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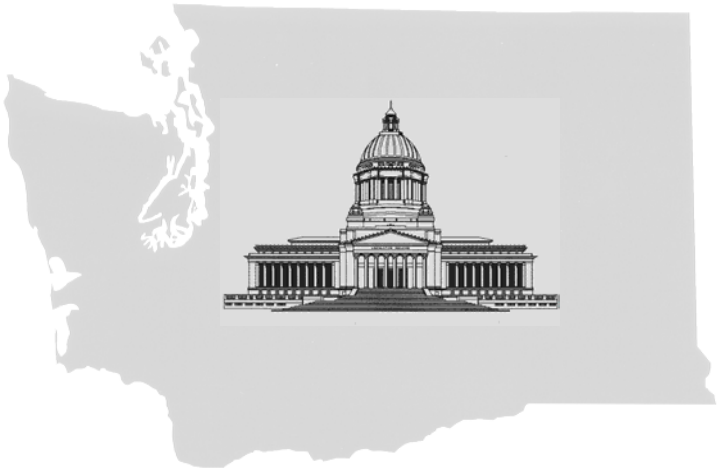

Oversight and Review of Washington's Pipeline Safety Office

Report 03-5

June 19, 2003

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The Joint Legislative Audit and Review Committee (JLARC) carries out oversight, review, and evaluation of state-funded programs and activities on behalf of the Legislature and the citizens of Washington State. This joint, bipartisan committee consists of eight senators and eight representatives, equally divided between the two major political parties. Its statutory authority is established in RCW 44.28.

JLARC staff, under the direction of the Committee and the Legislative Auditor, conduct performance audits, program evaluations, sunset reviews, and other policy and fiscal studies. These studies assess the efficiency and effectiveness of agency operations, impacts and outcomes of state programs, and levels of compliance with legislative direction and intent. The Committee makes recommendations to improve state government performance and to correct problems it identifies. The Committee also follows up on these recommendations to determine how they have been implemented. JLARC has, in recent years, received national recognition for a number of its major studies.

OVERSIGHT AND REVIEW OF WASHINGTON'S PIPELINE SAFETY OFFICE

REPORT 03-5

REPORT DIGEST

JUNE 19, 2003

STATE OF WASHINGTON

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BACKGROUND

The Washington Utilities and Transportation Commission (WUTC) houses a division of pipeline safety which inspects natural gas and hazardous liquid pipelines. Following a fatal pipeline accident in Bellingham in June 1999 and based on direction from the 2000 and 2001 Legislatures, the WUTC increased its program staffing, added new inspectors, and expanded its inspection processes. The Legislature also directed the Joint Legislative Audit and Review Committee to review the newly expanded program in its 2001 legislation (ESSB 5182).

For this review, JLARC staff interviewed pipeline operators, other delegated states, federal pipeline safety staff, and WUTC management and staff. We also reviewed program and financial files and contracted with three private firms with expertise in pipelines and geographic information systems for additional analyses.

A Very Dynamic Period

The WUTC has had authority to conduct intrastate (within state boundaries) natural gas inspections since 1955 and intrastate hazardous liquid inspections since 1996. The program expansion to interstate (across state lines) pipeline inspection in 2000 has resulted in a more intense inspection effort, a higher regulatory profile, and a program that is still evolving.

The world of pipeline safety is undergoing significant changes across the country: new federal rules to increase inspections, multiple program audits by the General Accounting Office, and a newly-developed, risk-based approach to conducting inspections.* The WUTC is now operating a larger program with increased responsibility and changing inspection approaches.

Other State Pipeline Safety Programs

Our assessment of pipeline safety programs across the United States shows there is no programmatic model that can guide an assessment of the WUTC's program. These programs vary greatly among the states, making interstate comparisons difficult. Moreover, no established interstate mechanism assembles or shares best regulatory practices.

General Findings

This review focused on three primary activities of the WUTC's pipeline safety program: inspecting pipelines, mapping pipelines, and imposing a fee on operators.

Inspections

The WUTC has established the initial stages of a more complex pipeline regulatory program; hired experienced and quality staff; accelerated staff training; improved program planning, and developed a comprehensive record system and databases. Completed inspections are at an historic high, and those inspections are more thorough and intense. WUTC is completing inspections more quickly than their initial projections and anticipates inspecting some companies less frequently. This could lead to the need for fewer inspectors for traditional inspections.

* In accordance with federal requirements, an inspection typically involves the methodical review of company records to ascertain if they are current and comport with federal codes. New inspection protocols may include more intensive physical inspection than what now exists.

However, new inspection protocols from the federal government are also in initial stages of development; and they will require additional inspection time.

Challenges for the WUTC will be to move beyond today's regulatory procedures and toward more risk-based management. The WUTC has not yet developed robust performance measures, nor has it developed a coherent and consistent enforcement policy. The nascent Integrity Management System can help the WUTC better manage risk, but additional lessons can be learned from Bellingham and the other accidents around the United States.

Mapping

The WUTC has made a good effort to assess their needs and the needs of "first responders," the local emergency personnel, to create a mapping system responsive to their multiple needs. In their planning efforts, however, the WUTC has not been sufficiently attentive to the larger community that already supports emergency responder readiness. That existing framework includes the State Fire Marshal, local Emergency Operation Centers, county and local GIS efforts, and the pipeline companies themselves, all of whom put some level of effort into maintaining GIS-based maps to support local emergency responses. Additionally, the WUTC has not clearly articulated how their mapping efforts fit with its pipeline inspection function.

Regulatory Fees

The WUTC has created fee rules that are congruent with statutory language and that fairly allocate inspection program costs. However, one calculation in the current fee methodology is based upon an estimate of staff time that has proven to be inaccurate. This projection has led to a disproportionate shift of costs from one group of pipeline operators (the intrastate companies) to another (the interstate companies). We found that interstate companies are paying more than their proportional share of the inspection program costs. In addition, the fee methodology uses an estimated daily cost of an inspector's time that is significantly less than the actual cost. This miscalculation, too, has created discrepancies in the fees paid by operators.

RECOMMENDATIONS

Based on JLARC's general findings and conclusions of this study, we make the following four recommendations:

Recommendation 1: Focus on Risk. The WUTC's pipeline safety program should develop a strategy to reduce the risks of pipeline accidents that will define risk, explain current risk reduction efforts, and identify new risk reduction strategies.

Recommendation 2: Identify and Integrate Best Practices. WUTC should identify and adopt best inspection and safety management practices through greater interaction with pipeline operators and the national pipeline safety community.

Recommendation 3: Integrate Mapping System with Other GIS Efforts. WUTC should plan its GIS system within the context of the existing emergency response infrastructure and articulate additional benefits to be gained with the WUTC's mapping system.

Recommendation 4: Align Costs and Workload. WUTC should base its fee methodology on actual staff time spent on inspections and revise the daily costs of an inspector's time to reflect actual practice.

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CHAPTER ONE – INTRODUCTION

OVERVIEW

Pipeline safety authority in the United States is shared between the federal Office of Pipeline Safety (OPS) and state governments. Typically, OPS delegates regulatory authority for ***intrastate*** (within the state boundaries) pipeline oversight to the states. Forty-eight states, Puerto Rico and the District of Columbia have this authority. Nine state governments have sought and received delegated authority for oversight on ***interstate*** (across state lines) natural gas pipelines, and six state governments have authority for oversight of ***interstate*** hazardous liquid pipelines.[1, 2]

In Washington State, pipeline safety authority rests in the Washington State Utilities and Transportation Commission (WUTC). The WUTC has conducted a natural gas inspection program since 1955, focusing on intrastate pipelines.[3] In 1996, the WUTC entered into an agreement with the OPS to conduct audits of intrastate hazardous liquid pipelines.

There are 29 different pipeline operators in the state: 18 natural gas companies and 11 hazardous liquid companies.[4] These companies operate more than 21,000 miles of regulated pipelines. Appendix 3 includes a map of the interstate pipelines and an index of both the intrastate and interstate pipeline operators in Washington.

Natural gas enters the state through one of three high-pressure interstate ***transmission*** pipelines, which together cover 1,700 miles.[5] Four local gas companies and three local governments then distribute this gas to homes and businesses through 18,600 miles of ***distribution*** pipelines. Eight industrial companies connect directly to the interstate lines for use at their facilities, and their 60 miles of pipe are also subject to intrastate regulation. The 20,300 miles of natural gas pipelines represents **96 percent** of the total regulated pipeline miles in Washington.

There are many fewer miles of hazardous liquid pipe. Four companies transmit hazardous liquid through 700 miles of interstate pipeline and seven companies operate a total of 92 miles of intrastate pipe. The 792 miles of hazardous liquid pipelines represent **4 percent** of the total regulated pipeline miles in Washington.

The WUTC also regulates a liquid natural gas facility, an underground natural gas storage site, and propane storage sites, as well as natural gas master meters. Master meters are clusters of meters operated by institutions such as schools and hospitals or by residential complexes such as apartment buildings and mobile home parks.[6]

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[1] The states with interstate gas authority are: Arizona, Connecticut, Iowa, Michigan, Minnesota, New York, Ohio, Washington, and West Virginia. The states with hazardous liquid authority are: Arizona, California, Minnesota, New York, Virginia, and Washington.

[2] Hazardous liquid pipelines generally carry petroleum products, but some also transport anhydrous ammonia and carbon dioxide.

[3] The natural gas program involves distribution utility companies, municipalities, direct sales industries, propane operators, and master meter operators.

[4] One of the operators, Exxon, is involved in storage, but it does not have any pipeline miles. All of the other operators have some pipeline miles.

[5] Transmission lines are large, high-pressure pipelines that carry natural gas or hazardous liquid from sources or refineries to distribution centers.

[6] The exact number of master meters in the state is unclear, but it is at least 420. WUTC perceives that the exact extent of its regulatory authority over master meters also is unclear.

A DYNAMIC REGULATORY ENVIRONMENT

On June 10, 1999, the Olympic pipeline ruptured in Bellingham. The result was a major release and explosion of 279,000 gallons of gasoline, resulting in three deaths. The Bellingham explosion set in motion a series of state and federal investigations and led to changes in both state and federal laws governing pipeline safety:

December 1999:	Governor's Fuel Accident Prevention and Response Team Final Report
March 2000:	Legislature enacts ESHB 2420, directing WUTC to seek delegation of interstate inspection authority
May 2000:	OPS and WUTC complete comprehensive audit of all interstate pipeline operations in the state
May 2000:	General Accounting Office publishes the first of four studies on OPS[7]
June 2000:	OPS grants delegated authority to WUTC for interstate pipelines
December 2000:	OPS adopts rules to implement Integrity Management for liquid operators with more than 500 miles of pipe
March 2001:	OPS adopts rules to implement Integrity Management of liquid operators with less than 500 miles of pipe
April 2001:	Legislature enacts ESSB 5182, imposing a regulatory fee on hazardous liquid and gas pipelines, directing WUTC to adopt rules, and directing this JLARC study
December 2002:	Congress enacts the Pipeline Safety Improvement Act of 2002 to strengthen pipeline safety
January 2003:	OPS proposes an Integrity Management program for gas transmission pipelines

The WUTC now operates a pipeline safety program of 15 staff (up from six in 1999), including a director and inspector supervisor, nine inspectors, policy and administrative staff, and a GIS technician.[8] The WUTC has adopted an intrastate hazardous liquid rule and a rule to calculate and administer its fee methodology. It is currently preparing a new rule for intrastate gas.

When the Legislature passed ESSB 5182 in 2001, it included a provision that JLARC review the newly expanded pipeline safety program and assess interstate and intrastate regulations, mapping requirements, and allocation of costs. To review the program, JLARC staff:

- Interviewed legislators and legislative staff, and met with other interested stakeholders;
- Conducted a survey of states with delegated programs;

[7] The four studies are: "The Office of Pipeline Safety Is Changing How It Oversees the Pipeline Industry," GAO, May 2000 (GAO/RCED-00-128). "Progress Made, but Significant Requirements and Recommendations Not Yet Complete," GAO, September 2001 (GAO-01-1075). "Status of Improving Oversight of the Pipeline Industry," GAO, March 19, 2002 (GAO-02-517T). "Improved Workforce Planning and Communication Needed," GAO, August 2002 (GAO-02-785).

[8] In April 2003, the WUTC management announced the elimination of two inspector positions. One of these positions would be reclassified as a GIS manager position; the other would be permanently eliminated.

- Interviewed pipeline safety program managers and inspectors at the state (WUTC) and federal (OPS) levels;
- Reviewed state and federal documents, including OPS grant documents on state programs and the WUTC's inspection database; and
- Contracted with three private firms with expertise in pipeline oversight and regulation and GIS systems.

WUTC INTERACTION WITH PIPELINE COMPANIES

As part of this review, JLARC also conducted interviews with 14 companies who operate more than 90 percent of the liquid and gas pipeline miles in the state. These interviews gave a first-hand account of the changing dynamic of pipeline inspections from the perspective of those who have the most interaction with the WUTC program. Ten of the companies reported that they had established a positive relationship with WUTC, and four indicated that the relationship wasn't positive. Seven of the eight intrastate companies indicated they had positive relationships, even though several of them had recurring compliance issues. Three of the four companies with negative experiences from their interactions with WUTC were interstate companies, who have only recently come under WUTC jurisdiction. Whether the relationship between regulator and operator is positive or negative seems in part to be a function of how long their relationship has been, irrespective of whether substantive problems have arisen during the inspections.

Additional detail from the interviews with the pipeline companies is located in the topic-specific sections of this report and in Appendix 4.

REPORT ORGANIZATION

This report is divided into three subject areas: inspections, mapping, and fee methodology:

- **Chapter 2** reviews the WUTC **inspection** workload, compares the WUTC program to other states' programs on a number of dimensions, and evaluates how risk and performance are assessed in the inspection process;
- **Chapter 3** reviews the requirements for **mapping** the pipeline system and assesses WUTC's approach to mapping;
- **Chapter 4** reviews the **fee methodology** used to fund the program; and
- **Chapter 5** completes the report with a discussion of the findings and conclusions.

CHAPTER TWO – THE WORLD OF INSPECTIONS

OVERVIEW

Inspections of gas and hazardous liquid pipelines are intended to ascertain whether a company is operating its facilities in accordance with federal pipeline regulations.[9] OPS requires state inspectors to follow standard checklists in conducting inspections. There are actually 12 different checklists, depending on the type of inspection being conducted.[10] Inspectors conduct standard inspections, special inspections, incident inspections, drug and alcohol inspections, and construction inspections. They spend several days reviewing a company's operation and maintenance manual, previous inspection records, and compliance history prior to visiting the company. The inspection typically involves a methodical review of the records of the company to see if the records are current and whether they comport with the federal code.[11] They also include a physical examination of some pipeline elements.

Because standard inspections focus on a review of company documents, some observers prefer to use the term "audit" in reference to these activities and to preserve the term "inspection" for the physical review and testing of a pipeline. We have used these two terms interchangeably in the report, which is the common usage of operators and regulators across the country. The new Integrity Management program will involve more physical testing of pipelines, but the regulatory role will still be focused on a review of company records and documentation of these tests rather than the conducting of tests themselves.

SEARCHING FOR A MODEL PROGRAM

Is there a model program, with activity and performance criteria and benchmarks, against which we can measure the WUTC program?

The first step in our analysis was to attempt to discern a model program and to compare the WUTC program to this model. Following a competitive bid process, we contracted with General Physics Corporation, a Maryland firm with an extensive background in pipeline safety analysis, to articulate an analytic framework of best practices and pipeline safety benchmarks in the country. General Physics concluded that **there is no model program in the country**, nor is there a published description of what constitutes a model program. The closest approximation of a model is OPS' "Guidelines for States Participating in the Pipeline Safety Program" published in May 1996.[12] These guidelines are a general description of what is needed in a state program, but OPS does not purport that they constitute a model program. In fact, an OPS representative familiar with the state programs flatly asserted, "It is impossible to say what is a model program."[13]

General Physics concluded "the type of program a state implements is often based on the political climate within the state and the public perception of the safety and environmental risks that pipelines impose. **The pipeline accident history often influences the public perception of the safety and environmental risk**" *(emphasis added)*.[14]

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[9] The code is published as Pipeline Safety Regulations, Code of Federal Regulations, Title 49, Parts 186 to 199, revised October 1, 2000.

[10] "Report of Model Pipeline Safety Program," prepared for JLARC, by General Physics Corporation, Columbia, Maryland, December 2002.

[11] By contrast, a construction inspection is a physical examination of pipeline in the ground, to ascertain if the construction team is following the construction manual.

[12] Guidelines for States Participating in the Pipeline Safety Program, U.S. Department of Transportation, Office of Pipeline Safety, May 1996.

[13] Interview with OPS official, July 8, 2002.

[14] "Report on Model Pipeline Safety Program," p 2.

Elements Of A Model

What activities should an excellent pipeline safety program be doing? How do we know these are criteria of excellence? Which of these is WUTC doing and how well are they doing them?

While General Physics was unable to derive a set of benchmarks that could be applied to the WUTC, they did identify eight elements of a model program:

1. The **regulatory environment** in which the program operates.
2. The **program administration** elements necessary to support the inspection process.
3. The **inspection staff** qualifications and training.
4. The type of **inspections** conducted and techniques for maximizing the effectiveness of those inspections.
5. The **reporting**, both routine and accident, required of the regulatory companies.
6. The **enforcement** tools available to the state agency to enforce the regulations and to penalize for non-compliance.
7. The **performance measures** used to evaluate the effectiveness of the program.
8. The benefits of community and regulated company **outreach programs**.

Exhibit 1 on the following page summarizes JLARC's assessment of the 2000-02 activities of the WUTC, in the context of these eight model elements.

Using the template of model program elements, JLARC's assessment is that **WUTC has made significant progress** in developing the regulatory, administrative, staffing, and logistical aspects of a pipeline safety program. The model template, drawn from our expert consultants' work, suggests that the program areas that need more focus and investment are:

1) Focusing inspection practices more directly on risk, in addition to the use of checklist protocols;
2) Incorporating continuous improvement techniques, including the best practices of other states;
3) Using externally-oriented performance measures to assess program effectiveness; and
4) Integrating enforcement practices into the safety model.

WUTC INSPECTIONS

What is the inspection workload? What differences exist between interstate and intrastate inspections; between gas and liquid? What standards are there to measure and assess Washington's program?

During the legislative debate over the expansion of the program, WUTC articulated a set of inspection workload projections. These assumptions were used to frame the new program and develop inspection plans and the fee methodology. WUTC created and improved an Access database to store information on the inspection program. JLARC has studied this database and additional data provided by OPS on other delegated pipeline programs to assess the WUTC inspection workload.

Exhibit 1 – Model Program Elements Review

Model Element	WUTC Program
1. Regulatory Environment	WUTC has: • Adopted rules to administer new responsibilities. • Scored 100 percent on its 2003 OPS grant application, for the first time in years. • Improved its relationship with OPS.
2. Program Administration	WUTC has: • Developed inspection checklists, to comply with OPS requirements. • Created an extensive record system, an evident improvement over previous program. • Shown evidence that inspectors review records for prior actions and recurring violations prior to inspections (with some exceptions). • Developed a comprehensive database, which is not yet fully utilized by managers. • Compiled inspection interpretations, unusual for a developing regulatory agency. • Participated in development of Integrity Management protocols. WUTC has not: • Shown evidence that it employs continuous improvement techniques.
3. Inspection Staff	WUTC has: • Fully staffed program with high quality personnel: four engineers, five inspectors with extensive utility pipeline safety experience, and a mix of junior and senior staff. • Acquired training for staff at the Transportation Safety Institute at an accelerated rate. • Announced that they will reduce inspection staff by 2 FTE in Spring 2003.
4. Inspections	WUTC has: • Incorporated OPS inspection protocols. • Significantly improved the number of standard and total inspections. • Placed a strong emphasis on drug and alcohol inspections for pipeline operators. • Conducted high profile construction drive-by inspections. • Inspected facilities more frequently and intensely than the historic OPS practice. WUTC has not: • Closed out inspections and disputes on a timely basis. • Incorporated best inspection practices of other states. • Developed risk-based practices that go beyond the standard audit procedures.
5. Reporting	WUTC has: • Collected comprehensive data and entered it into a database. • Used the data to improve its annual work plans. WUTC has not: • Demonstrated use of risk-related data to focus resources or change practices.
6. Enforcement	WUTC has: • Identified substantial numbers of Notices of Possible Violation and Compliance Actions. • Issued three penalties in 2002. WUTC has not: • Prepared written guidance on when to escalate enforcement actions. • Secured OPS responsiveness to its interstate enforcement recommendations.
7. Performance Measures	WUTC has not: • Developed and employed performance measures that are up-to-date, consistent, and accurate, despite the existence of its comprehensive database. • Developed performance measures that focus on reduction of risk.
8. Outreach Programs[15]	WUTC has: • Received a substantial grant to conduct outreach to local communities and the public.

Source: JLARC and General Physic's analysis.

[15] This area is outside of JLARC review.

Number and Length of Inspections

Exhibit 2 below, reports the type and number of inspections that WUTC has conducted since 1998.[16] Over the last five years, WUTC has increased the number of standard inspections each year, from nine in 1998 to 45 in 2002.[17] It has also nearly tripled the total number of inspections, from 32 in 1998 to 83 in 2002.

Exhibit 2 – Annual Inspection Totals by Year, Since 1998

Year	Standard	Specialized	Drug & Alcohol	Construction	Other	Total
2002	**45**	19	14	2	3	**83**
2001	**41**	17	6	2	1	**67**
2000	**24**	12	2	5	2	**45**
1999	**16**	15	0	0	0	**31**
1998	**9**	12	5	2	4	**32**
Total	**135**	75	27	11	10	**258**

Source: WUTC database.

Additional review of the WUTC database gives this picture of an "average inspector year:"

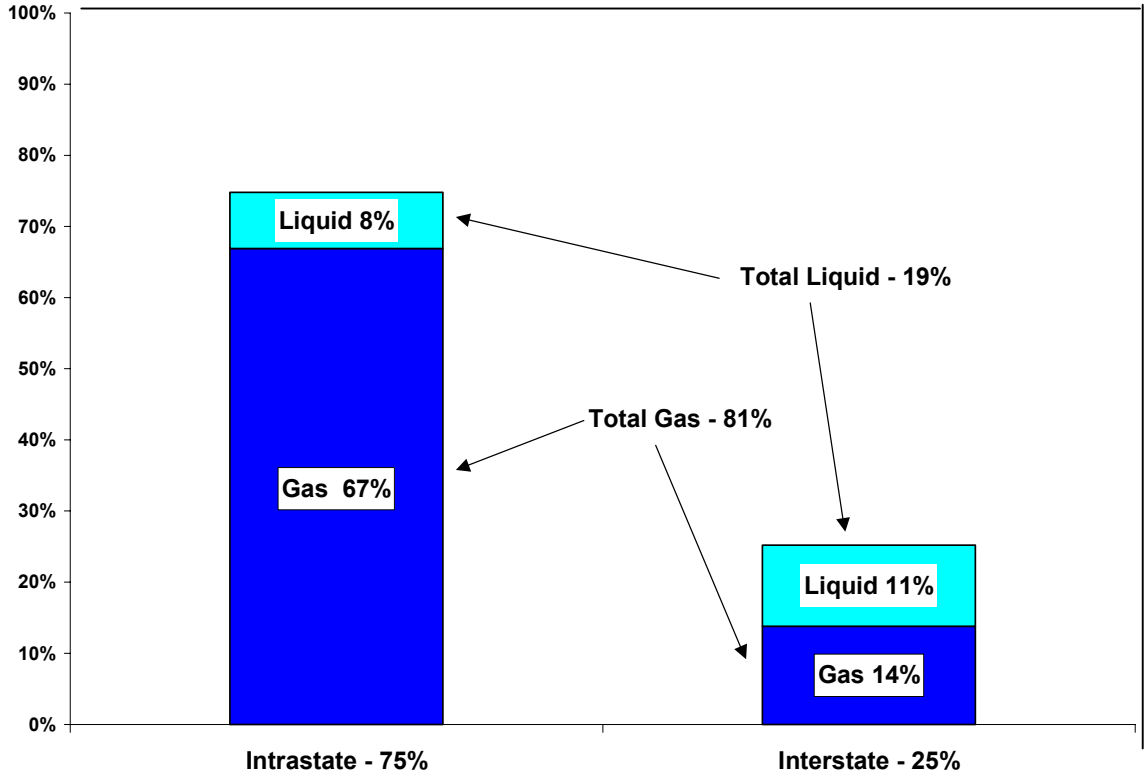
- 55 percent of inspectors' time in 2002 was spent on inspections; 17 percent on general pipeline issues; 13 percent on training; 9 percent on leave; and 5 percent in meetings.
- 80 percent of inspection time is devoted to standard inspections.
- On average, the 9.2 inspectors each conducted nine inspections in 2002, five of which were standard inspections. This rate of inspection production per inspector has been relatively constant over the last five years.

As indicated in Exhibit 3 on the following page, inspectors spent three quarters of their time on intrastate and one quarter on interstate pipelines in 2002. Looking at the split between gas and hazardous liquid inspections, WUTC spent 81 percent of their time on gas inspections and 19 percent on liquid inspections. These workload percentages are a reflection of the number of pipeline miles and operating units in the physical pipeline system.

[16] WUTC conducts these types of inspections:
Standard Inspections are comprehensive audits of the pipeline company's operations, maintenance, emergency response, repair, and replacement procedures. They are the basic unit of inspection.
Specialized Inspections focus on specific operation, maintenance, or emergency response issues or concerns.
Drug and Alcohol (D&A) Inspections review companies' written drug and alcohol misuse prevention plans and procedures.
Construction Inspections review design and construction for major projects.
***"Other"* includes:**
Incident Inspections, which are prompted by any failure of a pipeline, including damage caused by a third party.
Operator Qualifications Inspections, which are affirmations that a written personnel qualifications program is in place for operators of pipelines.
Integrity Management Inspections, which are being developed by OPS (see explanation on page 15).

[17] OPS sent a sharply worded letter to WUTC in May 2001, serving notice that "unless WUTC demonstrates measurable improvement with regard to the oversight of LDC (Local Distribution Company) pipelines within the next two months, we intend to terminate the interstate agreement conferring interstate agent status on WUTC."

Exhibit 3 – Percent of Inspection Time by Type, 2002



Source: JLARC analysis of WUTC database.

During the 2000 legislative session, WUTC prepared a projection of estimated time needed to complete inspections. This estimate was used in the fee methodology formula discussed in Chapter 4. Exhibit 4 below contrasts several of these projections with the actual 2002 data on standard inspections.

Exhibit 4 – Length of Inspection, by Type

2002	Interstate Gas	Intrastate Gas	Cities Gas	Interstate Liquids	Intrastate Liquids
# Inspections	5	28	3	3	6
# Days/Inspection	21.7	23.1	13.0	29.8	13.3
Projected # of days	23	26	12.5	24	16

Source: WUTC database.

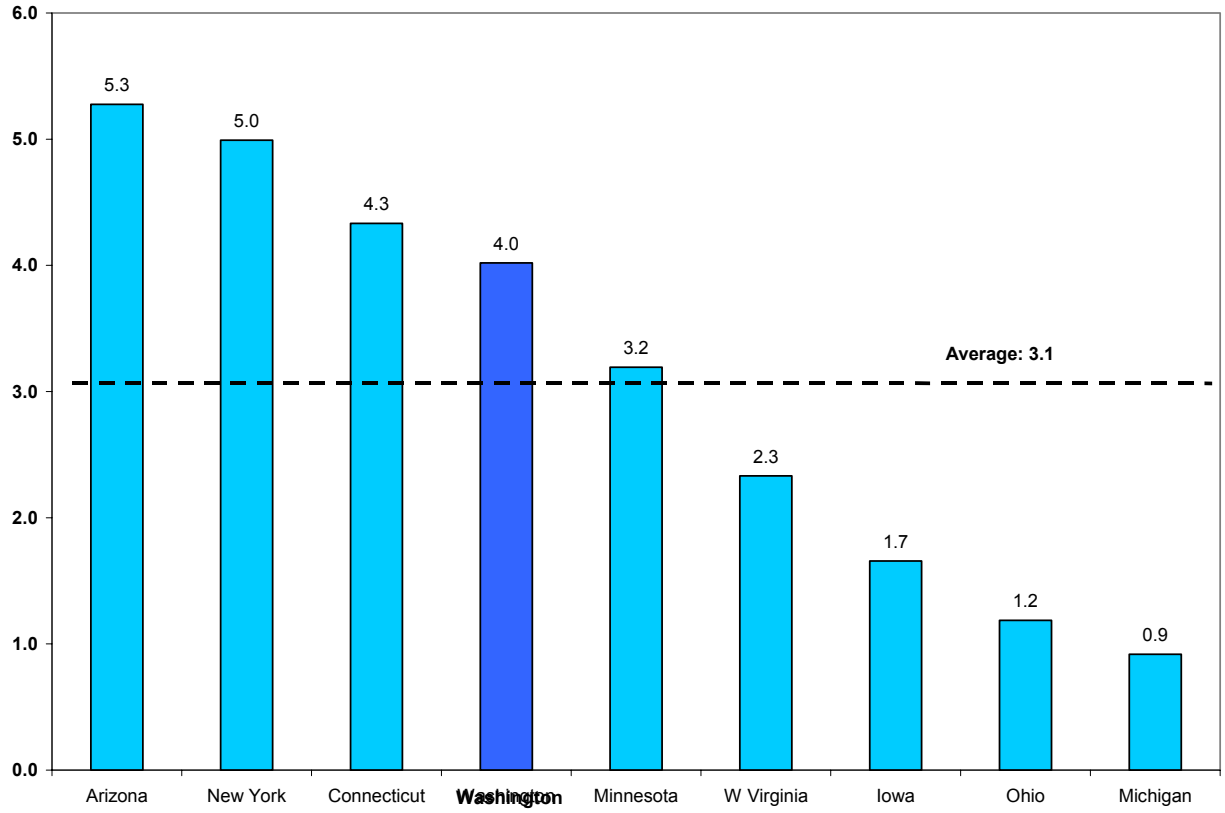
- The average interstate and intrastate gas inspections took **fewer** days than WUTC's projection.
- An average interstate liquid inspection took almost 25 percent **longer** than WUTC's projection, but intrastate liquid inspections were somewhat **shorter** than predicted.

During JLARC's interviews, several company operators observed that the initial inspections were too long, and they anticipated that the inspections would become shorter as WUTC staff gained experience. The 2002 data suggest that the majority of the inspections now take less time than was initially projected, but the interstate liquid pipeline inspections take longer.

Program Size

Washington has the seventh largest state inspection program in the United States. There is no national benchmark to judge the appropriate size of a program.[18] We compared the number of WUTC inspectors in 2001 to those in other delegated states with both intrastate and interstate programs, using mileage, population, and number of inspection units. Each of these factors signaled a similar conclusion about the size of the program, but we selected miles of pipeline because it seems to be a more universally accepted measure. Exhibits 5a below and 5b on the following page display the range among the delegated states of inspectors by miles of pipeline.[19] The measure of natural gas inspectors indicates that Washington's program is above the national average, but within the national norm. However, the hazardous liquid measure indicates that Washington has more than twice the average inspectors per mile.

Exhibit 5a – Natural Gas: Inspectors Per 10,000 Miles

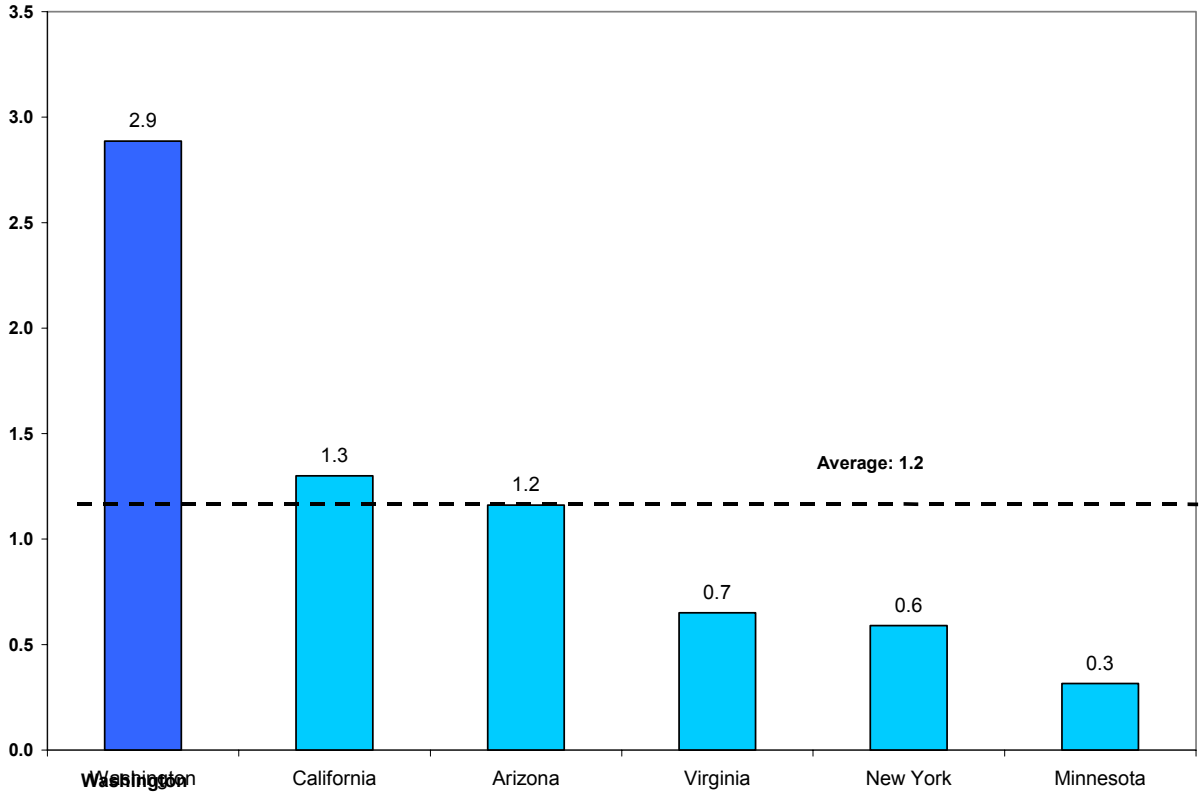


Source: Inspector data is from 2001 OPS grant applications. Mileage is from OPS statistics.

[18] OPS provides a formula for minimum programming staffing in its "Guidelines for States Participating in the Pipeline Safety Program." States typically vary widely from the OPS formula, with two or three times as many gas inspectors as the recommended formula and fewer liquid inspectors than are recommended. The OPS guidelines do not seem to be a useful tool for judging the optimal size of a program.

[19] In actual practice, WUTC has 9.2 inspectors, rather than its initial 9.6 projection. For comparative purposes, however, we use the 9.6 projection: 7.3 FTE for natural gas and 2.3 FTE for hazardous liquid.

Exhibit 5b – Hazardous Liquids: Inspectors Per 1,000 Miles



Source: Inspector data is from 2001 OPS grant applications. Mileage is from OPS statistics.

COMPANY OBSERVATIONS

Knowledge of Inspectors

Ten of the 14 pipeline operators interviewed for this report indicated that the WUTC inspectors were knowledgeable about pipeline safety and pipeline operations. Half of the respondents indicated that the auditors had improved over the last few years as they gained experience. They also commented favorably on the WUTC practice of sending out junior inspectors with senior inspectors in order to gain experience. Four of the companies thought that not all the inspectors were knowledgeable, that some of them brought too many biases with them, or that they mixed up the rules on gas and liquids.

Communications

Many of the companies' observations were about communications. The majority of companies were complimentary of the way WUTC inspectors deal with the staff on their field inspections. They reported that the inspectors' orientation is to solve problems rather than to document faults, and that this attitude helps solve problems. Other companies found the WUTC to be unnecessarily adversarial.

Companies offered a number of suggestions for improving communication:

- They would like to hear positive comments from the inspectors when they have done something well or when they have shown substantial improvement in correcting matters documented in inspection reports.

- They would like the WUTC to sponsor annual seminars. The seminars they have attended have been very useful in educating their staff. A number of the companies also expressed appreciation about WUTC's practice of sharing best industry practices.
- They like the informal visits when an inspector stops in to talk or drives by on an unscheduled basis to check on construction crews.
- Delay in closing out the inspection, or failure to formally close out contentious issues, is confusing and creates uncertainty about what they are expected to do.
- Having the same inspectors produces a more useful audit, because those inspectors already understand their operations. Companies also seek consistency in interpretation, which is more likely from the same inspectors.[20]

Frequency and Intensity of Inspection

The WUTC annual work plan is built on a two-year cycle for interstate facilities and an annual cycle for most intrastate facilities. The two-year cycle is consistent with the OPS directive to the WUTC, and it is consistent with the practice of other delegated states, although when these inspections were done by OPS, OPS did not inspect this frequently.[21]

Twelve of the 14 companies we interviewed thought that the nature of inspections had changed in the last three years, since the expansion of the WUTC program, while two companies said that the inspections weren't much different. Most company staff described the inspections as more intense, more aggressive, more comprehensive and in-depth, and more frequent. They reported that the state inspectors were showing a much higher profile, for example, with their practice of informal drive-bys of construction sites.

We asked the interstate companies (who had not previously been inspected by WUTC) if their state inspections were different than those conducted by OPS. All of the companies reported that the inspections of the two regulatory agencies were mostly similar, although two indicated that WUTC took longer to complete the inspections.

Ten of the companies reported that they now were being audited annually and four were being audited every other year.[22] Three of those who reported annual audits said that they expected to be shifted to every other year. Three of the interstate firms contrasted this frequency to OPS' schedule of once every three years. Nearly all of the companies thought that an annual audit was too frequent. WUTC management has also indicated that the 2001-02 audits revealed that it will not be necessary to inspect some operators annually, given their performance in these inspections.

ENFORCEMENT AND COMPLIANCE

Pipeline safety enforcement and compliance practices vary enormously across the states. There are no apparent standards or benchmarks for enforcement at either the state or federal level. Very few states issue financial penalties to pipeline companies.

[20] See Appendix 4 for company suggestions on process improvements.

[21] JLARC's survey of other delegated states revealed that most of these states conduct intrastate inspections annually, with several on an 18-month or 24-month cycle. California's hazardous liquid program reported that it inspects on a 1-to-5 year basis, depending on risk.

[22] It is likely that WUTC would report this differently. The companies tend not to distinguish between standard inspections, and special construction, or drug and alcohol inspections.

States with delegated interstate and intrastate responsibility for **natural gas** inspections have markedly different approaches to enforcement. Three states (Connecticut, Michigan, and West Virginia) issued 30 or fewer Notices of Probable Violations (NOV) letters in 2001, while Arizona issued 2,072 – three times as many as the next highest state. Yet Arizona, which had the most reported number of NOVs, did not take any formal compliance actions on these violation notices. Michigan, which has five inspectors covering nearly 55,000 miles of natural gas pipeline, reports very few violation or compliance activities to OPS. On the other hand, Minnesota reported nearly 700 NOVs in 2001, and issued 119 compliance actions – more than twice as many compliance actions as any other state.

Washington ranks in the top third of the states in the rate of its natural gas compliance actions, as indicated by both total numbers of NOVs and NOVs per inspector. Few states submit violations to OPS. Washington submitted 26 NOVs in 2001 to OPS for violations by interstate companies.

There is less inspection activity across the nation for **hazardous liquid** pipelines, with fewer compliance actions as well. The enforcement practices of the six delegated states vary, but not as widely as with natural gas. However, Washington's behavior differs from the other states in several respects. Washington took more hazardous liquid compliance actions (14) in 2001 than any other state, and the number of its compliance actions per inspector is highest in the country. Its ratio of hazardous liquid compliance actions taken per mile is nine times as high as any of the other six states.

In 2001, state pipeline offices issued 116 fines, totaling $1.2 million. One hundred eleven of these penalties were for natural gas violations and five for hazardous liquid violations. More than 80 percent of the gas penalties were issued by just four states (Massachusetts, Minnesota, New York and Texas), and Texas issued four of the five liquid penalties. Thirty-six states, including Washington, did not issue any penalties in 2001. The WUTC issued three penalties in 2002, all to intrastate companies.

The agency is still in the early stages of developing a coherent and consistent enforcement policy. There is no written guidance at the WUTC on when to escalate enforcement actions, and the agency has brought in a contractor to assist development of this guidance. The Commissioners themselves have expressed sharp differences in their approach to enforcement settlement practices.[23]

We asked the companies what recurrent issues had emerged from the inspections and how the WUTC had dealt with non-compliance. Seven of the intrastate gas companies reported that they had recurring issues with records maintenance, drug and alcohol testing, weld procedures, cathodic protection readings,[24] and signage markers. None of the interstate companies or the liquid pipeline operators reported recurring issues in their audits.

Companies with recurring issues reported that most often the WUTC seeks to resolve issues informally through discussions. The WUTC also makes suggestions about safety practices and procedures, which most companies try to follow even though they are not compelled to by code. The WUTC's behavior in seeking compliance was mostly perceived to be non-confrontational.

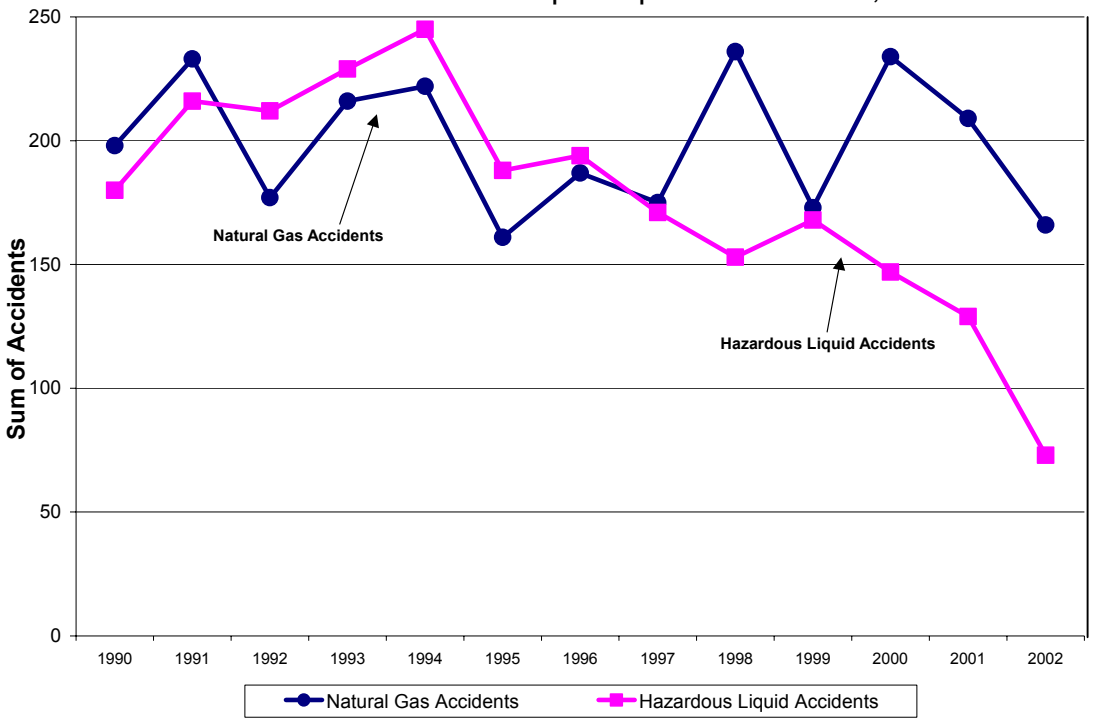
[23] For example, *WUTC v Puget Sound Energy*, Commission Order Accepting Settlement, Docket No. UC-001116, July 25, 2002.

[24] Cathodic protection is an engineering technique to interrupt or slow down the natural current that runs through a buried pipe and causes corrosion.

PERFORMANCE MEASURES

As with other aspects of pipeline safety, there are few standard measures of performance used by the states or OPS, other than the number of accidents.[25] The national data compiled by OPS, displayed in Exhibit 6 below, shows that the number of annual natural gas accidents has been relatively constant from 1989 to 2002. Comparable national data for hazardous liquid, however, shows a sharp decline in accidents since 1994. The number of hazardous liquid accidents in 2002 was less than a third of the number in 1994.[26]

Exhibit 6 – National Gas and Liquid Pipeline Accidents, 1990-2000



Washington's natural gas accident rate is substantially different from national figures. The number of natural gas accidents has declined every year since 1998, from 107 accidents in 1998 to 63 in 2002. The Washington data on hazardous liquid accidents is more limited. There were three accidents in 1999 (including the Bellingham accident), four in 2000, and one each in 2001 and 2002.

WUTC's quarterly performance measure report to OFM contains four measures on pipelines:

1. Accidents per 100 miles of pipe, for liquids and gas
2. Value of property damage caused by liquid and gas accidents
3. Percentage of pipeline operators with a current inspection
4. Number of public inquires about pipeline safety

The first three of these are intended to describe and communicate how well the inspection system is performing. The purpose of the fourth measure is unclear. Unfortunately, the data in these

[25] In August 2002, GAO noted that OPS has improved the quality and completeness of its data, but it has not yet articulated performance measures to judge the effectiveness of integrity management. GAO, August 2002, pp.19-21.
[26] These and other OPS statistics are available on their web page at www.ops.dot.gov.

reports are inaccurate and out-of-date. It does not appear that the agency uses these measures in any analytic manner or to inform its decisions. The WUTC recently assigned a senior policy staff person to articulate new measures.

Our review did not uncover extensive use of performance measures by other delegated states. New York collects data on "accident precursors," which are system indicators such as corrosion and leaks that, if not well managed, will to lead to accidents. The New York office has constructed a system to identify risks in local gas delivery systems. Virginia uses performance data to adjust its inspection plans throughout the year, and it has also used performance measurement to curtail damage caused by excavation.

We asked Washington's pipeline operators which performance measures they used to evaluate the operation of their pipelines. They reported a variety of measures, including:

Leaks and spills	Pump and motor efficiency
Vehicle accidents	Unmanned starts
Lost time accidents	False alarms
Unscheduled maintenance or outage	Cathodic protection patterns
Product inflow/outflow patterns	

Two of the large interstate companies use a combination of factors to rate their performance simply as "pass/fail."

MANAGING RISK

Inspections are intended to reduce the risk of future accidents. Yet there is ongoing concern among pipeline accident analysts that the current system of inspections doesn't do enough to reduce this risk. Several attempts over the years, usually in response to a pipeline accident, have tried to put more attention and focus on risk. By "risk," we mean the probability of negative consequences occurring from the existence and operation of natural gas and hazardous liquid pipelines. Risk management, to be effective, reduces the probability of such negative consequences.

In 1996, Congress established a Risk Management Demonstration Program, "to test whether the principles and processes of risk management could provide effective alternative regulatory approaches for the pipeline industry."[27] OPS was unable to construct a practical regulatory framework from the program and abandoned this program in 2001. OPS' new regulatory effort is called Integrity Management.

Integrity Management (IM) is intended to "evaluate and address threats posed by pipeline segments in areas where the consequences of potential pipeline accidents pose the greatest risk to people and their property and to provide additional protection in these areas."[28] Integrity Management will require pipeline companies to develop management plans to demonstrate how they are reducing risk in high consequence areas.[29] Companies will also be required to physically test their pipelines for leaks and corrosion.

[27] "Beyond Compliance: Creating a Responsible Regulatory Environment that Promotes Excellence, Innovation, and Efficiency," Report to Congress, Office of Pipeline Safety Program, December 2000.
[28] Federal Register, Vol. 66, No. 124, June 27, 2001, pg. 34,319.
[29] High consequence areas are primarily heavily populated or environmentally sensitive areas.

OPS is in the early development stages of its Integrity Management effort. It has included a WUTC inspector in several pilot inspections. The two agencies are planning to train three other WUTC inspectors this year on Integrity Management. In its August 2002 report, the General Accounting Office expressed skepticism that OPS would be able to meet its ambitious schedule for developing Integrity Management. GAO also reported that some states will need to increase the number of inspectors and that all states will need to increase their staff training due to this new program.

Some observers believe that the current audit/checklist approach required by OPS will be insufficient to reveal actual risk in the real-world operation of pipelines. JLARC commissioned Accufacts, Inc., an expert pipeline consulting firm familiar with the Bellingham explosion, to review two studies issued by the National Transportation Safety Board, and draw lessons that could be used in Washington State.[30]

Accufacts reached the following conclusion:

> *Pipeline inspection approaches as dictated by the Federal Office of Pipeline Safety, including the newly enacted High Consequence Areas and pipeline Integrity Management programs* ***do not address the root cause system failures*** *that resulted in the Bellingham and Chalk point tragedies. Current inspection efforts concentrate on document and checklist approaches to ensure compliance with specific sections of Federal regulations. The "micro detail" or component approach generates volumes of paperwork, but misses the larger pipeline system perspective critical to preventing pipeline failures. Such over-focus on detail is highly manpower intensive and has proven ineffective in preventing pipeline failures from major system breakdowns…*
>
> *Neither the OPS nor the WUTC are properly staffed to deal with these new high IM [Integrity Management] manpower intensive demands unless regulatory approaches change. A different and more efficient inspection approach that focuses limited manpower on system understanding and compliance is thus warranted.*[31]

Accufacts' recommendations for augmenting standard audit protocols and Integrity Management, designed to head off the kinds of failures that result in high consequence accidents, are attached as Appendix 5. These include:

- Verifying that operators understand their pipeline's system design, and that equipment is operated within this design;
- Requiring "management of change" procedures;
- Requiring the reporting of overpressure accidents in a timely manner;
- Verifying the independence of critical safety equipment;
- Compiling grand-fathered anomalies; and
- Developing additional inline inspection tools.

The shortcomings of the current system were on display in the aftermath of an August 2000 natural gas pipeline explosion near Carlsbad, New Mexico that killed 12 people. This accident was preceded by a number of OPS inspections that failed to note faults in the system that were

[30] These studies were of the pipeline rupture and subsequent fire in Bellingham, Washington, and the rupture and release of fuel oil near Chalk Point, Maryland.

[31] Richard Kuprewicz, "Preventing Pipeline Failures," December 30, 2002, pg. 1. (emphasis added)

evident from the review afterward. In its report and recommendations on this event, the National Transportation Safety Board highlighted the failure of the classic inspection protocols, along with other factors.[32]

JLARC's study of other state programs revealed how one state is attempting to deal with the limitations of the audit/checklist model. In recent years, New York's pipeline program has sought to bring a greater engineering perspective to pipeline failure and risk analysis. In addition to the inspection audits, engineers in the New York office use engineering assessments to identify reasons for pipeline failure and highlight areas of potential risk. The New York managers believe the combination of approaches is a better way to head off future accidents.[33]

[32] National Transportation Safety Board, Safety Recommendations P-03-1 through 3 and P-03-4, and Pipeline Accident Report PAR-03/01.

[33] Interview with John Gawronski, Chief of Safety and Reliability, New York State Public Service Commission, January 23, 2003.

CHAPTER THREE – MAPPING PIPELINES

OVERVIEW

Mapping refers to identifying and communicating the location of underground pipelines. Historically, mapping was achieved by conducting surveys and drawing maps accordingly. Now, the more common approach to mapping is using satellite technology and global positioning systems to locate pipelines, and using **geographic information systems** (GIS) to store and display the location information on digital maps.

In the context of pipelines in Washington State, mapping has become a key concern. The most obvious reason that policymakers and the public want the WUTC to have a mapping system is so that we know where the pipes are in times of emergency.[34] Particularly, policymakers and the public want location and other pipeline information readily available to **first responders** in emergency situations. First responders are the emergency personnel who arrive first on the scene of an emergency; they are typically from the local fire and police departments. In the event of a pipeline accident, these first responders need to have basic information about where the pipeline is located, what type of material it is carrying, how to handle or contain the substance, and who operates the pipeline.

CURRENT MAPPING EFFORTS AT THE WUTC

RCW 81.88.080[35] mandates the WUTC to develop mapping specifications that will **meet the needs of first responders**; **assist local governments** in obtaining pipeline location information and maps; ensure that the state mapping system is **consistent with the federal mapping system**; and complete the system by January 1, 2006.

In January 2002, the OPS awarded the WUTC a "Pipeline Safety" grant. This $800,000 grant has four major tasks, one of which is to plan and develop a mapping program. The WUTC is dedicating approximately half of the grant resources to building and maintaining a central, computer-based system showing the location of all natural gas and hazardous liquid pipelines in Washington State.

In response to the state legislation and with this federal grant, the WUTC has been working on creating a GIS-based mapping system. The WUTC has had a GIS analyst on staff since the fall of 2000 and contracted with a GIS consulting firm to assess the mapping needs of the pipeline safety program, particularly in its efforts to support first responders.

The consultant's report, completed in December 2002,[36] outlined suggested priorities of a WUTC GIS system (to support first responders, inspections, local governments, and one-call locater services),[37] and identified the type of system the Commission needed to meet those

[34] Other reasons to map pipelines are for routine operations and inspections, for local land use planning, and for siting energy facilities.
[35] Section 7 of ESSHB 2420 (2000).
[36] GIS Needs Assessment And Conceptual Design," GeoNorth, December 2002.
[37] A one-call center is a "call before you dig" centralized call center aimed at preventing damages to underground facilities. Excavators are encouraged to call before they plan to dig, and the one-call center will in turn notify the operators of any underground utilities that lie in the planned excavation area. Utility operators then inspect the site to ensure that their utilities are not disrupted by the excavation.

priorities. They identified 18 different layers of data to be collected by the WUTC[38] and determined that the best way to serve first responders is to provide them with paper map books of the pipelines and other spatial data. Although the implementation plan proposed by the consultants did not include an estimate of the cost of producing these map books, the consultants did determine that first responders would need an average of two map books per 1,000 residents.[39] If the WUTC decided to produce map books for first responders across the state, and based on the 2002 estimated state population, the WUTC would need to produce 6,000 map books, which in turn would need to be updated as pipelines and/or operators changed.

EMERGENCY RESPONSE AND RELATED GIS EFFORTS IN WASHINGTON STATE

The consultant's report does not reference the emergency response infrastructure already in place. It focuses on WUTC as the sole source of GIS-based information for first responders in the case of a pipeline accident. This assumption drives their recommendation that the WUTC provide location information on many attributes other than pipelines. In fact, it may be imprudent to circumvent the local systems already in place.

For example, the Office of the State Fire Marshal has prepared laminated maps of the pipelines in Washington[40] and distributed them to local first responders. These maps provide first responders with a general indication of where pipelines run in the state, basic protocols for first responders to follow in the event of a pipeline accident, and contact information for the pipeline operators.

Our review suggests that the WUTC has not made significant efforts to work within the existing GIS capabilities that many first responders already have and use.[41] Several initiatives are already underway concerning emergency response in Washington State. Although some of them have a different focus (weather emergencies, terrorist response), they all focus on the same need for preparedness.[42] Current emergency preparedness efforts of state and local entities in Washington include:

> **Emergency Management Division (EMD), Department of the Military:** The EMD serves as the central command in a statewide emergency. The EMD staffs a 24-hour emergency response phone number that can mobilize a response effort if local jurisdictions need assistance and has a fully equipped communication center. The EMD is currently working with the WUTC to include pipeline location and related critical infrastructure data into its GIS.

[38] These 18 layers of digital data include such things as buildings, earthquake zones, medical facilities, schools, day care centers, and transportation infrastructure.

[39] Fire districts are created and staffed based on population, so population serves as an accurate proxy for the size of each fire district and their corresponding need for map books.

[40] These maps were developed by the WUTC with their existing data on pipeline locations.

[41] To assist with our review of WUTC's mapping and GIS program, JLARC contracted with GeoEngineers, a Seattle-based consulting firm with experience in pipeline mapping. Much of our analysis has been informed by their report, "Review of the Washington State Pipeline Safety Mapping System," GeoEngineers, January 7, 2003. Their conclusions can be found in Appendix 7.

[42] Other key players in emergency response that are not discussed in this report are the Emergency Management Council, the State Emergency Response Commission, and the Local Emergency Planning Committees. Similarly, there are other efforts in GIS mapping across the state, including a building mapping proposal by the Washington Association of Sheriffs and Police Chiefs, and the ongoing coordination efforts of the WA-Trans project within the Department of Transportation and the Washington Geographic Information Council (WAGIC).

Emergency Operation Centers: The local equivalent of the Emergency Management Division is the emergency operations center (EOC): all 39 counties and several large Washington cities are designated as EOCs. To be designated as such, local jurisdictions must have minimal infrastructure in place, such as a command room, a phone line, and a fax machine. However, many counties and some of the larger cities have more sophisticated systems than what is required, and several of those have GIS capabilities.

For example, Pierce County has one of the most sophisticated GIS systems in the state. Many of the county's fire trucks and patrol cars are equipped with computers that can access the county's GIS program. **Local jurisdictions with this level of sophistication do not need paper map books from WUTC; they need only the pipeline-specific data to put into their own systems.** Local jurisdictions use their GIS programs not only for emergency management, but also for land use planning and public information.

State Fire Marshal's Office, Washington State Patrol: Although the primary responsibility of the Fire Marshal is to support local fire districts, an additional responsibility is to provide coordination of Washington State fire service resources for mobilization during natural or human-caused disasters. The Fire Marshal also provides terrorism and hazardous materials training, fire prevention and life safety education, and public information services.

E2SHB 2420 (2000) mandated the State Fire Marshal's Office to conduct an assessment of first responder preparedness for pipeline emergencies. In its December 2001 report, the Fire Marshal's Office concluded that providing training to first responders on awareness, operations, and tactics should strengthen emergency preparedness.[43] The Fire Marshal proposed to do this in part by creating the pipeline maps (referenced above) and by training. In addition to the laminated maps of pipelines, the Fire Marshal plans to facilitate the development of digital maps of fire jurisdictions that include topographic layers and pipeline location information available to local first responders on a compact disc.

One-Call Centers: The 2000 legislation directed the WUTC specifically to determine what additional mapping information the state's one-call system might need. During WUTC's needs assessment review, the one-call system operators indicated that they did not need additional mapping information to perform their role. Rather, the general location information supplied to the one-call centers by the pipeline operators is sufficient to identify approximate areas where a pipeline might be compromised by a proposed excavation; the one-call centers then defer to the pipeline operators to inspect the digging.

Pipeline Operators: Under federal law, operators are required to provide public and first responder information and coordination. They accomplish this by various means, such as:

- Developing a training curriculum for first responders and delivering it either on company premises or at the local police or fire stations.
- Notifying directly those first responders who have not participated in training for some time.

[43] *First Responder Readiness for Pipeline Emergencies in Washington State*, Office of the State Fire Marshal, December 2001.

- Working with local jurisdictions to provide them with paper maps and/or digital map data customized for their purposes (first response, land use planning, siting issues, and public awareness).
- Providing information and training opportunities to the general public.

One pipeline training program manager noted that pipeline companies are actually reluctant to provide first responders with too much information, for several reasons:

- **Security concerns**. Once pipeline information is in the public domain, it is easier to access and to use for dangerous purposes, i.e., potential terrorist activities.
- **Complex system and product**. The network of pipelines, valves, and pump stations is difficult to understand and manage. Similarly, the products contained in the pipeline are volatile. It is unlikely that emergency response personnel would have the ongoing training and expertise to do extensive emergency management of the pipeline. Companies prefer that first responders secure the perimeter, identify the hazards, and then call in the pipeline emergency response crews.

EXPERIENCES OF OTHER STATES

In their report for JLARC, GeoEngineers compared the current WUTC mapping initiative with the efforts in five other states.[44] Their findings about the other states included:

- Other states are well ahead of Washington insofar as their mapping systems were started between five and 25 years ago.
- While the Legislature mandated the WUTC to focus its efforts on mapping for *emergency response*, other states created their mapping systems around priorities such as supporting the pipeline inspection program or assisting in land use planning.[45]
- So far, Washington has identified the highest number of attributes to include in its system (48);[46] other states collect between 6 and 24. The federal mapping project, the National Pipeline Mapping System, contains 18.

The GIS program that WUTC is creating is the most elaborate of the seven systems reviewed. Based on these findings, GeoEngineers concluded their report with suggestions to focus more exclusively on pipeline and pipeline-related data and work within the existing local government GIS network.

[44] The five states reviewed were California, Louisiana, Minnesota, Texas, and Virginia.
[45] The WUTC has since expanded its goals for the mapping system to also serve these functions, but the original goal behind the consultant's report was to create a system responsive primarily to first responder needs.
[46] Since the WUTC mapping system is not in place yet, the final number of attributes included has not yet been determined. However, the WUTC's consultant reported that first responders requested 48 pipeline attributes.

CHAPTER FOUR – FEE METHODOLOGY

OVERVIEW

In order to pay for the newly expanded pipeline safety program, the 2001 Legislature articulated terms for a fee to charge all pipeline operators in Washington State. It directed the WUTC to adopt rules for direct assignment of average costs associated with annual standard inspections, and a "uniform and equitable means" of estimating and allocating the remaining costs.[47] The implementing rules the WUTC adopted in June 2001 were closely congruent with this statutory language. In its rules, the agency selected *miles of pipeline* as one element of allocating remaining costs.[48,49]

There are four steps to the fee methodology developed and used by the WUTC in FY 02 and FY 03:

1) Calculate the total program cost and subtract the federal grant to arrive at total state program costs.[50]
2) Divide the net program cost between interstate and intrastate companies.
3) Distribute the direct costs of average standard inspections for each company.
4) Distribute the remaining costs to each company on the basis of pipeline miles, within the interstate or intrastate "block" created in Step 2.

DIVIDING INTERSTATE AND INTRASTATE COSTS

In an attempt to capture and distribute the incremental cost of the newly delegated program, the WUTC inserted into the order that imposed the fee an element that was neither in statute or rule (step 2, above). This additional factor was a formula that divided the total state program costs between interstate and intrastate companies on the basis of 41.7 percent to interstate companies and 58.3 percent to intrastate companies. WUTC applies this formula *prior* to the calculation of the direct inspection costs and allocation of remaining costs. In other words, an interstate operator shares direct and remaining costs *only* with other interstate companies, and an intrastate operator shares direct and remaining costs *only* with other intrastate companies.

The origin of the 41.7/58.3 percent split was WUTC's projection that 4 of its 9.6 inspectors would conduct interstate inspections and 5.6 inspectors would conduct intrastate inspections. (That is, 4 divided by 9.6 is .417). In actual practice, the WUTC had 9.2 inspectors in 2002, and they spent three-quarters of their time on intrastate inspections. Of the total 2002 staff time that

[47] RCW 81.24.090(8) also requires WUTC to create a regulatory incentive program, in collaboration with the citizens committee on pipeline safety, after the completion of the JLARC study.

[48] States vary widely in how they fund their programs. Most of them use a combination of components, including utility revenues, direct costs, pipeline diameter and throughput, and mileage. One-third of the delegated states use mileage as one of the components.

[49] The Research and Special Programs Administration of the U.S. Department of Transportation produced a Report to Congress on pipeline safety user fees. It analyzed mileage, capacity, and diameter as potential factors in a fee and concluded that mileage was the fairest and least administratively burdensome assessment measure. "Pipeline Safety User Fees", Report to Congress, U.S. Department of Transportation, Research and Special Programs Administration, March 1998.

[50] OPS provides a basic grant to all states each year.

is coded in the WUTC database as either interstate or intrastate related, 69 percent was intrastate work, and 31 percent was interstate work. The current distribution of interstate and intrastate costs does not reflect how staff actually spend their time.

DISTRIBUTING DIRECT COSTS

The calculation of the direct cost component (step 3, above) is unaffected by the interstate/intrastate percentage. To calculate the cost of an average standard inspection, WUTC uses this formula:

Direct Costs = Number of standard inspection days
✖ Average number of inspection units
✖ Cost per day of an average inspection

The assumptions WUTC used for the first two components of this formula turned out to be relatively close to actual practice. The WUTC projected 929 **standard inspection days** in FY 2003. The actual figure was 966 days in calendar 2002.[51] WUTC's projections of days per each type of operator varied somewhat from actual practice in 2002 (see Exhibit 4, page 9).

The projection of **average number of inspection units** varied from 2001 to 2002, but it was a very close fit when the two years are averaged.

For the third component of the formula, the WUTC used a daily **average inspection cost** of $531. The average daily inspection cost in 2002 was actually closer to $640. Using the higher average daily inspection cost would increase the direct cost share component of the fee methodology from 31 percent to 38 percent of the total cost. However, this difference does not have much impact on the distribution of costs between interstate and intrastate companies.

DISTRIBUTING REMAINING COSTS

The aggregate direct inspection cost is subtracted from each of the interstate and intrastate "blocks." This leaves a remaining cost that is divided among the pipeline companies according to their percentage of pipeline miles, *within the interstate or intrastate block* (step 4, above). It is apparent, therefore, that the "uniform and equitable means" of distributing remaining costs is composed of two factors: mileage and **projected** staff time. The projection of staff time is the more dominant factor. Because of the staffing factor, interstate companies paid $210 per mile in 2002, and intrastate companies paid $30 per mile for the remaining costs, a seven-fold difference.

[51] The database in 2001 is incomplete and not reliable for calculating 2001 standard inspection hours.

Exhibit 7 – Fee Methodology, Using Projected and Actual Staff Percentages[52]

Current Methodology	Interstate Companies	Intrastate Companies	Total Costs
Direct Costs @ $531/day	$139,090	$352,115	$491,205
Remaining Costs	$521,432	$571,349	$1,092,781
Total Program Costs	$660,522	$923,464	$1,583,986
Using 31/69% Split			
Direct Costs @$640/day	$168,960	$425,760	$594,720
Remaining Costs	$306,672	$682,594	$989,266
Total Program Costs	$475,632	$1,108,354	$1,583,986
Difference	**- $184,890**	**+ $184,890**	

Exhibit 7 above contrasts the current FY 2003 fee methodology with an alternative calculation which uses the actual 2002 staff time (31/69 percent) as well as the higher daily fee cost. In combination, these two adjustments would shift $185,000 from the interstate block to the intrastate block.

[52] Appendix 8 contains a detailed spreadsheet developed by WUTC to calculate the FY 2003 fee.

CHAPTER FIVE – FINDINGS AND RECOMMENDATIONS

JLARC's review focuses on three primary activities of the WUTC's pipeline safety program: inspecting pipelines, mapping pipelines, and imposing a fee on operators. Our findings and recommendations below are organized around those three activities.

INSPECTING PIPELINES

The WUTC has established the initial stages of a more complex regulatory program; hired experienced and quality staff; accelerated staff training; improved program planning; and developed a comprehensive record system and database. Additionally, the WUTC has increased the number of inspections completed and shown improvement in the time spent to conduct inspections.

The major challenge for the WUTC in the next few years will be to move beyond the regulatory procedures used today and to bring additional oversight techniques to bear on the unique and significant risks posed by pipelines. The current inspection approach is limited in how it treats real-world risk. To some degree, the nascent Integrity Management System will help the WUTC in their effort to manage risk, but additional lessons can be learned from Bellingham and the other accidents around the United States.

At present, the program does not have regular interaction with other state programs on what constitutes best inspection and/or risk-limiting practices. Such interactions could also assist in developing performance benchmarks and performance measures, which are currently out-of-date, inaccurate, and of little apparent use to managers or staff. The program also lacks a coherent and consistent enforcement policy. However, WUTC cannot change its regulatory or enforcement protocols for ***inter***state companies without the approval of the federal Office of Pipeline Safety.

From these findings in the inspection area of this review, we make the following recommendations:

Recommendation 1: Focus on Risk

The WUTC's pipeline safety program should develop a strategy to reduce the risks of pipeline accidents. The strategy should:

- Include a definition of risk and how risk reduction will be measured;
- Identify how the current audit/inspection and the proposed Integrity Management approaches reduce the risks of accidents;
- Specify additional approaches that will reduce the risk of accidents, such as those suggested by the Accufacts report, other states' risk assessment practices, damage prevention options, and industry procedures that are not currently required by the pipeline regulatory code; and
- Reflect the difference in WUTC's regulatory authority over ***intra***state versus ***inter***state pipeline companies.

Legislation Required:	None
Fiscal Impact:	None
Completion Date:	November 2003

Recommendation 2: Identify and Integrate Best Practices

The WUTC should increase its interactions with the national pipeline safety community to identify and adopt best inspection and safety management practices, such as performance-based management. WUTC should also develop better means of getting input from the regulated pipeline community in order to sharpen its inspection performance.

Legislation Required:	None
Fiscal Impact:	Minimal travel costs
Completion Date:	November 2003

MAPPING PIPELINES

The Legislature charged the WUTC with creating a mapping system to meet the needs of first responders, and the WUTC has put significant effort into meeting that requirement. However, we have found their approach to be overly broad. The WUTC has not integrated its role into the existing emergency response structure, which includes local emergency operation centers, the Office of the State Fire Marshal, and the pipeline operators. It would be more efficient, cost effective, and prudent for the WUTC to work within this existing infrastructure as it determines how best to support other local and state emergency personnel for potential pipeline accidents. Based on the experience of other states, a simpler approach would be to collect only those data attributes which other data providers do not currently collect and which add value for the users of the system.

More generally, the WUTC has not clearly articulated what or how other programmatic needs, such as supporting the inspection function, will be served by their mapping efforts.

Recommendation 3: Integrate WUTC Mapping System with Related GIS Efforts

The WUTC should reorient its proposed mapping program to fit within the existing emergency response system in the state. The WUTC should articulate a mapping strategy that clearly and distinctly meets all the various needs in the most efficient means possible.

Legislation Required:	None
Fiscal Impact:	None
Completion Date:	November 2003

IMPOSING A FEE ON OPERATORS

We found that the fee rules are congruent with statutory language, that use of pipeline miles is a legitimate method of allocating unassigned costs, and that the formula for calculating average costs is an appropriate means of assigning costs. However, the WUTC's current fee methodology includes a factor that is based upon a staff use projection that did not materialize. This projection has led to a disproportionate shift of costs from intrastate to interstate pipeline operators. In addition, the fee methodology uses an estimated average daily cost that is significantly less than actual cost.

This JLARC report analyzed 2002 data to suggest a different means of calculating these costs. To make the fee methodology more equitable, we make the following recommendation:

Recommendation 4: Align Fees and Workload

The agency should adjust future fee calculations of non-direct time to mirror actual staff time devoted to intrastate and interstate work. The agency should also recalculate the direct costs, using a figure that more closely reflects the actual cost of an average inspector day.

Legislation Required:	None
Fiscal Impact:	**Difference between current interstate fee and revised fee,** estimated in our analysis at $185,000 annually
Completion Date:	**July 2003**

AGENCY RESPONSE

We have shared the report with the Washington Utilities and Transportation Commission (WUTC) and the Office of Financial Management (OFM), and provided them an opportunity to submit written comments. Their written responses, as well as those provided by the Washington City and County Pipeline Safety Consortium, are included as Appendix 2.

ACKNOWLEDGEMENTS

JLARC would like to acknowledge and thank all of those who have contributed to this report. We received exceptional assistance from the Washington Utilities and Transportation Commission, the Federal Office of Pipeline Safety, pipeline operators and company representatives, local government officials, state pipeline regulators across the nation, and our three expert contractors. In particular, we would like to acknowledge the assistance and diligence of Sondra Walsh at the WUTC.

Thomas M. Sykes
Legislative Auditor

On June 19, 2003, this report was approved for distribution by the Joint Legislative Audit and Review Committee.

Senator Jim Horn, Chair

APPENDIX 1 – SCOPE AND OBJECTIVES

PIPELINE SAFETY PROGRAM: OVERSIGHT AND REVIEW

SCOPE AND OBJECTIVES

JUNE 26, 2002

STATE OF WASHINGTON

JOINT LEGISLATIVE AUDIT AND REVIEW COMMITTEE

STUDY TEAM

Dan Silver
Project Manager

LEGISLATIVE AUDITOR

TOM SYKES

Joint Legislative Audit & Review Committee
506 16th Avenue SE
Olympia, WA 98501-2323
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Website: http://jlarc.leg.wa.gov
e-mail: neff_ba@leg.wa.gov

BACKGROUND

In response to a June 1999 pipeline explosion in Bellingham, the 2000 Legislature expanded the authority of the Utilities and Transportation Commission (UTC) to develop and implement a comprehensive hazardous liquid pipeline safety program [C 191 L 00, ESHB 2420]. The UTC was required to seek federal authority to act as a federal agent to inspect and enforce federal law.

In 2001, the Legislature authorized the UTC to secure permanent funding for the pipeline safety program by assessing an annual pipeline safety fee sufficient to recover the reasonable costs of administering and operating the program [C 238 L 01, SSB 5182]. The Legislature prescribed certain conditions for this fee and the distribution of costs between *intrastate* and *interstate* pipeline companies. In this legislation, the Legislature also directed the Joint Legislative Audit and Review Committee to conduct a review, due by July 1, 2003.

MANDATE

The Legislature authorized JLARC's pipeline safety program review with this language:

> *"The joint legislative audit and review committee shall review staff use, inspection activity, fee methodology, and costs of the hazardous liquid and gas pipeline safety programs and report to the appropriate legislative committees by July 1, 2003. The report shall include a comparison of interstate and intrastate programs, including but not limited to the number and complexity of regular and specialized inspections, mapping requirements for each program, and allocation of administrative costs to each program." [SSB 5182, Sec.4, 2001 Session]*

PROPOSED STUDY OBJECTIVES

1. Describe the regulatory framework for pipeline safety. Identify current federal guidelines for those safety programs that have been delegated to the states. Describe new developments, industry standards, and benchmarks for an effective pipeline safety program.
2. Identify the variety of inspection activities carried out by the UTC under their expanded program. Compare and contrast the Washington State program with the inspection activities of other states and Canada, and with the federal Office of Pipeline Safety.
3. Describe the UTC pipeline mapping activities. Compare and contrast the mapping activities of the UTC with those in other states and the federal system. Identify expected outcomes from the UTC mapping activities that could be used by UTC inspectors, first responders, local governments, companies, excavators, and others.

4. Identify costs associated with intrastate and interstate pipeline regulatory activities of the UTC program. Describe the growth of the staff as UTC changed to a combined intrastate/interstate program. Identify projected inspection activities in 2000 and 2001, and compare them to the actual pipeline inspection activities carried out in 2002. Describe and assess the fee methodology used to distribute program costs between the interstate and intrastate pipeline companies. Compare the fee methodology adopted by UTC to other fee options.
5. Develop recommendations and next steps, including sharing information from the review to assist the UTC and the Citizens Committee on Pipeline Safety to address the legislative directive for a regulatory incentive program for pipeline safety. [Section 2(8) of SSB 5182]

OVERVIEW OF STUDY APPROACH

JLARC expects to contract with independent experts to:

- Identify the essential elements of a successful pipeline inspection effort and the most effective means of reducing risk to the public;
- Evaluate mapping in the context of pipeline safety and, in particular, the use of Geographic Information Systems and other related technologies to assess the activities of the UTC pipeline safety program; and
- Provide other technical expertise as warranted.

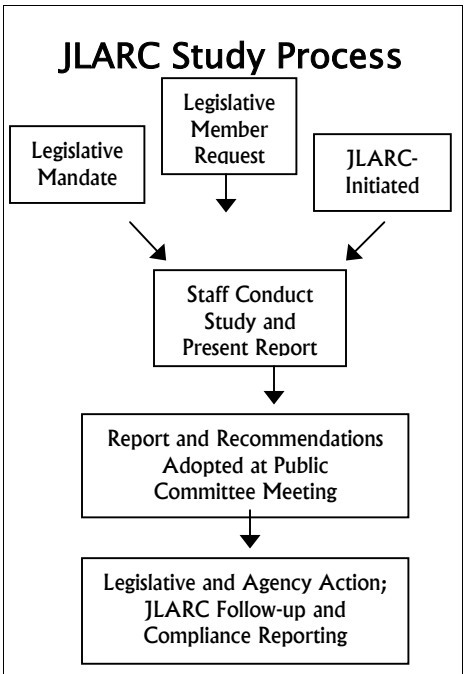
The staff and contractors will compare and contrast the Washington State program with programs operated elsewhere in the country, by other states and by the federal government.

This JLARC study will review the quality and nature of inspections from the perspective of: independent expert technical inspectors, UTC inspectors, the Office of Pipeline Safety, and field staff of the companies being inspected.

Where appropriate, this review will make recommendations for change and improvements to the inspection, fee, and oversight systems authorized under the 2000 and 2001 legislation.

JLARC Staff Contact for the Study

Tom Sykes 360.786.5175 sykes_to@leg.wa.gov



Criteria for Establishing JLARC Work Program Priorities

- Is study consistent with JLARC mission? Is it mandated?
- Is this an area of significant fiscal or program impact, a major policy issue facing the state, or otherwise of compelling public interest?
- Will there likely be substantive findings and recommendations?
- Is this the best use of JLARC resources: For example:
  - Is JLARC the most appropriate agency to perform the work?
  - Would the study be nonduplicating?
  - Would this study be cost-effective compared to other projects (e.g., larger, more substantive studies take longer and cost more, but might also yield more useful results)?
- Is funding available to carry out the project?

APPENDIX 2 – AGENCY RESPONSE

- Washington Utilities and Transportation Commission
- Office of Financial Management
- Office of the Governor
- Washington City and County Pipeline Safety Consortium
- Washington State Citizens Committee on Pipeline Safety

STATE OF WASHINGTON

WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

1300 S. Evergreen Park Dr. S.W., P.O. Box 47250 • Olympia, Washington 98504-7250
(360) 664-1160 • TTY (360) 586-8203

May 30, 2003

Thomas M. Sykes, Legislative Auditor
Washington State Joint Legislative Audit and Review Committee
506 16th Ave. S.E.
Olympia WA 98501-2323

RE: Comments on Preliminary Draft of JLARC Review of Pipeline Safety Office

The Washington Utilities and Transportation Commission (WUTC) welcomes this opportunity to respond to the Joint Legislative Audit and Review Committee's (JLARC) recommendations contained in its preliminary report – *Oversight and Review of Washington's Pipeline Safety Office*.

The WUTC's Pipeline Safety Program is not quite three years old. Yet as noted in the JLARC preliminary report:

> The WUTC has established the initial stages of a more complex pipeline regulatory program; hired experienced and quality staff; accelerated staff training; improved program planning, and developed a comprehensive record system and databases. Completed inspections are at an historic high, and those inspections are more thorough and intense.

We are proud of what the Pipeline Safety Program has accomplished since it was expanded in 2000. However, as noted by the report, the WUTC program is still developing and doing so during a period of dynamic change to how oversight of pipelines in this country is conducted.

We welcome the recommendations of the JLARC study team and are committed to incorporating the suggested changes into how Washington State's pipeline safety program accomplishes its mission.

Response to Report Recommendations

Recommendation #1	Agency Position
Focus on risk.	Concur

The WUTC is looking to the future and developing program strategies that approach risk in several ways. We recently adopted a risk assessment prioritization (RAP) process to deploy our inspection resources most effectively for intrastate inspections. Using this process we analyze information gathered from safety audits, complaints, investigations, rate cases, and industry and federal government sources. We then use the RAP to establish an inspection priority list of intrastate operators and inspection units to ensure resources are assigned where the greatest effect on improvement in pipeline safety and environmental issues can occur.

The RAP method establishes an inspection prioritization based on factors such as:

- The length of time since the last inspection
- History of the operator
- Number of pipeline leaks
- Leaks per mile of main and number of services
- Unaccounted for gas
- Type of pipeline materials in use
- Incidents
- Compliance history
- Construction activity
- Inspectors judgment

The integration of risk into the state pipeline safety program can be accomplished where it falls within the guidelines established for us by the Federal Department of Transportation, Office of Pipeline Safety (OPS). All decisions for priority and frequency of interstate inspection are determined through the OPS. Therefore, the WUTC does not have the same flexibility in setting safety standards, determining the method used for the inspection, or determining frequency of the standard inspection.

The WUTC agrees with the statement by Accufacts that traditional strategies for managing pipeline safety risk focused on obvious risks, but failed to address the root cause of accidents. The WUTC pipeline safety program does identify the potential of risk through regulatory reporting of safety-related conditions. These incident indicators reveal inadequacies in company prevention planning and provide important learning opportunities, as well as indicate the quality of an operator's safety program. A company's management commitments, recorded indicators, and level of expertise are a few examples of additional factors that could fully capture sources of potential risk. The WUTC is exploring ways to incorporate these factors into the current reporting requirements.

The foundation to managing risk is a strong information base. The state pipeline safety program maintains a database of incidents that documents the cause of incidents and categories them by cause. The information for the database is derived from comprehensive

investigations and reports from pipeline operators. In most incidents, there are several contributing factors that when combined, result in a pattern that can be recognized as indicators for future failures. It is important to control these factors, which makes reporting by operators critical. The WUTC is identifying the factors that will indicate a pattern of pipeline incidents and looks forward to working with industry, the federal Office of Pipeline Safety, the public, and other stakeholders to determine more effective ways to reduce risk.

Recommendation #2	Agency Position
Identify and integrate best practices.	Concur

The WUTC looks forward to learning more about new approaches to pipeline inspection from other state pipeline programs. We are an active participant in the National Association of Pipeline Safety Representatives (NAPSR), which is an association of state pipeline safety representatives who meet to share knowledge and expertise in the field of pipeline safety. NAPSR works closely with the federal Office of Pipeline Safety on reviewing inspection and enforcement procedures and experiences, revising or developing new safety regulations, and conducting training sessions, and involves the pipeline industry and related associations where appropriate. The WUTC has participated in a number of technical committees focused on development of better safety and management practices. The WUTC pipeline policy staff is actively involved in development of the new integrity management program, new operator qualifications regulation, and recent congressional improvements in the federal pipeline safety act.

Performance management is an important tool and of interest to communities. In January 2003 the WUTC sponsored a community workshop in Bellevue with the federal Office of Pipeline Safety to explore safety issues. Performance-based management was one of three featured topics. We designed the discussion to focus on the opportunity for the public to be able to evaluate individual operators, the performance of the industry, and performance of government regulators. The WUTC has developed additional performance measures beyond those reflected in the JLARC report. These are reported to the Governor's office every quarter and are reflected in the WUTC balanced scorecard. The workshop provided the OPS and WUTC valuable additional information on the kinds of measures of interest to the public and industry.

Recommendation #3	Agency Position
Integrate WUTC Mapping System with Related GIS Efforts.	Concur

Over the past two years, we have worked closely with other organizations as we worked to develop a pipeline geographical information system (GIS). Examples include:

- In an effort to understand what local governments were doing in this area, our GIS analyst spoke with 68 local government officials. These conversations included GIS professionals or managers at 14 counties and 15 cities.

- Our GIS plan is almost complete and includes information provided to us by 116 fire districts statewide that we surveyed.
- We have shared pipeline data with a number of city, county, state agencies and pipeline operators.
- We generated the pipeline maps used by the Office of the State Fire Marshall in incident response training they presented to local fire departments.

We have worked closely with state and local government agencies while developing our plan and will continue to do so. We share the study team's desire that we provide these important services as efficiently as possible.

The WUTC plans to incorporate more information about pipelines than the five other pipeline GIS programs[1] surveyed by JLARC's GIS consultant because we believe we need to do so to meet our statutory mandate to "meet the [pipeline information] needs of first responders"[2] as they have described them to us. We also believe additional GIS data will be required to appropriately implement the new system of pipeline safety management required by OPS rules called "integrity management."

In the six months since we met with the JLARC study team's GIS consultants, we have made considerable progress implementing a pipeline GIS to support first responders, local governments, and our own inspection program.

The GIS software we have selected will allow us to share GIS data in any format needed by other organizations. It also supports importing other organization's data for use in our GIS.

We plan to provide pipeline-related GIS information in the form that is most useful to the recipients. For jurisdictions that have a fully functioning GIS capability, we will give them the pipeline-related GIS data they need. In turn they can meet the pipeline-related GIS needs of their organizations. For jurisdictions that do not have GIS capability, we will provide pipeline GIS in forms they can best use.

This summer we will complete most of the first phase of our plan, which focuses on developing internal processes needed to ensure efficient, reliable, and secure management of the GIS data we have collected. This fall we will begin to develop the various tools we will need to deliver GIS products and data to local governments.

Recommendation #4	Agency Position
Align fees and workload.	Partially Concur

The WUTC agrees that until we have had further experience with the new comprehensive program, the fee methodology should be based on actual staff time and the per-day amount for standard inspections should be revised to reflect actual cost.

[1] GeoEngineers surveyed the pipeline GIS programs operated by California, Louisiana, Texas, Virginia and the OPS.
[2] RCW 81.88.080(1)

We have applied actual time to determine the 2003/2004 pipeline safety fees and have found the percentage-split between interstate and intrastate to be greater than the JLARC proposed 31/69 split. The JLARC split does not include four months of staff time related to inspections and it does not include time spent on policy work directly related to interstate and intrastate safety, citizen committee staffing and meetings, and other related activities.

Sincerely,

Carole J. Washburn
Executive Secretary

cc: Marty Brown, Office of Financial Management
Carol Jolly, Office of Financial Management

RECEIVED
JUN 19 2003
JLARC

STATE OF WASHINGTON
OFFICE OF FINANCIAL MANAGEMENT
Insurance Building, PO Box 43113 • Olympia, Washington 98504-3113 • (360) 902-0555

June 17, 2003

TO: Thomas Sykes, Legislative Auditor
Joint Legislative Audit and Review Committee

FROM: Marty Brown, Director MB

SUBJECT: **OVERSIGHT AND REVIEW OF WASHINGTON'S PIPELINE SAFETY OFFICE - PROPOSED FINAL REPORT**

I have received the proposed final report of the Oversight and Review of Washington's Pipeline Safety Office and your request for the Office of Financial Management's response to the report. Thank you for the opportunity to review the recommendations.

My comments pertain to the budgetary implications of the report and not directly to the policy issues addressed by Carol Jolly, Acting Director of the Governor's Executive Policy Office, in her letter to Joint Legislative Audit and Review Committee members Heather Moss and Dan Silver, dated May 22, 2003.

RECOMMENDATION	AGENCY POSITION	COMMENTS
Recommendation 1: Focus on Risk	Concur	None
Recommendation 2: Identify and Integrate Best Practices	Concur	None
Recommendation 3: Integrate WUTC Mapping System with Related GIS Efforts	Concur	None

Recommendation 4: Align fees and workload	Partially Concur	Concur with JLARC and WUTC that the fee methodology should be based on actual staff time and actual costs. Concur further with the agency that the percentage-split between interstate and intrastate costs proposed by JLARC may need to be revised based on time spent on pipeline safety policy, citizen committee staffing, meetings and other related costs.

Again, thank you for the opportunity to review and comment on the proposed final report.

GARY LOCKE
Governor

STATE OF WASHINGTON
OFFICE OF THE GOVERNOR
P.O. Box 40002 • Olympia, Washington 98504-0002 • (360) 753-6780 • www.governor.wa.gov

May 22, 2003

Ms. Heather Moss
Mr. Dan Silver
Joint Legislative Audit and Review Committee
P. O. Box 40910
Olympia, Washington 98504-0910

Dear Dan and Heather:

I am writing to offer a few comments on the preliminary JLARC report on the Pipeline Safety Program. These comments are founded on my understanding of the state's pipeline safety authority as it relates to federal authority, rather than on any "budgetary aspects" of the preliminary report.

I want to begin by expressing my admiration for the overall report. I think you did an extremely good and thorough job in assessing the WUTC's pipeline safety activities and their strengths and weaknesses in implementation. Having followed this program closely since mid-1999, I especially appreciate your acknowledgement that the expansion of WUTC oversight to include interstate pipelines reflects a significant change in focus, and that this transition has been maturing over the past 3 years.

My reservation about the report is related to its limited emphasis on the constraints placed on the state by federal law and the U.S. Department of Transportation's Office of Pipeline Safety. While the state has fairly substantial leeway in conducting its *intrastate* program, this is not the case in its regulation of *interstate* programs. Despite substantial efforts by the WUTC and the Governor's Office in working with our Congressional delegation to empower states on interstate regulation, we have not succeeded in amending federal pipeline law to achieve this objective.

For example, you quote your Accufacts consultant about the shortcomings of OPS's Integrity Management approach as saying that "neither the OPS nor the WUTC are properly staffed to deal with these new high IM [Integrity Management] manpower intensive demands unless regulatory approaches change...." You then offer the consultant's recommendations for improvements to the IM program. But I don't feel you give nearly enough weight to the fact that, under federal preemption restrictions, the state cannot adopt regulations that go beyond – or even differ from – those adopted by OPS.

Similarly, in discussing enforcement, you state that "thirty-six states, including Washington, did not issue any penalties in 2001. The WUTC issued three penalties in 2002, all to intrastate companies." Here too, it seems to me, you have underemphasized the state's restrictions under federal law that preclude the WUTC imposing enforcement penalties on interstate operators; the state can only recommend action to the federal OPS, which must take the enforcement action. [You allude to this reality by noting in another context that "OPS has not acted on any of Washington's submissions (of Notices of Violation).] I do not wish to take exception to any desire by the Commissioners to seek settlements or take a non-confrontational approach to violations, but I do think it needs to be pointed out that the state's discretion is inherently limited in a federal preemption mode of operation.

I would therefore suggest that in your presentation of Recommendations 1 and 2, the report should acknowledge that the WUTC is constrained by federal law and regulation in the extent to which it could operate an optimal regulatory program (risk-based and/or based on best management practices).

RECOMMENDATION	AGENCY POSITION	COMMENTS
Recommendations 1 and 2	Partially concur	See above

Thank you for the opportunity to comment on the preliminary report. I look forward to receiving the final report next month.

Sincerely,

Carol Jolly
Acting Director
Executive Policy Office

cc: Carole Washburn, WA Utilities and Transportation Commission
David Danner, Executive Policy Office
Deborah Feinstein, Office of Financial Management

Washington City and County Pipeline Safety Consortium

Katherine M. Hansen
Pipeline Safety Coordinator
City of Bellevue - Transportation Department
PO Box 90012
Bellevue WA 98009-9012

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JUN - 2 2003
JLARC

May 30, 2003

Tom Sykes, Legislative Auditor
Joint Legislative Audit and Review Committee
506 16th Avenue SE
Olympia, WA 98501-2323

Re: Comments on the Oversight and Review of Washington's Pipeline Safety Office – Preliminary Report.

Dear Mr. Sykes,

The Washington City and County Pipeline Safety Consortium offers the following comments on JLARC's "Oversight and Review of Washington's Pipeline Safety Office – Preliminary Report" (the Report). The Consortium is comprised of the following Washington state cities and counties directly affected by pipelines: Cities of Bellevue, Bellingham, Bothell, Kent, Redmond, Renton, SeaTac, Seattle, Tumwater and Woodinville and the Counties of Clark and Thurston. These jurisdictions alone represent over 1.97 million people. The Consortium's charge is to provide information, assistance and advocacy to local government agencies and officials on matters relating to hazardous liquid and natural gas pipeline safety.

While the Report is extensive, the Consortium will limit its comments to two areas: the report seems to rely too heavily on integrity management as a superior means of assessing pipeline integrity while failing to mention that WUTC inspectors conduct physical examinations of pipelines as a regular part of their inspection process currently and it recommends that the WUTC limit its mapping project to include only data helpful to emergency first responders without regard to the RCW requirement that data be available to local governments for pipeline location information.

Risk Reduction

The JLARC report makes the recommendation that WUTC should focus on risk reduction rather than internal processes and measures. JLARC cites the federal system of integrity management as a means of risk reduction. JLARC also points to the state of New York, where "engineers use engineering assessments to identify reasons for pipeline failures and highlight areas of potential risk." (The Report at page 17.)

The Consortium agrees that the use of risk reduction or integrity management will reduce risk in high consequence areas, however, like the state of New York and Accufacts, we believe that relying solely on integrity management to reduce risks is inadequate. While the Report discusses the WUTC's document review of pipelines, it fails to mention the physical pipeline inspections performed by the WUTC. These inspections are conducted within the parameters set by the federal Office of Pipeline Safety under federal law. Physical inspections are a significant tool for assessing pipeline integrity that have a place within any integrity management plan. We support the WUTC in their continued physical inspections of pipelines and the use of other means of assessing pipeline integrity, such as in-line inspection tools. While it is valuable to focus on risk reduction, such focus should not be at the cost of other methods of inspecting pipelines.

Mapping

The Report also makes the recommendation that "the WUTC should reorient its proposed mapping program to fit within the existing emergency response system in the state. The WUTC should articulate a mapping strategy that clearly and distinctly meets all the various needs in the most efficient means possible." (The Report at page 28.) The Report cites RCW § 81.88.080 requiring the WUTC to create a mapping system that not only assists first responders but also assists local governments in obtaining pipeline location information.

The Consortium believes that while providing mapping data helpful in emergency situations is vital, there are also very important uses for mapping data that WUTC should provide as well. RCW § 81.88.080 extends the mapping project parameters to include pipeline information that will assist local governments in obtaining pipeline location information. For example, pipeline location information is used by local governments to determine what utilities occupy a city or county's rights of way and to assist in local land use and permitting processes. City projects can move forward more quickly and at lesser expense when extensive pipeline location information is readily available. An ambitious mapping project will certainly be more expensive initially but due to economies of scale, embarking on a larger project initially will result in cost savings later on. The Consortium supports the WUTC's ambitious mapping project.

The Consortium supports the report's recommendation that any mapping system should coordinate with existing systems. While some jurisdictions – cities and counties – may have fully-operational mapping systems such as GIS, other jurisdictions are just creating theirs or have no plans to do so. An ambitious WUTC mapping project would help all these jurisdictions. Jurisdictions with operational mapping systems could use the WUTC data for its in-depth

pipeline information. Cities contemplating a mapping system could use the WUTC data instead of creating their own database. Cities without plans for a mapping system could still use maps printed from the WUTC system for their local jurisdictions. The ambitious mapping project WUTC has embarked on can be tailored to fit with existing systems while still providing exhaustive pipeline location information for any use a jurisdiction may have.

We appreciate this opportunity to comment on the JLARC report. Thank you.

Sincerely,

Katherine M. Hansen

Katherine M. Hansen

cc:
Heather Moss
Carole Washburn
Steve King

Washington State
Citizens Committee on Pipeline Safety
PO Box 90012
Bellevue, WA 98009-9012

June 4, 2003

RECEIVED
JUN - 9 2003
JLARC

Tom Sykes – Legislative Auditor
Joint Legislative Audit and Review Committee
506 16th Avenue SE
Olympia, WA 98501-2323

Dear Mr. Sykes:

The Washington Citizens Committee on Pipeline Safety was created by the legislature in the 2000 Pipeline Safety Act. We have had the opportunity to advise the Washington Utilities and Transportation Commission (WUTC) from its early stages in developing the comprehensive safety program called for in that Act. We have been pleased with the program's direction.

At the Committee's recent meeting on May 20, 2003, we discussed the Joint Legislative Audit and Review Committee (JLARC) preliminary report on the WUTC's Pipeline Safety program and would like to make the following observations.

The Citizens Committee on Pipeline Safety recommends that two important clarifications be incorporated into JLARC's final report.

1) A clarifying statement should be added indicating that for the critically important interstate pipeline systems, any change that the WUTC may wish to make to the pipeline inspection processes must receive prior approval from the Office of Pipeline Safety (OPS). Failure to receive such prior approval can jeopardize the WUTC's pipeline "Interstate Agency" status with OPS, a serious issue for the State of Washington.

2) It is the Committee understanding that recent discussions regarding some changes in the pipeline interstate inspection process have been agreed to, indicating that OPS and the WUTC are working in a positive manner to improve pipeline inspection effectiveness. This Committee supports and plans to remain informed on the progress of these critical improvements. We believe comments supporting this positive effort between OPS and the WUTC should be encouraged and mentioned in any final report.

Thank you for the opportunity to comment on your report.

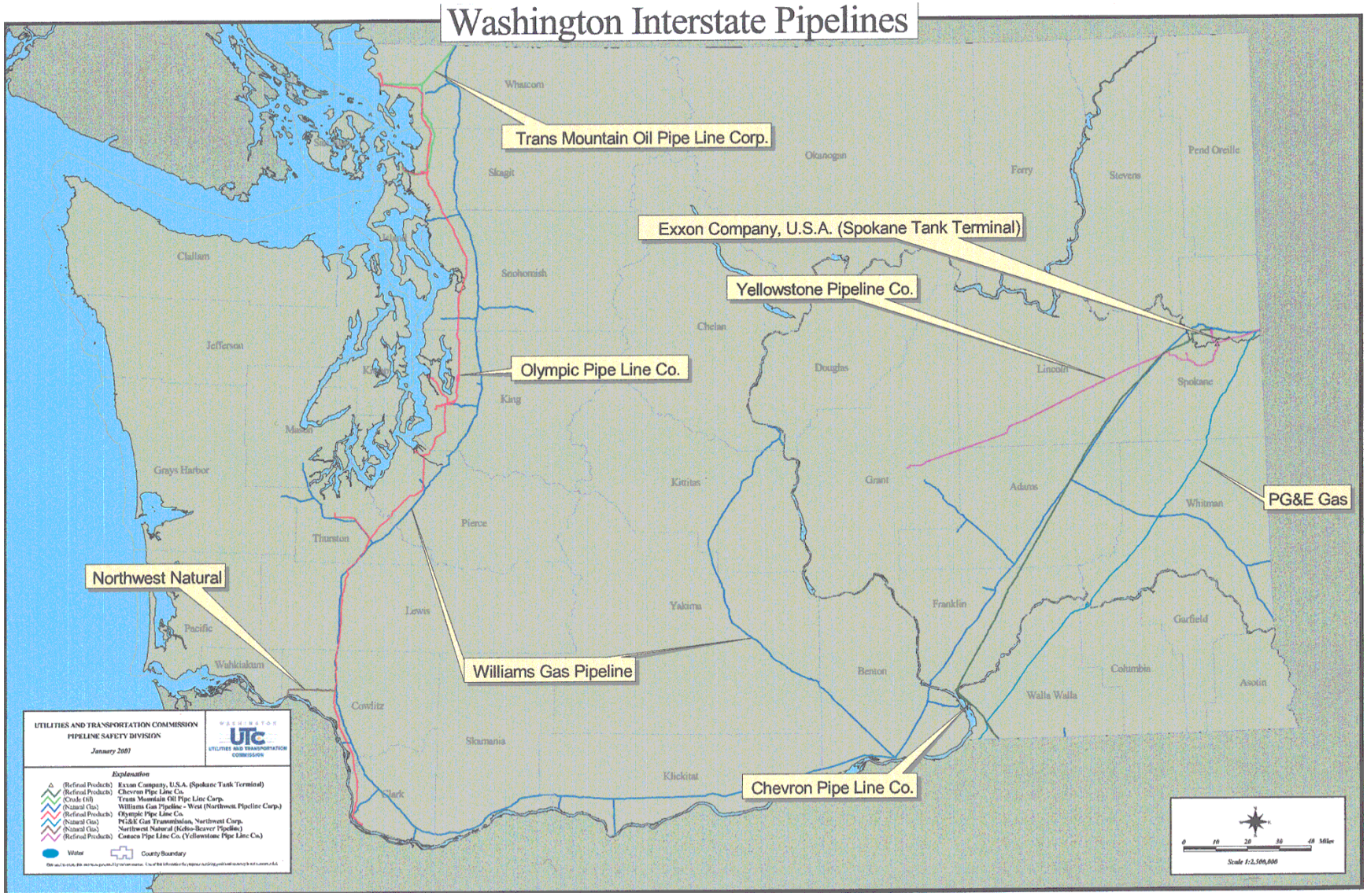
Sincerely,

Chuck Mosher
Committee Chairman

APPENDIX 3 – PIPELINE OPERATORS

Company	Miles of Regulated Pipeline
Intrastate *Natural Gas Distribution and Transmission*	
Puget Sound Energy	10,626
Cascade Natural Gas Corporation	3,811
Northwest Natural	1,319
Avista Utilities Corporation	2,616
Municipal Gas Operators	
City of Buckley	33
City of Ellensburg	94
City of Enumclaw	95
Intrastate *Gas – Direct Sales*	
Ferndale Pipeline System	36
Inland Empire Paper Company	3
Agrium, US Incorporated (Gas)	2
Weyerhaeuser Paper Company	9
Georgia Pacific Corporation – Camas Mill	2
Sumas Cogeneration Company LP	4
Evergreen Aluminum, LLC.	1
Basin Frozen Foods, Inc.	4
Intrastate *Liquid*	
BP Cherry Point Refinery	10
Agrium US, Incorporated (liquid)	1
Naval Air Station – Whidbey Island	4
BP Olympic Pipeline – Intrastate Lateral	56
Kaneb Pipeline Company	4
McChord Pipeline Company	15
Tidewater Barge Lines, Incorporated	3
Interstate *Gas*	
Williams Gas Pipeline West	1,437
KB Pipeline Company	18
PG&E Gas Transmission – Northwest	309
Puget Sound Energy-Jackson Prairie	7
Interstate *Liquid*	
Chevron Pipe Line Company	177
Trans Mountain Oil Corporation	65
Conoco, Inc. – Yellowstone Pipeline Company	140
BP Olympic Pipeline – Interstate	334
Exxon Mobile Corporation	0

Note: The map on the next page depicts **interstate** pipelines, which represent approximately 12 percent of the state's pipeline system.


Washington Interstate Pipelines
Trans Mountain Oil Pipe Line Corp.
Exxon Company, U.S.A. (Spokane Tank Terminal)
Yellowstone Pipeline Co.
Olympic Pipe Line Co.
PG&E Gas
Northwest Natural
Williams Gas Pipeline
Chevron Pipe Line Co.
Whatcom
Skagit
Okanogan
Ferry
Stevens
Pend Oreille
Clallam
Snohomish
Chelan
Jefferson
Douglas
Lincoln
Spokane
King
Mason
Grays Harbor
Kittitas
Grant
Adams
Whitman
Pierce
Thurston
Lewis
Yakima
Franklin
Garfield
Pacific
Wahkiakum
Benton
Columbia
Asotin
Walla Walla
Cowlitz
Skamania
Klickitat
Clark
UTILITIES AND TRANSPORTATION COMMISSION
PIPELINE SAFETY DIVISION
January 2001
Explanation
(Refined Products) Exxon Company, U.S.A. (Spokane Tank Terminal)
(Refined Products) Chevron Pipe Line Co.
(Crude Oil) Trans Mountain Oil Pipe Line Corp.
(Natural Gas) Williams Gas Pipeline - West (Northwest Pipeline Corp.)
(Refined Products) Olympic Pipe Line Co.
(Natural Gas) PG&E Gas Transmission, Northwest Corp.
(Natural Gas) Northwest Natural (Kelso-Beaver Pipeline)
(Refined Products) Conoco Pipe Line Co. (Yellowstone Pipe Line Co.)
Water
County Boundary
0 10 20 30 40 Miles
Scale 1:2,500,000

APPENDIX 4 – OPERATORS' OBSERVATIONS ABOUT THE WUTC: SUMMARY

JLARC interviewed 14 of the 29 companies in the fall of 2002. These 14 represented every type of operator, and they manage more than 90 percent of the pipelines in the state. The pipeline companies have had varying experiences with the expanded WUTC program, and they offered numerous suggestions for process improvements. In addition to their comments included in the body of this report, we summarize some of their suggestions below:

Seek efficiency.

Each of the companies recognized that WUTC had hired a lot of new people and faced a normal learning curve bringing them up to speed. Companies suggested that the WUTC should now look for efficiencies in the ways it conducts its audits. They had these specific suggestions:

- Reduce the number of people involved in an inspection, now that the junior auditors have completed their basic training and acquired field experience.
- Being well prepared. Several companies were highly complimentary of the inspectors for being prepared. One of the strongest criticisms voiced in the survey concerned an instance when an inspector was not prepared.
- Pay attention to the scheduling of the multiple units in the larger companies. At times, the compliance staff in these companies have been overwhelmed in their ability to meet the demands of the inspections. Spreading the inspections out more evenly over the course of the year, rather than bunching them up at the end, would enable the companies to be more responsive to the inspectors.
- Schedule inspections every other year rather than annually, especially when companies have not had significant or recurring problems.

Tighten up the process.

- More than a third of the companies criticized the timeliness of the WUTC's written follow-up to their audit. Companies report delays of three months or longer before receiving the inspection report. Several companies reported that new inspections were beginning before they could respond to the problems identified in the previous audit. Other companies expressed frustration that the WUTC does not come to closure on issues raised in their audits.
- Several companies voiced a concern that the WUTC spent too much of their audit time on written procedures in manuals and not enough in the field. Companies asserted that the operating manual did not change very much from inspection to inspection, and spending so much time on it protracted the length of the audit. Companies also perceive that the WUTC's emphasis on the manual is to some degree a focus on process over safety. Audit time could be better spent on field inspection to reveal physical circumstances not apparent through the manual review.

- Companies questioned the appropriateness of WUTC's use of cathodic protection readings. They note a significant variation in the ability of the inspectors to work in this highly technical area. Several suggested that the WUTC should hire an outside firm, rather than assuming all of its inspectors should be equally competent with this responsibility.

APPENDIX 5 – GENERAL PHYSICS' REVIEW OF PIPELINE PROGRAMS: SUMMARY

At the outset of this review, JLARC sought external assistance in understanding the regulatory environment for pipeline safety. We selected General Physics of Elkridge, Maryland to conduct a comprehensive literature review and to complete a series of interviews with federal and state officials on best regulatory practices. General Physics concluded that there was no programmatic model existing in the U.S. that could be used to assess Washington's program, but there were evident model elements that might be employed for this purpose.

Excerpts from their report are included below. A complete report is available from JLARC upon request. General Physics Corporation, "Report on Model Safety Program," December 2002, GP-R-128026.

Purpose

The purpose of this study was to identify best practices for the inspection and regulation of pipelines, and to use those best practices to define the elements of a model inspection program.

1.3 Comparison of Pipeline Safety Programs

The pipeline safety programs reviewed varied considerably in size and complexity. They ranged from small pipeline safety programs with a few inspectors that implemented minimum federal standards for certification, to larger state programs with 20 or more inspectors that exceeded federal standards in many areas. Several state programs included innovative risk-based approaches to inspection planning and conduct, as well as the use of fine negotiation and rate cases as incentives for regulated companies to implement safety programs that go beyond federal standards. The type of program that a state implements is often based on the political climate within the state and the public perception of the safety and environmental risks that pipelines impose. The pipeline accident history often influences the public perception of the safety and environmental risk.

Model Program

1.3.3 Continuous Improvement

A continuous improvement program is a valuable management tool that has been applied in both industry and government. It is an element of both Total Quality Management and Six Sigma. The application of continuous improvement techniques facilitates a continual improvement of program efficiency and effectiveness. It aids organizations in adapting to changes in the regulatory environment, the regulated companies, and the technology used by both the regulated companies and the regulator.

In a model pipeline safety program, continuous improvement should focus both on the inspection staff and the tools they use in conducting inspections. The performance measures discussed in Section 2.7 of our report can be used to measure improvement. In addition, the regulatory agency should conduct periodic analyses of the performance measures and the inspection and enforcement history to identify trends in safety and compliance. This analysis should also be used to identify opportunities for improvements.

1.3.3 Inspection Techniques

Risk-Based Inspection

To maximize inspection resources, inspections should be prioritized by the risks associated with the failure to comply with the regulation. Risk-based inspections in the petroleum refining industry have demonstrated improved safety. For example, if the consequences of failing to perform a maintenance task on the pipeline are severe and likely to occur, then failure to perform that task is a high risk and the associated inspection should be assigned a high priority. However, if the consequences associated with failing to perform a maintenance task on the pipeline do not result in an increased probability or do not affect the consequences of an accident, that task should be assigned a low priority.

There are several states that have implemented risk-based inspections. New York has assigned low, medium, and high risk associated with not performing the inspection associated with a code requirement. High-risk regulations are inspected annually for each operator. Medium-risk regulations are inspected between one (1) to three (3) years and low-risk regulations may have the inspection interval extended up to five (5) years.

The state of Texas prioritizes the safety risks associated with pipeline characteristics such as, material of construction, class location, use of cathodic protection, and then rates operators on a numerical basis with respect to the pipeline characteristics to determine the inspection priorities. Inspection data is used to re-evaluate inspection priorities on an ongoing basis.

Of the states interviewed, Virginia has the most comprehensive risk-based inspection program. A computer program has been developed that uses an algorithm to prioritize inspections. Operator information provided through annual reports filed with the federal OPS is downloaded and includes miles of main pipe and number of services for various pipe materials and sizes. Operating companies provide the number of No. 1 grade leaks and average emergency response time. The inspection history is also considered for the number of probable violations. Each parameter considered is assigned a weight factor and a numerical value. The higher the total sum for an operator, the greater the need for inspection.

When considering a risk-ranking methodology, it is important to consider that the determination of relative risk is subjective. The risk-ranking methodology should be documented in a procedure that describes how the relative ranking was derived and what factors were considered. A numerical value should be assigned to each regulatory requirement in the code and can be determined by factoring several parameters for each regulatory requirement in the code. The best method for implementing this is to use a computer program to determine the risk rankings through the use of an algorithm. Risk-ranking based inspections can be taken a step further by considering each company's inspection history with regard to the section of code to determine which companies to inspect first. Using the two approaches in combination will result in a risk-based ranking of inspections to perform on a given company.

APPENDIX 6 – ACCUFACTS' REPORT FINDINGS

As part of this review, JLARC decided to review several real accident cases and assess how the regulatory system might be used to avoid those accident scenarios. The two cases we selected were the Bellingham accident of June 1999, and a release of petroleum near Chalk Point, Maryland in April 2000. JLARC selected Richard Kuprewicz of Accufacts Incorporated of Sammamish, Washington to conduct this study. Mr. Kuprewicz, who since has been appointed to WUTC's Citizen Committee on Pipeline Safety, was one of the outside investigators brought in to assess the Bellingham accident in 1999.

The recommendations from the Accufacts report are reproduced below. It is worth reviewing the entire report to get the context for these recommendations. A complete report is available from JLARC upon request. "Preventing Pipeline Failure," Accufacts Inc., December 30, 2002.

Accufacts' Specific Recommendations For WUTC

Based on the observations provided in this report, the following recommendations should be instituted within the WUTC to ensure that pipelines are designed, maintained, and operated safely within Washington State. These recommendations are presented in priority to be effective and efficient, with the most critical listed first:

1) **Pipeline Inspections.** The WUTC should immediately redirect its pipeline inspection efforts toward verifying that a pipeline's Baseline Data system design is understood and documented on a "simplified flow" drawing. Regulatory inspection efforts should then focus on ensuring that equipment is properly purchased, installed, operated, and maintained to keep the pipeline operating within this specific design intent. Priority should be given to gas and liquid transmission pipeline segments spanning HCAs [High Consequence Areas], operating at the upper end of their velocity ranges that are at the greatest risk of exceeding MOP/MAOP [Maximum Operating Pressure/Maximum Allowable Operating Pressure].

2) **Over-reliance on Pipeline Integrity Management.** In any regulatory pipeline safety program there is great temptation to believe IM can play the major role in preventing pipeline failures. IM should not supplant other regulatory efforts that insure pipelines are prudently designed, operated, and maintained. Washington State efforts should be focused on ensuring that WUTC inspection resources are not overly diverted to IM activities at the expense of specific recommended items included in this list.

3) **Management of Change.** The WUTC should formulate regulations requiring appropriate "Management of Change" approval procedures within a pipeline company for any pipeline change of Baseline design that is not a replacement in kind.

4) **Overpressure Reporting.** The WUTC should adopt new regulations that require all pressures in excess of 110% MOP/MAOP anywhere within a pipeline be reported to the WUTC in a timely manner so that proper mitigation can be assured to prevent reoccurrence.

Accufacts' Specific Recommendations For WUTC (continued)

5) **Safety Critical Equipment.** The WUTC should foster pipeline regulations defining safety critical equipment and incorporating the concept of independency for such equipment in pipeline operations. This effort should capture the point that redundancy is not independency. In addition, the frequency of operation of safety critical overpressure equipment should be reported at least annually.

6) **SCADA Computer Monitoring.** The WUTC should adopt regulations requiring SCADA [Supervisory Control and Data Acquisition] computer "leak detection" monitoring on transmission pipelines operating across HCAs.

7) **Grandfathered Anomalies.** The WUTC should compile a list by pipeline, of all anomalies of concern that are grandfathered, but that would no longer be permitted in new pipeline operation.

8) **Inline Inspection.** The WUTC should foster further development of and proper use of inline inspection tools including development of industry practices capturing the concepts outlined in this report. Such development must also acknowledge the limited capabilities of these devices even as technology continues to improve.

9) **Third Party Damage Prevention.** The WUTC should adopt additional third party damage prevention regulations exceeding the basic current one-call and public education efforts. Such regulations should focus on addition requirements within pipeline companies capturing the concepts defined in this report.

10) **Specialized Expertise.** Given the rapid development and changes in unique pipeline technologies such as smart pigging, hydraulic analysis, and leak detection, the WUTC should budget sufficient resources to permit the use of independent specialized expertise when needed.

APPENDIX 7 – GEOENGINEERS' REPORT CONCLUSIONS

As part of this review, JLARC sought assistance in understanding what was involved in pipeline mapping and how it was being conducted elsewhere in the United States. JLARC also sought to understand the approach being taken by the WUTC, as well as the course of action recommended by its GIS consultant.

JLARC selected GeoEngineers, a Seattle firm familiar with pipeline mapping, to do this review. GeoEngineers subcontracted part of the work to Kirsty Burt Geographic Information Systems, a firm with acknowledged expertise about Washington State agencies' GIS.

The conclusions from their report are included below. The complete report is available from JLARC upon request. "Review of the Washington State Pipeline Safety Mapping System," GeoEngineers, January 7, 2003.

GeoEngineers' Review of the Washington State Pipeline Safety Mapping System

CONCLUSIONS

Our review of the WUTC pipeline mapping program finds that it is undertaking many of the key functions for a successful GIS program: funding the mapping program through fees, developing a Needs Assessment and initiating contacts with first responders. However, as with all such programs, several significant improvements could be implemented and we have made recommendations under each of the evaluation criteria set up for this study. Some of the recommendations would be fairly easy to implement; others more difficult. However we believe that all are important for developing an even more effective GIS program at the WUTC. We have taken the complete list of recommendations from the report, selected the most important recommendations and provide an expanded discussion for each of them. With the intent of the WA pipeline safety legislation firmly in mind, we conclude that the most cost effective and practical benefits can be accrued by implementing the following recommendations, listed in order of importance:

1. **Modify the approach to local government users with improved interaction and support for first responders.**

   WUTC's current approach, as we discovered via interviews and review of the draft GIS Needs Assessment, is to focus on supporting first responders directly with mapping and GIS services, which require that WUTC build a substantial GIS, with many data layers, in-house. It is imperative that this approach to GIS development be reviewed and modified as soon as possible.

   We agree that the intent of the legislation is to have WUTC support the needs of first responders. However, we do not believe that the intent is to have WUTC make maps directly for first responders except, perhaps, in rural areas where GIS support for emergency response does not exist. Nor is it the intent of the legislation to have WUTC collect numerous additional supporting GIS data layers. Rather, the WUTC should be working within the strong existing framework of GIS support for emergency response that exists in all HCAs in the state. Coordination and contact should be with these staff, rather than directly with the first responders themselves. We suggest that a hierarchy be developed that outlines the highest priority jurisdictions and these should be supported first. Local government GIS professionals should be asked to help direct how WUTC can best support existing GIS emergency response efforts[46,51]

Also, the focus should be on pipeline data as much as possible, rather than on data development and collection of supporting data layers. For the most part, these exist at the local government level already. Local jurisdictions frequently maintain the most accurate and up-to-date GIS data within their area. Some data collection might be required in more rural areas, but we would recommend that the jurisdictions take the lead in that effort. Existing data from USGS and state government will likely provide a good starting point, and may be sufficient for the lower consequence areas.

WUTC should direct part of its planning process toward developing a plan for supporting existing local government emergency response efforts with pipeline data, and focus on providing quality pipeline data that is updated on a regular basis as needed. Primary contacts should be established first with existing GIS organizations within the jurisdictions.

2. **Deal with the data management challenge by prioritizing pipeline attribute and data collection.**
   The states we spoke with made consistent recommendations regarding pipeline data attributes. They recommend following the NPMS standard for data attributes and keeping additional attributes to a minimum. Additional attributes should be limited to flags, such as data source or quality, or to links with other systems, such as inspections. We believe that WUTC has proposed too many attributes for the pipeline GIS layer and that it will not be practical or useful for them to collect or maintain them. In general, attributes belong in databases for other systems, such as the inspection system, not within the GIS data itself. WUTC should decide where the attributes belong, pare down their attribute collection as much as possible, and develop links to important systems as needed.

3. **Develop stronger management skills and presence for GIS at WUTC.**
   Particularly in the early phases of GIS development, strong management within WUTC is required. Tasks such as strategic planning, system design, work plan development, coordination with local government GIS professionals, coordination with operators, and management of GIS consultants, require significant management skill and support. We find that WUTC has a good technical staff person to carry out development tasks but that the success of pipeline mapping and first responder support in Washington requires stronger GIS management focus.

4. **Secure funding beyond 2006.**
   The legislation sets a 2006 deadline for completion of pipeline mapping. Although the basic system may be completed by then, we know from experience, and the experience of other states, that pipeline mapping in GIS is a long-term effort that will require maintenance and continuing development. This must be clearly understood by those who support and fund the pipeline mapping efforts because funding beyond the 2006 deadline is critical.

5. **Encourage compliance by operators by including them as a user group for the mapping system.**

   Pipeline operators are the primary source for centralized pipeline mapping data. They also fund the effort through a fee system. In every state, working with pipeline operators presents challenges. Those states most successful with collecting quality pipeline data from the operators, such as TX and VA, have worked out relationships that make it worthwhile for the operators to cooperate in the pipeline mapping effort. In VA, economic development uses the pipeline data to help locate businesses which is beneficial to the operators. In TX, the data collection is handled via the pipeline permitting system.

   WA should develop a strategy with the operators that will create an incentive for the operators to provide data updates to WUTC. Aside from the examples mentioned above, WUTC might consider providing improved data back to the operators. Also, WUTC should work with the operators at a management level to cooperatively develop a strategy for pipeline mapping that will mutually benefit the operators as well.

APPENDIX 8 – FEE METHODOLOGY DETAILS

The spreadsheet below displays WUTC's fee methodology for FY 03.

Pipeline Safety Program Fees (July 1, 2002 - June 30, 2003)	Miles of Pipeline	# of Stnd Inspect Days	Average # of Inspect Units	Total # of Stnd Inspect Days	Cost of Stnd Inspection	Cost of Stnd Inspection * # of Units	Percent of Miles	Cost for Mileage	Total for Company
INTERSTATE									
GAS -- TRANSMISSION									
KB Pipeline--NWN	18.00	23	0.5	11.5	$12,220	$6,110	0.7240%	$3,775	$9,885
PG&E Transmission	309.00	23	0.5	11.5	$12,220	$6,110	12.4280%	$64,803	$70,913
Williams	1,436.50	23	2	46	$12,220	$24,440	57.7759%	$301,262	$325,702
PSE - Jackson Prarie	7.00	13	0.5	6.5	$6,890	$3,445	0.2815%	$1,468	$4,913
Williams -- LNG		10	1	10	$5,720	$5,720		$0	$5,720
Williams -- Construction		50	1	50	$25,720	$25,720		$0	$25,720
HAZARDOUS LIQUIDS									
Trans-Mountain Pipeline	65.00	24	0.5	12	$12,775	$6,388	2.6143%	$13,632	$20,019
Yellowstone Pipeline - Spokane	25.15	24	0.5	12	$12,775	$6,388	1.0115%	$5,274	$11,662
Yellowstone Pipeline - Moses Lake	114.52	24	0.5	12	$12,775	$6,388	4.6060%	$24,017	$30,405
Chevron	177.00	24	0.5	12	$12,775	$6,388	7.1189%	$37,120	$43,508
Olympic Pipeline	334.16	24	1	24	$12,775	$12,775	13.4399%	$70,080	$82,855
Olympic Anomaly Digs		50	1	50	$25,775	$25,775		$0	$25,775
Exxon		13	0.5	6.5	$6,890	$3,445		$0	$3,445
Total Interstate Miles	**2,486.33**	**325**	**10**	**264**		**$139,090**	**100%**	**$521,432**	**$660,522**
INTRASTATE									
LDC's									
NW Natural	1,319.00	26	2	52	$13,750	$27,500	7.0360%	$40,200	$67,700
Avista	2,616.00	26	4	104	$13,750	$55,000	13.9546%	$79,729	$134,729
Cascade	3,811.00	26	7	182	$13,750	$96,250	20.3291%	$116,150	$212,400
PSE	10,626.00	26	3	78	$13,750	$41,250	56.6824%	$323,854	$365,104
MUNICIPAL									
Buckley	33.00	12.5	0.5	6.25	$6,610	$3,305	0.1760%	$1,006	$4,311
Ellensburg	94.00	12.5	0.5	6.25	$6,610	$3,305	0.5014%	$2,865	$6,170
Enumclaw	95.00	12.5	0.5	6.25	$6,610	$3,305	0.5068%	$2,895	$6,200
DIRECT SALES - TRANSMISSION									
Vanalco	0.50	12	1	12	$6,360	$6,360	0.0027%	$15	$6,375
Agrium	1.60	12	1	12	$6,360	$6,360	0.0085%	$49	$6,409
Inland Empire Paper Co.	3.40	12	1	12	$6,360	$6,360	0.0181%	$104	$6,464
Fort James	1.70	12	1	12	$6,360	$6,360	0.0091%	$52	$6,412
Sumas Cogeneration Co.	4.20	12	1	12	$6,360	$6,360	0.0224%	$128	$6,488
Weyerhaeuser Paper	9.00	12	1	12	$6,360	$6,360	0.0480%	$274	$6,634
Arco Western Co.	36.25	12	1	12	$6,360	$6,360	0.1934%	$1,105	$7,465
Bassin Food	3.62	12	1	12	$6,360	$6,360	0.0193%	$110	$6,470
STORAGE - LP/LNG/LIQUIDS									
PSE - Propane Air		13	1	13	$6,890	$6,890		$0	$6,890
PROPANE DISTRIBUTION									
PSE -- LP Gas Distribution		9.5	1	9.5	$5,140	$5,140		$0	$5,140
HAZARDOUS LIQUIDS									
Agrium	0.80	16	1	16	$8,470	$8,470	0.0043%	$24	$8,494
Tidewater	2.79	16	1	16	$8,470	$8,470	0.0149%	$85	$8,555
Arco	10.00	16	1	16	$8,470	$8,470	0.0533%	$305	$8,775
Kaneb	4.20	16	1	16	$8,470	$8,470	0.0224%	$128	$8,598
Naval Air Station - Whidbey	4.00	16	1	16	$8,470	$8,470	0.0213%	$122	$8,592
Olympic Pipeline	56.01	16	1	16	$8,470	$8,470	0.2988%	$1,707	$10,177
McChord Pipeline Co.	14.50	16	1	16	$8,470	$8,470	0.0773%	$442	$8,912
Total Intrastate Miles	**18,746.57**	**372**	**35**	**665**		**352,115**	**100%**	**$571,349**	**$923,464**
TOTAL PIPELINE MILES	**21,232.90**	**697**	**45**	**929**		**491,205**	**100%**	**$1,092,781**	**$1,583,986**