Exhibit No. _____T (DL-1T)
Docket UG-110723
Witness: David Lykken

BEFORE THE WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION, Complainant, v. PUGET SOUND ENERGY, INC., Respondent.	DOCKET UG-110723

TESTIMONY OF

David Lykken

STAFF OF
WASHINGTON UTILITIES AND
TRANSPORTATION COMMISSION

October 25, 2011

I. INTRODUCTION AND SUMMARY

Q. Please state your name and business address.

A. My name is David Lykken. My business address is the Richard Hemstad Building, 1300 S. Evergreen Park Dr. SW, Olympia, Washington 98504

Q. By whom are you employed and in what capacity?

A. I am employed by the Washington Utilities and Transportation Commission as the Pipeline Safety Director.

Q. Please describe generally your duties as the Pipeline Safety Director.

A. I direct a comprehensive interstate and intrastate pipeline safety program regulating natural gas and hazardous liquid pipelines operating in Washington. This program enhances public safety through adoption of standards, compliance inspections, technical assistance, public education and enforcement. Our safety program covers the natural gas pipeline system of Puget Sound Energy, Inc. ("PSE" or the "Company").

Q. Please describe generally your relevant professional background.

A. I began my employment as a Pipeline Safety Engineer at the Commission in 2000. I was the Commission's Chief Pipeline Safety Engineer from 2004 to 2009, when I began my current position as Pipeline Safety Director.

Prior to my employment at the Commission I was employed by Washington Natural Gas Company for 18 years and PSE for 2 years. In these positions I gained

extensive technical knowledge and experience in natural gas pipeline construction practices, operations, and maintenance, as well as safety regulation. While employed by these companies, I held management level positions as a Construction Coordinator and Operations Supervisor, responsible for coordinating job planning and projects, and ensuring compliance with company policies and procedures and pipeline safety regulations.

Q. What is the purpose of your testimony?

A. My testimony provides background information regarding various aspects of natural gas pipeline safety practices such as integrity management and how it is different from traditional regulation. I will also describe what PSE has done to make its system safer, the problem presented by older polyethylene ("PE") pipe, and PSE's exposure to it. Staff witness Mark Vasconi is responsible for presenting the Staff recommendation on the specific tariff filing in this docket.

II. DISCUSSION

Q. What is distribution integrity management?

A. The Pipeline Integrity, Protection, Enforcement, and Safety Act of 2006 mandated that the Pipeline and Hazardous Material Safety Administration ("PHMSA") prescribe minimum standards for integrity management programs for distribution pipelines. The law provided for PHMSA to require operators of distribution pipelines to continually identify and assess risks on their distribution lines, to remediate conditions that present a

potential threat to pipeline integrity, and to monitor program effectiveness. Instead of imposing additional prescriptive requirements for integrity management, PHMSA concluded that a requirement for operator-specific programs to manage pipeline system integrity would be more effective given the diversity in distribution systems and the threats to which they may be exposed. Regulations were, therefore, promulgated that require operators, such as natural gas distribution companies, to develop, write, and implement a distribution integrity management program ("DIMP") with the following elements:

1. Knowledge,
2. Identify threats,
3. Evaluate and rank risks,
4. Identify and implement measures to address risks,
5. Measure performance,
6. Monitor results,
7. Evaluate effectiveness,
8. Periodically evaluate and improve program, and
9. Report results.

Q. Why is integrity management important?

A. Federal and State pipeline safety regulations have contributed to producing an admirable safety record. Nevertheless, incidents continue to occur, some of which result in death and injury. These incidents often involve unique circumstances or characteristics of a particular pipeline system/segment or its operation.

It is not possible to significantly reduce high consequence pipeline incidents without reducing the likelihood of their occurrence on distribution pipelines. The DIMP regulations aim to assure pipeline integrity and improve the safety record for the transportation of natural gas and hazardous liquids.

Q. How is integrity management different than the historical approach to pipeline safety?

A. The purpose of distribution integrity management ("IM") is to enhance safety by identifying and reducing pipeline integrity risks. The IM programs required by federal rule are similar to those required for gas transmission pipelines, but tailored to reflect the differences in and among distribution pipelines. Based on the required risk assessments and enhanced controls, the rule also allows for risk-based adjustment of prescribed intervals for leak detection surveys and other fixed-interval requirements in existing regulations for gas distribution pipelines. These regulations require that operators of these pipelines develop and follow individualized IM programs, in addition to PHMSA's core pipeline safety regulations. The IM approach was designed to promote continuous improvement in pipeline safety by requiring operators to identify and invest in risk control measures beyond core regulatory requirements.

Q. Please describe PSE's pipeline safety management practices.

A. PSE has taken a number of steps to improve system performance and reduce the public's exposure to risk. Most of these safety management programs relate to safety and compliance, training, compliance auditing, and continuing surveillance. In addition, many

programs have already been implemented and some completed to address the risk associated with older vintage materials such as cast iron and bare steel pipe. PSE is also focusing on the highest priority areas including reducing third party damage and replacing and leak surveying pipe where there are integrity concerns. As a result, the number of hazardous and total leaks repaired has continued to decline. These decreases indicate that the overall system performance has improved.

Q. Does PSE have other types of installed distribution pipe that are of concern?

A. Yes. PSE has some amount of pre-1985 PE pipe in its system. This type of pipe has been identified by PHMSA as having a higher risk of leaking due to brittle-like cracking

Q. Please describe the problems experienced with older PE pipe in other jurisdictions.

A. There have been a number of serious pipeline incidents associated with plastic pipe materials identified as being susceptible to brittle-like crack failures. Brittle-like cracking can be caused by high localized stress intensification that may result from geometrical discontinuities, excessive bending, improper installation, or dents and gouges. Other factors that can lead to premature brittle-like cracking are the pipe's environment and service conditions under which the piping is used. These conditions include, but are not limited to, inadequate support and backfill during installation and rock impingement.

The vulnerability of this material to premature cracking represents a serious hazard to public safety. Operators in several states such as Arizona, Illinois, Minnesota, Texas, Iowa, and Missouri have replaced thousands of miles of this higher-risk plastic

pipe. Failures associated with incidents in these states have been tied back to poor construction practices at the time of installation.

In 2001, the American Gas Association (AGA) began to collect data on in-service plastic piping material failures with the objective of identifying trends in the performance of these materials. The resulting leak survey data, collected from 2001 to present, on the country's natural gas distribution systems includes both actual failure information and negative reports (reports with no leads) submitted voluntarily by participating pipeline operating companies.

The AGA, PHMSA, and other industry and state organizations continue to collect and analyze the data. Unfortunately, the data cannot be correlated with the quantities of each plastic pipe material that may be in service across the United States. Therefore, the data does not assess the failure rates of individual plastic pipe materials on a linear basis (*i.e.*, per foot, per mile, etc.). However, the failure data reinforces what is historically known about certain older plastic piping and components.

Q. How much PE pipe does PSE have in its system?

A. According to information submitted on Federal DOT annual reports for calendar year 2010, the Company had a total of 8,059 miles of PE main and 636, 997 services installed. This is more than 2/3 of PSE's total gas distribution system.

The level of exposure with respect to the older pre-1985 pipe manufactured by DuPont is unclear since historical documentation such as material requisitions, construction, and maintenance records do not provide sufficient detail to determine quantities purchased and location of installations. Also, DuPont pipe was not used

exclusively by the Company prior to 1985 and constitutes only a fraction of the total mileage of plastic pipe installed during this time. Other high quality PE materials were used during this time and have performed as designed.

Q. What has been PSE's experience with the performance of this pipe?

A. PSE does have a history of pipe failures associated with this pipe, but due to good construction practices the magnitude and frequency have to a certain extent been minimized.

In 2008, PSE implemented improved processes in materials failure analysis that enhanced the ability to identify joining and brittle-like cracking failures on older PE pipe. In 2009, PSE developed a risk model for plastic pipe segments based on their failure history. The risk model was developed to align with the risk model used to rank main segments for the Bare Steel Program. Additionally, in 2010 PSE implemented a new policy to replace pre-1986 PE services included as part of larger main replacement programs such as Bare Steel Replacement. PSE replaced 9541' of DuPont pipe in 2010 and intends to replace another 23,615' by the end of 2011.

Q. Does this conclude your testimony?

A. Yes.