's gas delivery system?**

A. Yes. Older gas mains are often more susceptible to leakage, so PSE evaluates aging gas systems to determine which ones should be replaced. Leakage can directly affect gas system reliability and safety, depending on its proximity to the public and the impact on customers when mains have to be taken out of service for leakage repair. Therefore, age is a contributing factor to gas system failure, and PSE's goal is to reduce leakage and maintain safe and reliable operation of

the gas delivery system. For example, in 1992 PSE started replacing cast iron pipe (which is a brittle material and more susceptible to leaks) with polyethylene pipe. PSE's program was designed to replace all cast iron pipe within 15 years. The Company completed the replacement work in June 2007, and a total of 287 miles of cast iron system was replaced during the 15-year period.

**Q. Are the costs to replace aging infrastructure increasing?**

A. Yes. The two main drivers of increases to PSE's costs of infrastructure replacement are increases in costs of labor and materials. To illustrate this point, the cost to replace an aging pole today should be compared to the cost of its original installation, which, on average, was almost 30 years ago. In 1976, the cost to install a 45-foot distribution pole was $631; by 2006, the cost had increased to over $3,300. Cost increases are also an issue relative to replacing aging gas infrastructure. For example, the cost to install one foot of 2-inch diameter plastic gas main has increased from $4 per foot in 1976 to $20 per foot in 2006. These are just two examples of the magnitude of cost increases that PSE faces.

Increases in the cost of raw materials (metals, resins, concrete, wood products and petroleum products) have significantly increased the costs of commonly used transmission and distribution materials (poles, wire, pipe and transformers). In just the three-year period from 2003-2006, the cost of 2-inch and 4-inch plastic gas main has increased by 48%; the cost of 45-foot wood poles has increased by

32%; electrical conductor costs have increased by 58%; and the cost of single phase transformers has increased by 48%.

Growing U.S. and international demand for infrastructure materials is contributing to inflationary pressure. PSE is not the only entity that is experiencing these types of cost increases. A recent utility construction cost report from The Brattle Group demonstrates the tremendous increase in construction costs. The Brattle Group reports that electric distribution plant costs (poles, conductor, conduit, transformers and meters) tracked the general inflation rate very closely between 1991 and 2003. However, the costs then increased 34% between January 2004 and January 2007, a rate that exceeded four times the rate of general inflation. Electric transmission plant costs followed a similar trend. During the same 2004 to 2007 time period, the price of line transformers increased 68%; the price of pad mount transformers went up 79%; the price of overhead conductors and devices went up by 34%; and station equipment rose by 38%. The Brattle Group also reports that the craft and heavy construction labor costs increased 26%, or almost twice the rate of general inflation, during the period January 2001 through January 2007. The full report can be found in Exhibit No. ___(SML-4).

As noted in The Brattle Group's report, rates for skilled craft labor predominantly used in construction are also increasing for PSE. Two examples of increasing labor costs at PSE are Journeyman Wiremen and Journeyman Service Linemen II. Skilled craft construction is performed by a Journeyman Wireman. PSE wire

personnel are involved in substation construction, and the hourly wage rate for these employees has increased by $1.65 per hour from $32.18 per hour on April 1, 2006 to $34.83 per hour on June 20, 2007. This represents an 8.2% increase. The second example of skilled craft labor rate increases within PSE is for the Journeyman Service Lineman II position, which has experienced an hourly rate increase of $4.11 per hour from $33.15 per hour on April 1, 2006 to $37.26 per hour on June 20, 2007. This represents an increase of 12.4%, even larger than that for the Journeyman Wireman position. The April 1, 2006 and June 20, 2007 dates are those contained in the Collective Bargaining Agreements between the International Brotherhood of Electrical Workers Local Union #77 and PSE.

Increasing labor rates are also a contributing factor in the amounts that PSE must pay for contracted construction services, as labor costs are typically a component of the cost for these services. The National Association of Electrical Contractors labor rate for contractors serving PSE's service territory has experienced Journeyman Lineman wage increases of 4% between February 2006 and February 2007. Wage rate increases for the Journeyman Lineman position continue at close to a 4% annual increase for the remainder of the contract period (February 2007 through January 31, 2010).

**Q. What are some of the other factors that are driving up costs?**

A. The current requirements for construction, permitting and inspection, traffic control and mitigation and preventive actions to minimize soil erosion were not

required in original installations to the extent they are today. In recent years, federal, state and local jurisdictions have increased their permitting requirements, raised their inspection fees, imposed work hour restrictions and added new traffic control plan and paving requirements.

**Q. Can you provide any examples of changing requirements by local jurisdictions that are impacting the Company?**

A. Yes, I can. In 2004, the City of Bellevue regularly issued permits based solely on PSE maps. Today, the city requires all utilities, driveways, and curb and gutter lines to be reflected on design drawings. To comply, PSE must often hire an outside surveying firm to create the background drawings. In addition, many jurisdictions are also increasing road restoration requirements to include "select" fill materials (e.g., crushed gravel, control density fill) in trench lines as opposed to refilling with the excavated native material. Jurisdictions have also begun to require PSE to replace the entire surface of a road lane, rather than just patch the part that was excavated. Jurisdiction work hour restrictions may add to project costs as in some cases they limit daytime work hours to a six-hour period of 9 a.m. to 3 p.m., or completely restrict work to night time hours only. These work period restrictions may add to project costs through higher overtime labor costs and lower productivity as compared with work performed during normal business hours.

In the City of Seattle, road restoration requirements also include a greater number of full concrete panel replacements, as opposed to partial panel replacement. Historically, in the City of Seattle the typical cost of a concrete street patch was approximately $400. Under the current requirements, the cost of a full panel replacement ranges in the thousands of dollars, depending on the size, thickness and location of the panel. Further, many jurisdictions now require more complex traffic control plans in order to safely move traffic through a construction work zone. In some cases, PSE is required to hire off duty police officers to direct traffic flow through intersections and other high volume areas, which adds to the total cost of a project. These factors continue to drive up PSE's construction costs.

## V. COMPLIANCE -- GENERAL

**Q. Please describe PSE's efforts to improve compliance with regulatory requirements.**

A. The Company has always taken regulatory compliance seriously. PSE takes full responsibility for adherence to all applicable safety and compliance regulations whether it is using its own crews or hired crews. PSE is committed to constructing, operating and maintaining safe electric and gas delivery systems that comply with applicable regulations and either meet or exceed PSE's own high standards of excellence.

The Company believes that its systems are safe. However, PSE is constantly looking for ways to enhance safety and improve regulatory compliance, particularly with regard to documenting its practices. PSE recently re-organized its Compliance and Safety areas. As part of this reorganization, the Company added safety compliance personnel, separated Standards efforts from Compliance efforts and separated gas compliance from electric compliance. The Director of Compliance and Safety now reports directly to PSE's Executive Vice President and Chief Operating Officer. The Compliance and Safety Team works closely with all areas of Operations so that gas and electric transmission and distribution systems are designed, built, operated, inspected, and maintained in a manner that is compliant with state and federal regulations. PSE has implemented internal corporate ethics and compliance training, as well as other safeguards to promote regulatory compliance. Another mechanism is PSE's Executive Systems Integrity Committee ("ESIC"), comprised of key leaders within the Company. ESIC reports to the Company's Board of Director's Governance Committee on a regular basis so that systems integrity remains a Company emphasis. A copy of PSE Operations organizational chart is attached to my pre-filed direct testimony as Exhibit No. ___(SML-5).

The complex and evolving regulations that touch PSE's business have led PSE to continue to develop and refine the Company's compliance organization and operational accountabilities.

## A. Compliance -- Electric Reliability Requirements

**Q. How were reliability requirements affected by the Energy Policy Act of 2005?**

A. The Energy Policy Act of 2005 (the "Act") amended the Federal Power Act to make reliability standards for the bulk-power system mandatory and enforceable, and a matter of Federal law. The Act gives the Federal Energy Regulatory Commission ("FERC") jurisdiction over the reliability of the bulk-power system in the U.S. The Act also created an Electric Reliability Organization (which in July 2006 became the North American Electric Reliability Corporation or "NERC"). NERC can impose penalties of up to $1 million per violation per day (or other appropriate sanctions) to an owner, operator, or user of the bulk-power system for a violation of a reliability standard. NERC can also delegate its enforcement authority to a regional entity, which in PSE's case is the Western Electricity Coordinating Council ("WECC").

**Q. How many reliability standards are there and when did they become effective?**

A. Eighty-three standards went into effect on June 18, 2007. The standards comprise almost 600 requirements and sub-requirements, and PSE must be able to document compliance with all requirements.

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**Q. Are all the standards new to what had been required for a utility?**

A. Many of the standards existed prior to the Act, although adhering to them was strictly voluntary and documentation proving adherence was not required. In addition, as the investigation of the 2003 blackout in the Northeastern United States uncovered, it was not entirely clear by the way the standards were written exactly which entity or party was responsible for compliance with the standards.

Estimates vary as to how many standards will eventually be written and made mandatory, but current estimates range as high as 125, and approximately one-fourth of them will be in addition to what had been voluntary standards.

**Q. How does PSE decide which standards are applicable to PSE?**

A. It is not a decision PSE makes. PSE is required to register with NERC and affirm those functions that PSE performs as an owner, operator or user of the bulk-power system. For example, PSE is registered as a Transmission Operator, Balancing Authority, Planning Authority, Transmission Planner, Transmission Service Provider, Transmission Owner, Resource Planner, Distribution Provider, Generation Owner, Load Serving Entity, and Purchasing-Selling Entity. The NERC standards are written such that they apply to one or more functions. Any entity that registers as performing that particular function is then automatically required to comply with the reliability standards and requirements associated with that function.

**Q. Are more standards being developed?**

A. Yes. New standards are being developed on an ongoing basis just as older, approved standards are continually being evaluated (every five years) and modified, if necessary, to meet newer or different operating conditions in the U.S. In late summer 2007, for example, the NERC Web site listed almost 40 additional standards that were either under development, being field tested, or awaiting regulatory approval. All told, there will be well over one thousand individual requirements associated with the standards.

**Q. How is compliance with the standards verified?**

A. All entities registered in the U.S. are audited for compliance every three years. PSE's first compliance audit took place November 13-16, 2007. The NERC and WECC auditors will be preparing a report of their findings.

As a registered entity, PSE must be able to provide documentation of policies, procedures or practices that support compliance with every requirement of every applicable standard. If an audit team finds instances of noncompliance, PSE is subject to fines or sanctions. PSE is also expected to self-report any and all instances of noncompliance as soon as they are discovered and file a mitigation plan stipulating steps taken or to be taken to attain compliance. Self-reporting is considered a mitigating factor in the assessment of any fines or sanctions.

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**Q. What actions is PSE taking to comply with these standards?**

A. In addition to PSE's re-organization and addition of personnel for compliance purposes, PSE has assigned personnel to manage and maintain documentation that is needed to demonstrate its compliance with the standards.

Both the organizational structure and assigning personnel to manage and maintain documentation to demonstrate compliance are proving to be beneficial. In the exit interview from the November 2007 on-site NERC compliance audit, the audit team stated that PSE has demonstrated a solid commitment to reliability; that the Company has developed, staffed and is implementing an Internal Compliance Program that follows guidance provided by FERC; and that the Company's program appears to be supported at all management levels within the Company.

**Q. Are there other actions the Company is taking to comply with these standards?**

A. Yes. PSE maintains a comprehensive vegetation management program, and one of the most critical and visible NERC compliance standards is vegetation management.

**Q. Please describe PSE's vegetation management program.**

A. PSE's vegetation management program includes tree trimming, vegetation removal and replacement, and targeted herbicide application for vegetation located in the right-of-way and growing proximate to PSE's overhead distribution

and transmission lines. Vegetation pruning on the distribution system occurs on a four-year cycle in urban areas and a six-year cycle in rural areas. Vegetation pruning on the under-230 kV transmission system occurs on a three-year cycle. Vegetation pruning on the 230 kV transmission system is being performed on an annual basis until the wire zone/border zone project (discussed below) is complete. PSE's vegetation management program also includes a component which removes dead, dying and diseased trees that pose a threat to PSE's system from private property adjacent to PSE's overhead system. This component of the vegetation management program is referred to as TreeWatch.

**Q. How do the reliability standards affect PSE's vegetation management program?**

A. The driver of mandatory reliability standards was the massive blackout in the Northeastern United States in 2003, in which 50 million people lost power. A major cause of the blackout was conductors sagging into trees within the rights-of-way. As a consequence, a mandatory and enforceable vegetation management standard was adopted for transmission lines rated 200 kV and above. This reliability standard requires utilities to: 1) prepare and keep current a formal transmission vegetation management program; 2) create and implement an annual plan for vegetation work; 3) report tree-related transmission outages quarterly to regional reliability organizations (WECC); and 4) report any actions taken as a result of a tree-related transmission outage.

In addition to the reliability standards, NERC and the industry recognized wire zone/border zone right-of-way vegetation management as a "best practice" that would eliminate the possibility of an outage caused by conductors sagging into trees on the right-of-way. This best practice is not specifically required by the NERC standards, but PSE has decided to implement it as a company standard. To implement this, PSE must create a predictable and low-growing environment of vegetation under and directly adjacent to its rights-of-way. PSE has historically allowed topped trees in some rights-of-way, but this will no longer be permitted under the wire zone/border zone right-of-way practice.

**Q. What are the expected costs of the new wire zone/border zone right-of-way best practice?**

A. The incremental expected cost to follow the wire zone/border zone right-of-way best practice will approximate $7.0 million through 2010: $2.5 million in $2008, $4.4 million in 2009, and $0.1 million in 2010. This work is in addition to any regular vegetation management work and is not expected to be funded by reductions in other vegetation management programs. These expected expenditures are based on field estimates of tree volumes and estimates of tree removal, related permitting and mitigation costs by PSE vegetation management and consultant staff.

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**Q. Please summarize all expected vegetation management costs.**

A. PSE has provided a summary table of vegetation management costs through 2012 in Exhibit No. ___(SML-6C).

**Q. What other changes are anticipated in PSE's vegetation management program?**

A. As a result of PSE's assessment of its performance in the 2006 Hanukkah Eve Storm, PSE's vegetation management program has been expanded to address its cross-country transmission corridor access and maintenance. Mr. Zeller's testimony provides additional information on this topic.

**Q. Tree-related outages are less of a problem in certain other electric systems, Eastern Washington for example. Please describe why.**

A. Four major considerations explain why PSE customers may experience a higher degree of tree-related outages in the PSE service territory than do customers in Eastern Washington:

- Precipitation variations;
- The difference and densities of native tree species in Western Washington versus Eastern Washington;
- Development and regulation associated with development; and
- Topography and terrain.

According to the United States Geological Survey, the western part of Washington State receives about 70 inches of rainfall per year and the eastern part about 20 inches. Average annual precipitation ranges from only seven inches in the driest part of Eastern Washington to about 150 inches in the Olympic Mountains in Western Washington. The Spokane Valley and Northern Idaho, for instance, have an average precipitation of less than 30 inches per year. By comparison, precipitation within the PSE service territory includes Buckley, Washington near Mt. Rainier with an average of 48 inches per year; Olympia, WA with an average of 51 inches per year; and Quilcene, Washington on the Olympic Peninsula with an average of 71 inches per year. The large amount of rainfall in PSE's service territory not only leads to accelerated tree growth rates, but also to super-saturated soils that predispose trees to being toppled under average to high wind conditions.

Second, the native tree species and density vary significantly between the two regions. Western Washington is comprised of the coniferous species Douglas Fir and Western Hemlock and broadleaf species such as Big Leaf Maple and Black Cottonwood, all of which are aggressive growers in areas of high precipitation. None of these species has a particularly deep root system, nor do they have a large tap root, which would help them withstand high winds. The service territory of Eastern Washington electric utilities, for instance, consist of species more compatible with drier conditions. For example, many of the evergreen species common to Spokane and Northern Idaho have deeper root structures to

withstand the drier conditions. This also makes them less vulnerable to wind. Growth rates are also decreased, again due to less precipitation. Tree density between the two service territories is different as well, when comparing the Olympic Peninsula, or even Mercer Island, to Spokane. One study has shown that higher density means more trees per mile of electric overhead system which translates to a greater number of trees capable of causing damage to PSE facilities. *See* Exhibit No. ___(SML-7).

Third, the level of development in PSE's territory also plays a role in increased outages compared to other utilities. Large tracts of native forest timberland are increasingly being converted into large plat housing developments. In many areas, jurisdictions require a certain number of trees to remain after clearing. These trees, which tend to be left as narrow buffer between the development and roads, are then exposed to wind conditions they had not experienced prior to clearing. The ground around the base of the trees is also often cleared of undergrowth, which helps hold the root system in the ground. Such trees are therefore more susceptible to failure, even with moderate winds.

Finally, the terrain of PSE's service territory also contributes to tree outages, as trees perched on steep slopes above PSE power lines can fall and contact power lines even though they may be a significant distance away from the lines.

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**Q. Please describe the Company's TreeWatch program.**

A. PSE's TreeWatch program, which removes dead, dying and diseased trees from private property along PSE's overhead system, became a $2 million O&M program on March 1, 2005, per the Commission final order in PSE's 2004 general rate case, Docket No. UG-040640 *et al.* In 2006, PSE was unable to spend the entire $2 million on this program due to the large number of storm events that occurred in the fourth quarter of 2006. PSE expects to spend the $2 million in 2007.

## B. Compliance -- Natural Gas System Safety Requirements

**Q. Please provide an overview of the natural gas system regulatory requirements that PSE must adhere to.**

A. At the forefront of all decisions that PSE makes regarding activities performed on its natural gas system is public safety. To that end, PSE is required to adhere to all state and federal pipeline safety requirements. At the federal level, the Pipeline and Hazardous Materials Safety Administration ("PHMSA"), through its Office of Pipeline Safety, promulgates minimum pipeline safety regulations in CFR Title 49, Part 192. At the state level, the WUTC has enacted additional pipeline safety rules contained in WAC 480-93. All of these rules are complementary to each other and cover a wide range of design, construction, inspection, operation and maintenance activities. All of PSE gas operating

standards and field procedures are designed to meet or exceed the Company's compliance with these requirements.

**Q. Have there been changes to pipeline safety requirements?**

A. Yes. While historically the federal requirements have been of a prescriptive nature, recent rulemakings have tended more toward performance-based outcomes. Operator Qualification and Transmission Integrity Management rules, along with the soon to be released Distribution Integrity Management rules are examples of this more risk-based approach to addressing pipeline activities and the effort to further improve public safety.

**Q. Please provide a summary of PSE's natural gas system compliance and safety initiatives and associated costs.**

A. While PSE has always been committed to operate a safe and reliable gas pipeline system, PSE has undertaken additional initiatives to improve its pipeline safety performance. These efforts have been developed either as a result of new regulatory requirements, in settlement of ongoing regulatory matters, to address aging infrastructure, or at PSE's own initiative. Provided below is a summary of some of these efforts and, where applicable, expected estimates of PSE's 2008 expenditures:

- **Bare Steel Pipe Replacement Program** - $10 million annual expenditures to replace 19 miles of the remaining bare steel pipe within PSE's system.

- **Increased leak survey frequency** - $275,000 incremental annual increase to conduct leakage surveys every three years, rather than on a mandated five year survey schedule.

- **Wrapped Steel Service Assessment Program ("WSSAP")** - $6 million annual expenditures to replace older wrapped steel services that are identified for replacement through the WSSAP risk model.

- **Integrity Management** - $170,000 per year related to the assessment of the integrity of transmission system.

- **Operator Qualification** - $740,000 per year for training and qualification of personnel performing covered tasks.

- **Public Awareness** - Awareness activities, including pipeline markers, customer education material, regular meetings with public officials, emergency first responders (e.g., fire and police) and pipeline safety public service announcements. PSE funds this work across several departments and the totality of the costs has not been tracked.

**Q. Please describe PSE's efforts to promote regulatory compliance and improve its gas pipeline compliance record.**

A. PSE is committed to operating a safe gas delivery system that complies with state and federal regulations and that meets or exceeds the Company's standards. PSE is constantly looking to increase gas system integrity and improve compliance. As discussed earlier in my testimony, PSE has recently reorganized its Compliance and Safety areas (for both gas and electric) to proactively respond to the complexity and evolving regulations that impact PSE. In addition, PSE has refocused its audit efforts to identify and respond to opportunities to improve its standards and the work performed by PSE employees, service providers and other contractors. PSE is using a combination of resources to perform these audits from

the Company's Quality Assurance and Inspection Department, Internal Audit Department and third party audits. PSE will continue to implement new and revised standards, programs and processes to improve compliance.

Some other examples of steps PSE is taking or has already taken to improve compliance include revising the Gas Operating Standards to more clearly specify how PSE complies with regulatory requirements; implementing the Isolated Facilities Program to identify and remediate, as needed, steel gas facilities that are isolated from cathodic protection systems; implementing the Wrapped Steel Service Assessment Program to identify, assess and remediate, as needed, a particular type and vintage of steel pipe; and implementing enhancement to the Company's computer database as well as improving processes for performing inspections or maintenance of facilities within the required timeframes.

Additionally, PSE has added staff to its Maintenance Planning department to focus on addressing compliance related maintenance issues. PSE's Maintenance Planning department has developed programs and long range plans to address ongoing maintenance issues. These programs and plans relate to gas facilities in bridge and slide areas, mobile home communities, regulator stations, meter sets, and valves among several others. The programs and plans typically include subjects such as work flows, personnel roles and responsibilities, tracking documents, budgets, and inspection, survey and patrol reports.

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## VI. ELECTRIC SYSTEM RELIABILITY

**Q. Are there other challenges that may be impacting the need for additional electric system investment?**

A. Yes. Although PSE has been able to deliver quality service for many years, PSE is concerned that current levels of energy delivery system investment may not be adequate to meet desired service levels. For example, the metric non-storm System Average Interruption Duration Index ("SAIDI"), a measurement of the average duration of a customer power interruption, is below PSE's expectations. SAIDI is one of the Company's service quality indices ("SQI") that is reported to the Commission on an annual basis. In 2006, the Company did not meet this metric, nor is the Company on track to meet the metric in 2007.

Exhibit No. ___(SML-8) reflects a comparison of the Company's non-storm SAIDI performance for each month of the year. It also reflects the quantity of outage minutes that are reported to be caused by trees versus outages that are caused by other factors (e.g., equipment failure, car pole accidents, animals, etc.). In 2006 and 2007 an abnormally high number of non-storm tree-caused outage minutes exist in January, February and November. Because January, February and November are typically higher wind months, it is possible that the Company's performance in this area is an anomaly and not a trend.

However, PSE's customers are more reliant on electronic equipment for business and personal use (e.g., telecommuting; email; time management; bill paying;

travel arrangements) as I discussed previously. As a result, customers in every class appear more sensitive to even minor disruptions in service that may have been tolerated in the past.

In addition, when customers relocate from urban areas to rural settings, they can be frustrated with the higher frequency of power disruptions that occur in more rural areas of PSE's service territory. While urban areas tend to have greater redundancies and relatively infrequent power disruptions, rural areas have fewer alternate power feeds and more frequent disruptions.

Failing to meet our service quality metrics does not meet PSE's own high standards and we are working to understand and address this matter.

**Q. Are there other electric system reliability metrics that are of concern?**

A. No, not at this time. The metric non-storm System Average Interruption Frequency Index ("SAIFI"), a measurement of the average number of outages a customer experiences, has also increased in the same months in 2006 and 2007, as reflected in Exhibit No. ___(SML-9). However, we have continued to meet our SAIFI service quality metric.

**Q. Why do you think additional system investment is needed to meet desired service levels?**

A. If higher winds and tree-related system damage continue as a pattern in the winter months, additional actions will be required in order to improve our performance.

Potential actions include more aggressive vegetation management practices, the use of different tower/pole designs, installation of additional switches to allow for the isolation of sections of damaged equipment so fewer customers are impacted or experience shorter outage durations, and/or additional undergrounding of the electrical system.

## VII. PSE'S AGING WORKFORCE

**Q. Why is an aging workforce a concern?**

A. Industry-wide research indicates that over 60% of the workforce is over the age of 45. Within PSE, the picture is the same – PSE's average employee age is 47, and over the next 10 years, 60% will be eligible for retirement. Having to identify, replace and train potentially 500 employees in the next five years will have real cost and service consequences to the Company. Recruiting and hiring replacements is challenging and costly. PSE has already experienced lengthy candidate searches, and when possible, PSE plans for extended training periods with overlap to transfer specific PSE system knowledge to new staff.

**Q. Please describe the actions taken by PSE to address an aging workforce.**

A. The Company has taken several steps to deal with the challenges of an aging workforce. PSE has implemented initiatives designed to help "grow our own replacements" after hiring individuals with very little utility experience. This approach reduces the need for costly and lengthy candidate searches, provides

PSE specific job training and increases the potential supply of workers.

Examples of this approach include:

- A focused effort, including expanded selection criteria, to hire Utility Workers, as a feeder group. These are individuals whom we anticipate will be more likely to succeed in the next steps of the works progression, thus providing qualified candidates for future Gas Worker vacancies.

- PSE has an active intern program, designed to assist in the identification and recruitment of individuals to the Company in advance of completing their college degree. The intern program provides the Company with an opportunity to observe work habits and performance, exposes students to career opportunities within the Company and provides students with an understanding of PSE's business, which may impact the students' choice of course work, better preparing them for a career at PSE.

- PSE has an active Engineer-In-Training ("EIT") program for recent college engineering graduates. This program provides a wide variety of job assignments (e.g., Electric and Gas System Engineering, Maintenance Planning, Total Energy System Planning, Standards and Compliance, Electric and Gas First Response, Transmission Contracts, Energy Efficiency and Energy Resources). The purposes of the program are to expand the entry-level engineer's professional work experience and build relationships among employees. PSE's EIT program goal is to rotate EIT candidates through all the departments listed above during their first year with PSE. After completing the program, the candidate is eligible for full-time job assignment based on PSE's needs, the candidate's skills, training, and interests.

- PSE has also teamed with unions who represent workers within the Company to provide apprenticeship opportunities, again to grow the pool of qualified workers.

The testimony of Tom Hunt, Exhibit No. ___(TMH-1T), further discusses the company-wide actions that PSE has taken to address an aging workforce, the

scarcity of skilled, experienced craft and technical resources and the needed knowledge transfer.

## VIII. COST DRIVERS AND COST MANAGEMENT

**Q. What are the predominate drivers of operations and maintenance cost increases?**

A. As discussed earlier in my testimony, the Company's costs are increasing due to a number of factors such as a larger system to operate, inspect and maintain; more customers to serve; changing customer expectations; additional and evolving federal, state and local regulations, ordinances and compliance requirements; aging infrastructure which requires additional inspection and maintenance; a diminishing supply of experienced resources; and higher levels of capital system investment.

**Q. Are there indicators that show PSE's O&M costs are efficient**?

A. Yes. When looking at electric O&M costs per customer and gas O&M costs per customer, PSE remains one of the lowest cost providers among investor-owned utilities in the United States, as is reflected in Exhibit No.___(SML-10).

**Q. How does higher capital spending investment increase O&M?**

A. In certain instances capital spending has a direct impact on the Company's O&M. For example, when PSE installs energy delivery system assets where there were

previously none, the result will be an increase in ongoing O&M expenses since these assets (gas pipe, valves, regulators, poles, transformers, switches, etc.) will need to be inspected and maintained for compliance with regulatory requirements and for system integrity purposes.

Energy delivery system assets that are installed to replace existing assets (as part of aging infrastructure replacement programs) may result in a reduction in the ongoing maintenance costs. For example, when PSE replaces older substation circuit breakers and relays with more modern equipment, PSE expects maintenance requirements to decrease over the long term since the newer equipment has less frequent or less intensive maintenance needs. However, replacement does not always mean lower maintenance costs. For example, the replacement of existing gas mains and services would not necessarily result in a decrease in maintenance expenses since these types of assets must be inspected at regular intervals that are prescribed by codes, irrespective of the age or condition of the pipe.

Additionally, increasing capital infrastructure investments may generate an associated operations and maintenance related to construction cost ("OMRC"). As prescribed by FERC accounting practices, when certain construction activities take place, there is an associated operations and maintenance component. For example, when an older gas main is replaced and the service lines going to individual residences and businesses are not replaced, the work associated with tying the existing services into the new gas main is required by FERC to be

accounted for as O&M expense. Another example of such accounting occurs when a pole is replaced; the removal and reattachment of the conductor is required by FERC to be accounted for as O&M expense. As capital infrastructure investment is increased, PSE anticipates OMRC will increase, as summarized in Exhibit No. ___(SML-11C).

**Q. What increases in O&M expenditures are associated with PSE's transmission and distribution systems?**

A. PSE's actual and anticipated O&M expenditures are summarized in Exhibit No. ___(SML-11C). During 2007 alone, PSE expects O&M expenditures of nearly $[redacted] million. This figure is $[redacted] million greater than PSE's 2006 expenditures of $[redacted] million and represents a [redacted] increase. PSE expects further increases in transmission and distribution O&M in 2008 to $[redacted] million. This is $[redacted] million or [redacted] greater than 2007 expected O&M expenditures.

Such increases are driven primarily by increased inspection and maintenance requirements, regulatory compliance (e.g., FERC or NERC electric reliability requirements and pipeline safety mandates), damage prevention, vandalism repair, vegetation management, and OMRC. Not only is PSE performing more operational and maintenance work, but such efforts are compounded by cost increases covered earlier in my testimony.

Locating underground utilities is an example of an area where PSE is experiencing rapidly rising O&M costs. During 2006, PSE experienced an 11%

increase in O&M locating costs over 2005 levels. This represented nearly $630,000 of additional costs. In 2007, PSE anticipates an additional 7% increase over 2006 levels and over an additional $425,000 of costs. In total, O&M locating costs have increased over $1 million since 2005.

**Q. Why are these locating costs increasing so dramatically?**

A. The average number of calls to "Call Before You Dig" in the PSE territory has increased between 3% to 7% for each of the last three years. The growing economy and the quantity of infrastructures (e.g., water, sewer and roads) being replaced or added, combined with successful advertising for "Call Before You Dig" has likely driven this increase.

**Q. With work volumes increasing and as the cost-of-doing business increases what are examples of actions taken by PSE to manage costs?**

A. An example of an action PSE has taken to manage the increases in work volume and cost-of-business increases is the implementation of a mobile work force scheduling and coordination system which should help PSE identify and dispatch the closest qualified resource to an emergency event. The system also automatically organizes scheduled compliance inspection and service work to minimize travel time and increase productivity.

Additionally, PSE has formed a Performance Excellence department which reports to the Executive Vice President and Chief Operating Officer. This

department is charged with identifying opportunities across key operational functions and implementing process improvements to drive sustainable performance improvement in the areas of customer responsiveness, reliability, compliance, safety and efficiency.

**Q. What are the predominate drivers of increases in capital investment costs?**

A. As discussed earlier in my testimony, the Company's costs are increasing due to a number of factors such as changing customer expectations; additional and evolving federal, state and local regulations, ordinances and compliance requirements – which impact design, permitting and construction practices; diminishing supply of experienced resources; and significantly higher material costs.

**Q. What is the magnitude of the investments PSE is and will be making to its gas and electric energy delivery systems?**

A. In order to meet the operations challenges described in my testimony, PSE must make substantial investments in its gas and electric energy delivery systems. Actual and anticipated capital investments are summarized in Exhibit No. ___(SML-12C). PSE expects that total gas and electric delivery system capital investments in 2008 of $[redacted] million will exceed 2007 investments of $[redacted] million by approximately $[redacted] million, or [redacted]. These increases are driven primarily by the need to (1) add more electric and gas transmission and distribution system capacity, (2) add electric substation capacity, (3) provide

service to new gas and electric customers, and (4) undertake programmatic replacement of aging facilities.

**Q. How does PSE allocate its resources to support gas and electric system reliability and minimize costs?**

A. PSE has developed a methodology to effectively plan and prioritize its gas and electric system infrastructure investments. This process utilizes a variety of engineering modeling, financial analysis and analytical hierarchy decision-making tools and is referred to as the Total Energy System Planning ("TESP") process. The TESP process measures the benefits versus costs of a given project in detail and provides prudent decision options from a portfolio of hundreds of gas and electric projects. TESP is a single planning and decision-making process that allows PSE to evaluate and prioritize capital spending initiatives and programs. TESP does not favor either gas projects or electric projects. As a result, all electric and gas projects are compared against one another, with an emphasis on maximizing the benefits across the project portfolio. The TESP planning process and tools have continued to evolve over time in an effort to optimize and improve the benefits obtained from PSE's capital spending.

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**Q Since PSE utilizes contractors to perform the bulk of its routine construction, please provide an update on the oversight of work performed by Service Providers during the test period?**

A. A new contract was finalized with Quanta Services, Inc. on January 23, 2007. Contract unit cost prices were adjusted to reflect current market conditions and the contractual performance metrics were significantly enhanced in many areas. PSE also transitioned the street lighting work under the Quanta Master Services agreement. The Quanta contract price adjustments will increase approximately 3.5% in 2008. Given the quantity and type of work expected in 2008, the O&M impact of this is approximately $1.0 million.

A contract extension was negotiated with Pilchuck on January 26, 2007. The 2008 price adjustments will increase approximately 5%. Given the quantity and type of work expected in 2008, the O&M impact of this is approximately $400,000.

In total, the 2008 O&M impact of these contracts is expected to be approximately $1.4 million.

**Q What tools does PSE use to manage contractors in the Operations areas?**

A. PSE employs a dedicated Contractor Management Department tasked with oversight and management of contractors in the construction and repair areas. This department is under my area of responsibility. Included in the Contractor

Management Department's responsibilities is the monitoring of contractor performance. PSE Contractor Management utilizes a set of performance metrics that are reported on and reviewed on a regular basis with contractors and PSE management. Examples of PSE contractor performance management metrics and a copy of the Contractor Management organization chart can be found in Exhibit No. ___(SML-13C).

In addition, within the Compliance and Safety Department, reporting directly to the Executive Vice President and Chief Operating Officer, is the Quality Assurance and Inspection Department ("QA&I"). The 19 inspectors within this area inspect approximately 10% of all field work carried out by the two major service provider contractors performing routine natural gas and electrical system design, engineering, permitting and construction. Field work is inspected to PSE standards and adherence to standards is required. When work is not performed to the Company's standards, it is often remediated at the contractor's expense.

A monthly report is issued on each service provider's adherence to PSE's standards and on a monthly basis QA&I reviews their findings with each contractor. QA&I tracks previously identified issues and Contractor Management oversees any necessary corrective action. QA&I also reviews field observations they may have, so that contractors can take action to prevent re-occurrence. Finally, QA&I performs audits of the service providers against the service providers own quality control program.

## IX. PSE'S INFRASTRUCTURE INVESTMENT NEEDS

**Q. Please describe the portions of PSE's electric infrastructure that require maintenance or replacement spending.**

A. Electric infrastructure includes PSE-owned transmission and distribution poles, cables, conductors, transformers, circuit breakers, structures, switches, controls and associated apparatus necessary to provide electric service to PSE's customers.

Reliability, replacement and remediation projects include work designed to improve system components, which can be impacted by trees, animals, environmental degradation, age and projects that arise due to unplanned events such as car-pole accidents, dig-ups or equipment failure.

PSE has several well-established maintenance and refurbishment initiatives, including cable replacement and substation maintenance. Maintenance and replacement strategies are based on the condition and age of the equipment. However, maintenance requirements often increase for aging equipment. PSE uses planned inspections to identify or mitigate problems in a proactive manner. These inspection costs are considered "maintenance" within PSE.

**Q. What is the magnitude of PSE's electric infrastructure capital spending?**

A. Actual and anticipated electric capital investments are summarized in Exhibit No. ___(SML-14C). PSE expects that 2008 electric capital investment of $[redacted]

million for all types of work will exceed 2007 investment of $[redacted] million by approximately $[redacted] million, a [redacted] increase.

**Q. Please describe the portions of PSE's gas infrastructure that require maintenance or replacement.**

A. PSE's gas infrastructure includes PSE-owned gas mains, services, valves, meters, cathodic protection sites, and pressure-regulating stations necessary to provide gas service to PSE customers. Replacement and remediation projects target system components that are impacted by leakage, compliance initiatives, age, and replacement as a result of unplanned events such as dig-ups.

A significant expenditure associated with the gas system is periodic inspection, which can identify components that require remediation (e.g., removal of atmospheric corrosion and follow-up painting) or replacement. These inspection costs are considered "maintenance" within PSE.

**Q. What is the magnitude of PSE's gas infrastructure capital spending?**

A. Actual and anticipated gas capital investments are summarized in Exhibit No. ___(SML-15C). PSE expects that 2008 gas capital investment of $[redacted] million for all types of work will be lower than 2007 investment of $[redacted] million by $[redacted] million, an [redacted] decrease.

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**Q Could PSE delay some of the gas or electric infrastructure replacements and thereby avoid these cost increases?**

A. Some replacements of aging equipment could be delayed. However, maintaining, rather than replacing, increasingly older components can be expected to drive up O&M costs due to greater maintenance requirements and expenses related to responding to system failures in a reactive manner. Short-term cost cutting actions can end up costing more in the long-run because the asset replacement or maintenance costs increase over time. In addition, deferring necessary system improvements often negatively impacts the quality of service to customers through longer or more frequent electric outages or decreased gas system reliability and integrity.

**Q Has PSE made investments in system infrastructure that are greater than forecasted in the last general rate case?**

A. Yes. During 2007, PSE expects to make system infrastructure investments in excess of $[redacted] million. This exceeds by $[redacted] million or [redacted] the Company's forecasted investment of $380 million that was included in the 2006 rate case. These investments were necessary to meet customer service expectations and regulatory requirements.

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## X. CONCLUSION

**Q. Please summarize your testimony.**

A. PSE continues to be an efficient, low-cost provider of high-quality electric and natural gas service to its customers. However, the Company's aging electric and gas transmission and distribution systems, increasing regulatory requirements, higher costs of doing business, and workforce resource and talent issues are resulting in major operational challenges that are accelerating over time. This is not a situation that is unique to PSE; this is an industry phenomenon.

Further, the communities PSE serves have experienced rapid growth and a strong economy, both of which lead to additional system capacity requirements, adding system to serve new customers and other factors that drive up PSE's expenses.

Substantial and continued capital investments and operations and maintenance expenditures will be required if PSE is to continue to provide reliable, safe and high quality service to its customers.

**Q. Does that conclude your testimony?**

A. Yes.