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Puget Sound Energy
Gas Safety Audit
Section 5 - Training

June 2009

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5.1 Introduction

5.1.1 Objective and Scope

The objective of this task was to conduct a review of Puget Sound Energy's (PSE) training program(s). This effort focused on the organization's approach toward training as related to safety and compliance.

This review examined PSE and their service providers (SPs) training process, policies, procedures and manuals, and in general observed the behaviors, attitudes, values and beliefs of the people involved. Additionally, the relationship between PSE and its SPs was given special attention and consideration to determine how effectively training is approached and what methods are common or different among the organizations. Our findings are listed under the following headings:

Training at PSE

- PSE Training Programs
- Organizational Structural Alignment of Training Units
- Operational Leadership, Communication and Culture
- Functional Management & Administration
- Manuals, Regulations, Standards, Policies and Procedures, Compliance
- Records Management

Safety training

OQ Technical

Non-OQ Technical Training

Management and Employee Development Training

Customer Care Service Training

Other – Special Regulations, Subject Matter Experts, etc.

Industry Associations

5.1.2 Approach

The general approach methodology used in evaluating PSE's training programs as related to safety and compliance involved acquiring information from PSE through interviewing employees and service provider personnel, reviewing training reports and data, observing sample training sessions and, in general, reviewing the overall training process.

An analysis of this information by type and source as noted above was then assessed through the following subtasks described below:

- **Data Collection—**we collected data emanating from the initial response to data requests provided by PSE, from our research and from matters arising in the course of interviews. This information was input into our Web-based document control facility (eRoom).
- **Initial Analysis/Cleaning—**in this subtask, we performed our initial analysis on the data provided by PSE. We identified any gaps or inconsistencies in the data and identified missing or questionable data. We made appropriate corrections, based on clarifications from PSE, to the data to provide as consistent a data set as possible.
- **Additional Data Requests—**based on our Initial Analysis/Cleaning, we formulated additional requests for specific data, data explanations and other information deemed necessary for consistent data.
- **Data Analysis and Cleaning—**in this subtask, we incorporated the additional data received and continued data cleaning efforts to assure consistent and meaningful information to support further analysis.
- **Conducted Further Interviews—**as a result of the additional data collected, and from earlier interviews conducted, further interviews were done to enable more detailed and specific questioning.
- **Observations—**several training sessions were attended to directly observe discussions, information exchange, and the means by which all was communicated.

5.1.3 Background

Since September 7, 2007, PSE and the staff of the Washington Utilities and Transportation Commission ("UTC") have been collaborating to address improvements to work processes, quality of service and system performance for aspects of PSE's operations, including gas operations and contractor oversight.

PSE and UTC have contracted Jacobs Consultancy Inc. to conduct a third-party audit of PSE's mandated gas safety program. The results of this audit are intended to enable PSE and the UTC to possess and work with an authoritative assessment of PSE's mandated gas safety activities. Additionally, an associated implementation plan involving mutually agreed upon recommendations will be available to PSE and the UTC.

Basically, PSE and the UTC prescribed the audit to review PSE's programs, structures and incentives in-place to maintain a "culture of safety and compliance" for PSE and its contractors. Evaluation of PSE's level of responsiveness toward its employees or contractor employees with regard to overall safety is to be conducted.

As there is a strong relationship between safety and training, consideration was placed on assessing the training programs endorsed by PSE to require its employees, service providers and contractor personnel to comply with its standards and procedures.

The following sections identify findings, conclusions and recommendations in training at PSE as related to safety and compliance.

5.2 Findings

PSE has a quality training program in place. It contributes to informing and preparing individuals to deliver utility service to the public in a safe and reliable manner. In support of this, PSE has initiated several steps to continue to enhance and improve its training program.

In doing so a key initial step for PSE was to assess its current training programs to determine opportunities for improvement or enhancement. To this end, PSE contracted the General Physics Corporation, Inc. in the fall of 2007 to conduct a complete review of PSE's company-wide training programs. The report, *PSE Training System Study – FINAL REPORT* was delivered to PSE in January 2008. The General Physics study assessed PSE's Electric Field Operations, Gas Field Operations, Energy Resource Field Operations and Customer Service and its associated training programs. The recommendations proposed in the General Physics report continue to be reviewed and considered by PSE. In some instances, certain recommendations are being implemented by PSE.

Another key step taken by PSE is conducting regular surveys to evaluate various aspects of the organization's employees including training. For example, the "Great Place to Work Survey" has been applied and has provided PSE with a barometer of where things stand with the staff and what kinds of issues and related changes may be necessary.

Additionally, Human Resources – Organizational Development Training staff have tailored programs that enable PSE staff to learn, progress, and grow with safety in mind. The Safety and Operations, Gas Operations and the Customer Care/Service Training teams also provide quality programs that are appropriately tailored to assure proper training is in place to continue maintaining a safe work environment and utility system.

In an effort to assess the relationship training has to safety and compliance at PSE and their service providers (SPs), the training process, policies, procedures and manuals, and in general, the behaviors, practices, attitudes, values and beliefs of the people involved were reviewed. The following set of findings is presented and will focus specifically on training as it relates to the areas of safety and compliance in gas operations. It is not intended to reassess the entire training system at PSE nor is it intended to supersede the General Physics Study. Subsequent and potential areas for enhancement or improvement will be based on these findings.

5.2.1 PSE Training programs

Within PSE there are four training groups: Safety and Operations, Gas Operations, PSE Human Resources – Organizational Effectiveness, and Customer Care/Service. To be precise the following findings will focus on the training of office staff and field crews as related to worker safety and compliance within these four groups. This report does not include PSE's Electric Field Operations, Energy Resource Field Operations or Customer Call Centers. The term "technical and operational" will be used interchangeably through out this document.

5.2.2 Organizational Structural Alignment of Training Units

- There are four broad types of training at PSE including: Safety, Technical (OQ and Non-OQ), Management and Employee Development, and Customer Care Training[1].
- Safety and Operational training is aligned under the Director of Compliance with three safety consultants, one industrial hygienist and one administrator in addition to a department manager. Safety training programs aim at worker or individual safety protocol and policy[2].
- Safety training professionals are available to all PSE organizational units for developing, delivering and overseeing respective safety training programs at PSE. These team members are dedicated and knowledgeable in the areas they oversee[3].
- Safety training programs overlap with technical OQ training and have a direct bearing on the well-being of the individuals involved and the utility system as a whole. Various courses bring attention to and address public safety and the procedures relevant to system safety[4].
- Technical (OQ and Non-OQ) training is aligned under PSE's Gas Operations Training Unit, which falls under the PSE Director for Gas Operations. Further details on the training programs will be subsequently discussed in this report[5].
- Management and Employee Development training are aligned under the PSE Human Resources – Organizational Effectiveness Department along with Health Benefits, Compensation and Staffing Organizational Diversity. The Manager for

[1] Interview 63
[2] Document Request 161
[3] Document Request 84
[4] Document Request 84
[5] Document Request 118, 120

Organizational Effectiveness is responsible for the leadership programs and "non-technical" employee development skills training programs for all PSE staff. Human Resources Business Partners work with PSE executives to address staff development needs throughout the organization[6].

5.2.3 Operational Leadership, Communication and Culture

- PSE leadership, in general, supports the training of the PSE staff and fosters a culture that promotes training of the staff in addressing the worker, their safety and development, public safety and utility-related information.
- When considering the relationship among leadership, communication and culture at PSE, it was noted leadership and culture are certainly linked. Communication is driven by management to help identify and establish the values and messages needed to be conveyed. The employee development program initiated over the last several years has exceeded internal PSE expectations in the speed, impact and energy associated with the effort[7].
- The PSE 2008 and 2009 corporate goals established the intended goals for the organization as a whole. Embedded in these goals are "company values that support safety, team work, team development and customer service" in the advance of providing a safe work environment and system in providing a safe reliable utility service. Training is one of the ways to advance theses goals[8].

5.2.4 Functional Management and Administration

While there is a distinct and separate organizational structure among the Safety and Operations Department, Gas operations Department, HR – Management and Employee Development and Customer Care Service training units functionally, there is access to training that is coordinated within PSE. There is some debate as to whether there should be a central or decentralized training department. Both sides of this debate offer justification for either model.

Currently, the training at PSE is de-centralized which allows for focus and refinement of specific training programs among the four groups. On the other hand, it places a challenging burden on the administrative side of the issue when considering tracking trainees, coordinating information, courses, logistics, etc. This creates a sense of

[6] Document Request 84
[7] Document Request 84
[8] Document Request 84

inconsistency across PSE with regards to training. "The four training groups at PSE analyze, design, develop, implement and evaluate their respective training programs. Tracking these separately has caused some confusion or consistency in the past."

5.2.4.1 Safety & Operations Training Department

- The Safety & Operations Training Department has both a vision and mission statement to support its safety programs (as noted in PSE Employee safety & Health Program – "The Yellow Book" 5th Edition).

  Vision Statement: Achieve a total safety culture.

  Mission Statement: Integrate safety into every aspect of our business to protect the employee, the company, and the community consistent with our core values[9].

- Both statements imply training to achieve a "total safety culture" but do not state training directly as a means to "integrate safety[10]."
- PSE's Safety & Operations Training Department delivers training in the following manner (as noted in PSE Employee Safety & Health Program – "The Yellow Book" 5th Edition) by:
  - Facilitating companywide safety, awareness, and consistency
  - Coordinating safety activities
  - Developing safety plans and procedures
  - Facilitating the exchange of safety and health information and training
  - Working with management, safety committees and employees to identify potential safety problems and solutions
  - Designing safety, health, and training programs to comply with federal, state, and local safety and health regulations
  - Ensuring the company accurately records accident information
  - Helping develop and present training programs to improve the safety and health of all employees
  - Maintaining employee interest and awareness in safety and health matters, and helping Management set a good example in safety practices
  - Ensuring that safety and health programs are kept current

[9] Document Request 23
[10] Document Request 23

- Ensuring that all employees have ample opportunity to become thoroughly familiar with the company's safety programs through continued training and communication
- Promoting safety and health-related matters
- Conducting compliance-assurance reviews to verify implementation
- Overseeing and administering all PSE safety and health programs
- Coordinating safety, health, and compliance efforts on issues as they overlap with standards, compliance, environmental services, risk and claims, security, and other departments as required[11]

- The analysis, design and development of safety training are completed internally by the four safety consultants and one industrial hygienist. These individuals implement and evaluate the safety training dealing with employee safety and related system safety. Several documents, interviews and observations support this statement. For example, the PSE Employee Safety & Health Program – "The Yellow Book" 5th Edition identifies various means by which safety training is to be designed and implemented. Additionally, it was observed first-hand on December 10, 2008, that the PSE field crews discussed various training issues related to worker and system safety. It was evident that this type of interactive discussion occurred on a regular basis. Also, several interviews with gas operations and training trust staff noted coordination with safety consultants on a frequent, regular basis on matters of worker safety, system safety and public safety[12].
- Safety and Operations Department safety meetings and training costs totaled $188,191 in 2005, $301,169 in 2006, $227,744 in 2007, and $229,781 in 2008. Safety training for Gas operations alone was $6,384 for 2004, $51,662 for 2005, $28,671 for 2006, $49,411 for 2007, and $ 51,439 in 2008[13].
- Safety training will most likely be enhanced as there was an increase in incident rates in 2008. The initial reason cited in the March 2, 2009 interview was "due to a lack of focus, there has been in the past a huge effort to be safe. That seemed to diminish and safety suffered. Actions are being discussed to correct this and bring the staff back to focusing on safety[14]."

11 Document Request 23
12 Document Request 23, 161
13 Document Request 67
14 Interview 71

5.2.4.2 Gas operations Training Department

- Gas Operations Training Department does not have a Vision/Mission Statement(s)[15].
- Gas Operations Training Department consists of staff of eleven (11) from both PSE and the PSE/UA Local 32 Training Trust. Together they provide training in four areas: Operator Qualifications (OQ), Gas Worker Program, Mobile Workforce, and Operator Training[16].
- In 2009, Gas Operations Department training costs are projected to be $476,850 and $855,716 for the PSE/UA Trust[17].
- Gas Operations Training Department supports Gas Operations Units including: Standards, Commodities, Energy Efficiency, Contractors and Service Providers, Customer Service and Access Centers; Emergency First Responder-type of training includes: review and development of standards, new tools and material evaluation or testing, products, special projects, "Gas 101" and Gas Storm training, Safety Days, and Emergency Responder Training[18].

5.2.4.3 Management and Employee Development

- Human Resources – does not have a Vision/Mission Statement[19].
- Management and Employee Development Training have a Senior Organizational Development Specialist and a Training Coordinator, and a shared Administrator. Additional trainer's positions have been identified in the 2008 budget. Also, there are several HR Business Partners who work with PSE executives to address staff development needs throughout the organization[20].
- Human Resources training costs in 2009 for Leadership and Management Development and Employee Development are projected to be $474,000 and $153,000, respectively[21].

[15] Document Request 124
[16] Document Request 84
[17] Document Request 125
[18] Document Request 23
[19] Document Request 124
[20] Document Request 84
[21] Document Request 125, Pending Document Request 163

5.2.4.4 Customer Care Service

- Customer Construction Service and Customer Service do not have a Vision/Mission Statement[22].
- Customer Field Service training costs are included with Gas Operations Training[23].

5.2.5 Manuals, Regulations, Standards, Policies and Procedures

- Various training documents and materials for workers are available to PSE staff in hard-copy, soft-copy and Web-based formats. The Gas Operations Training Department offers on-line training including: 55 PSE Specific courses, 8 PSE Specific in development, 5 generic utility courses, 18 OSHA and basic utility and 72 Midwest Energy Association (MEA) OQ courses[24].
- As standards, policies, and procedures are introduced, updated, or revised by PSE there appears to be an inconsistent means by which this information is disseminated, and more importantly, understood by the various units internal and external to PSE. Internally, PSE staff adequately coordinates this information; however, when the information gets disseminated to the service providers there is a level of uncertainty that the information was delivered and understood. However, the OQ-related information is better coordinated than the Non-OQ information[25].

5.2.6 Records Management

- The PSE records management records and tracks information on each of the four types of training. Information sharing of these records continues to be a challenge as the de-centralized structure often imposes boundaries in accessing the data. An example might be when the safety training group administers safety training to another division of PSE and the documentation may be tracked by both the safety group and the other division in a separate filing system. An electronic learning management system is currently being considered by PSE at

[22] Document Request 124
[23] Document Request 125
[24] Document Request 84, 162
[25] Document Request 7, 8

a company-wide level to alleviate overlap, inaccuracy and inconsistent informational facts[26].

- Four different training groups at PSE analyze, design, develop, implement, evaluate and track their respective training programs. Unless training files are physically reviewed and updated there is a possibility the information may or may not be an accurate account of an individual's training record. Managers are responsible for documenting training. Again and as noted earlier, "tracking these separately has caused some confusion or consistency in the past." Additionally, the General Physics Corporation, Inc. study in the fall of 2007 of PSE's company-wide training programs addresses the de-centralization approach and its shortcomings. The fact that a key recommendation to implement a learning management system is being strongly considered if not implemented in the near future by PSE supports the need for a more accurate reliable centralized records management system[27].
- PSE has recently contracted Browz, LLC to collect, verify, and maintain central records of contractors' compliance-related information such as safety history and programs, insurance, financial, business and contractor licensing, environmental policies and other business data required as part of the contractual process.
- The Safety & Operations Training Department is responsible for and manages the following records: Audit and Inspection, Incident Records, and Compliance Training Records. These records are retained for a certain period of time. Additionally, PSE retention program allows for review of records as requested by various governmental or regulatory agencies[28].
- PSE monitors the training programs and records of its service providers for Safety and Technical OQ and Non-OQ training to maintain safety and compliance[29].

[26] Interview 63 and 71
[27] Document Request 84, Interview 71
[28] Document Request 118, 25, 77,
[29] Document Request 8

5.2.7 Safety training

5.2.7.1 PSE Safety training

- Various types of safety training are available at PSE for the staff including: First Response duties, Forklift Operation, CPR, Motor Vehicle, Hazard Training, Environmental Training, First Aid/CPR Training, Competent Person, (OSHA) Training, and Flagger Training. Please refer to Figure 1 - PSE Safety Training[30].

Figure 1 - PSE Safety Training

Puget Sound Energy: Safety Training												
Subjects	Training Time	Textbook/ Booklet/ Manuals	Instructor Led Training (Class)	Information Exhange, Video Demo	Computer Based Training	Web Based Training	Simulation Session	Field Training	On-The-Job Training	Simulation/ Skills Testing	Field Evaluation	Written Exam
1st Aid / CPR Initial	16 hours	√	√			√						
1st Aid / CPR Refresher	8 hours		√									
Abnormal Operating Conditions						√						
Asbestos Awareness	4 hours	√	√									
BNSF, Safety/Security		√	√									
Characteristics and Hazards of Natural Gas						√						
Confined Space Entry		√	√			√						
Defensive Driving	2 days	√	√			√						
Hazard Communication	1 hour	√	√			√						√
Hazard Material Training						√						
Heat Related Illness		√	√			√						
New employee safety orientation training												
Prevention of Accidental Ignition						√						
Protection from Hazards						√						
Protection When Minimum Cover Not Met						√						
Respirator, Health and Fit Testing and Maintenance and Use	3 hours	√	√									
Safety Days - Driving safety, Fire Extinguisher, CO	80 hours	√	√									
Training is conducted through PSE and the PSE/UA Local 32 Training Trust.												

Legend: **X** = Not Available, <blank>= Data unavailable, √ = Available

[30] Document Request 118, 84

- All staff and supervisors attend the same basic safety training required in their business unit and all employees are trained to deal with specific situations unique to their department and job duties[31].
- All newly-hired employees or transferred employees:
  - Receive the Employee Safety Orientation Checklist (Form 3858) during the Human Resources Department's New Employee Orientation Jumpstart.
  - Work with their new supervisor to get the checklist completed, signed, and submitted to the Safety & Operations Training Department.
  - Making certain transferred PSE employees receive site-specific safety orientation given a new job classification.
  - Both new and transferred employees, receive safety training, beyond the basic orientation, before beginning certain job tasks, including a twenty minute safety video[32].

- PSE Safety & Operations Training Department is responsible for supporting all PSE business units and safety committees actively participating with the business units and safety committees in helping to identify and find solutions for operational safety training needs[33].
- Several overseeing bodies focused on safety issues are in place at PSE and regularly engage safety-related issues and decisions. They include: the Executive System Integrity Committee, the Safety Performance Committee, and multiple Safety Committees throughout the organization. These committees are comprised of key PSE executives, managers and staff. Safety Performance Committee meetings are held regularly where information is exchanged and decisions are made and implemented related to PSE safety. Committee members are limited to PSE staff only. Involvement by anyone external to the PSE organization is rare. The topics cover a range of information on worker safety, public safety and systems safety. PSE managers participate on these committees or the activities extending from a committee. Examples of activities extending from a committee include: Safety Day, and "Common Grounds[34]."

[31] Document Request 84
[32] Document Request 84
[33] Document Request 84
[34] Document Request 84

5.2.7.2 Pilchuck Safety Training

- Pilchuck considers safety to be an important and "Big Issue." PSE and Pilchuck safety managers continue to coordinate their safety programs in an attempt to improve and enhance their safety awareness and performance. After a gap in meetings held, regular Joint Manager's Safety Meetings have been re-established to improve the relationship regarding safety. Specific training provided by Pilchuck is contained in Figure 2 - Pilchuck Safety Training[35].
- Pilchuck Field Crew Safety Meetings are held regularly and involve managers and crew members who address safety issues. Typical safety meeting items include: review of safety reports covering vehicle accidents, injuries, near-misses, trench safety, confined space, competent person. There is some question as to how information from these meetings is communicated to other crew members[36].
- Pilchuck safety manuals are available and are coordinated with PSE safety manuals[37].

[35] Document Request 78, 79
[36] Document Request 65, 82
[37] Document Request 78

Figure 2 - Pilchuck Safety Training

Pilchuck: Safety Training												
Subjects	Training Time	Textbook/ Booklet/ Manuals	Instructor Led Training (Class)	Information Exhange, Video Demo	Computer Based Training	Web Based Training	Simulation Session	Field Training	On-The-Job Training	Simulation/ Skills Testing	Field Evaluation	Written Exam
Asbestos	16 Hours	√	√									
Bloodborne Pathogens		√	√									
BNSF, Safety/Security	2 hours	√	√									
Confined Space Entry		√	√									
CPR/First Aid Train the Trainer	2 days	√	√									
Electrical		√	√						√			
Environmental Safety Plan		√	√									
Fall Protection		√	√				√					√
Fire Prevention		√	√				√					
Ground Fault		√	√									
Hazard Assessment		√	√									
Hazard Communication		√	√									√
Hazwoper		√	√									√
Hearing Conservation		√	√									
Heat Related Illness		√	√									
Hydrogen Sulfide		√	√									
Lead Assessment		√	√						√			
Lifting Equipment, Forklifts, and Industrial Trucks		√	√			√	√			√		√
Lock Out / Tag Out		√	√									
Medical Services / First Aid		√	√									
PPE		√	√									√
PSE Gas and Electrical Hazard	2 hours	√	√									
Respiratory Protection		√	√				√					√
Safe Driving, Awareness and Techniques	1 hour	√	√									
Safety & Health Training Policy		√	√									√
Sand Blasting / Abrasive Blasting		√	√									
Scaffold Safety		√	√									
Traffic Control Plan		√	√									
Welding & Cutting Safety		√	√									√
Training is conducted through PSE and the PSE/UA Local 32 Training Trust.												

Legend: **X** = Not Available, <blank>= Data unavailable, √ = Available

5.2.7.3 Potelco Safety Training

- Safety training at Potelco occurs every month for two hours. There is safety orientation which covers basic safety issues including: the “Do’s and Don’ts”, any special material, vehicle and traffic safety, personal protective equipment, forms, and points of contact. The approach is train everyone on everything[38].
- The Potelco field crews approach safety with a positive attitude. If training is lacking the approach is to aid the individual and get them trained properly. Coaching and mentoring occur on a regular basis with regard to safety and procedures in the field[39].
- Potelco’s safety culture starts from the top and moves down through the staff and crews. Values focus on safety, quality and quantity. Training is a key component to safety and compliance[40].
- Potelco weekly safety and technical handouts are issued typically at “tail board/gate” meetings where information is delivered and crews sign-off on receiving the information. Specific training provided by Potelco is contained in Figure 3 - Potelco Safety Training[41].

[38] Document Request 79
[39] Document Request 79
[40] Document Request 79
[41] Document Request 78, 79

Figure 3 - Potelco Safety Training

Potelco: Safety Training												
Subjects	Training Time	Textbook/ Booklet/ Manuals	Instructor Led Training (Class)	Information Exhange, Video Demo	Computer Based Training	Web Based Training	Simulation Session	Field Training	On-The-Job Training	Simulation/ Skills Testing	Field Evaluation	Written Exam
Arc Flash Protection		√	√									
Bloodborne Pathogens		√	√									
Confined Spaces		√	√									
Driving Defensively		√	√									
Electrical Safety		√	√					√	√			
Electrical Safety - Substation		√	√					√	√			
Electrical Safety - Underground		√	√					√	√			
Electrical Switching and Tagging		√	√									
Fall Prevention		√	√						√			
First Aid - CPR		√	√									
H2S Poisoning Traing & Treatment		√	√									
Hand Protection		√	√									
Hazard Communication		√	√									
Hearing Conservation		√	√									
Heat Illness Training		√	√									
Heat Stress		√	√									
Ladders		√	√									
Lockout and Tagout		√	√									
Mercury Awareness		√	√									
MSHA		√	√									
Near Misses		√	√									
PPE		√	√									
Process Safety		√	√				√	√	√	√	√	√
Protecting your Knees		√	√									
Radiation Hazards		√	√					√	√			
Railroad Safety		√	√									
Respiratory Protection		√	√				√			√		
Scaffolds		√	√									
Storm Hazards		√	√									
Winter Driving		√	√									
Training is conducted through PSE and the PSE/UA Local 32 Training Trust. "Bloodborne Pathogens" is conducted through ARC.												

Legend: **X** = Not Available, <blank>= Data unavailable, √ = Available

5.2.7.4 Central Locating Services Safety Training

- Safety training at Central Locating Services **(**CLS) is completed by the staff covering a multitude of issues from personal and public safety, procedural safety and system safety. The CLS Safety Director uses the phrase "It can happen to you…." to establish a sense of personal need to be safe. Additionally, statistics are published that identify the peak times when safety incidents occur. This is used to enhance the awareness of being safe during these times. Please refer to Figure 4 - CLS Safety Training[42]**.**
- CLS feels that their approach parallels PSEs with regards to safety as the gas or electric industry as a whole demands constant and continuous measures in safety. In other words, safety is critically important in the utility industry and proper training plays a key role[43].

Figure 4 - CLS Safety Training

Central Locating Services: Safety Training												
Subjects	Training Time	Textbook/ Booklet/ Manuals	Instructor Led Training (Class)	Information Exhange, Video Demo	Computer Based Training	Web Based Training	Simulation Session	Field Training	On-The-Job Training	Simulation/ Skills Testing	Field Evaluation	Written Exam
10 Deadly Sins / Life Saving Rules				√								
5 Steps of Decision Driving				√								
7 Intersection Rules				√								
ESSPT of Decision Driving				√								
Safety Vision, Policy, and Principle Card				√								
Training is conducted through internal training.												

Legend: **X** = Not Available, <blank>= Data unavailable, √ = Available

5.2.7.5 Locator Inc. Safety Training

- Locator Inc. (LI) monitors safety on a daily basis and their safety structure was developed applying their own safety training program. LI believes it meets or exceeds PSE standards[44]**.**
- LI takes safety and training very seriously as the accuracy of locating utilities is extremely important. Various programs have been implemented that keep the staff informed and aware of the current standards, handling of equipment and

[42] Pending Document Request 166, Data for Figure 4, CLS Safety training came from Document Request #78 & 85.
[43] Document Request 78, 85
[44] Pending Document Request 166

safety procedures. Specific training provided by LI is contained in Figure 5 - Locating Inc. Safety Training[45].

Figure 5 - Locating Inc. Safety Training

Locating Inc.: Safety Training												
Subjects	Training Time	Textbook/ Booklet/ Manuals	Instructor Led Training (Class)	Information Exhange, Video Demo	Computer Based Training	Web Based Training	Simulation Session	Field Training	On-The-Job Training	Simulation/ Skills Testing	Field Evaluation	Written Exam
Confine Space Telephone Manhole	20min		√			√		√			√	√
DriveCam Orientation	15 min	√	√			√						
Electrical Procedures	20min		√			√						√
Electrical Protective Equipment Program			√									
Fire Emergencies		√	√									
Flagger Instruction	20min		√			√						√
General Gas Safety	20min		√			√						√
General Information	20min	√	√			√						√
General Vehicle	20min		√			√						√
Hazard Communication	20min		√			√						√
Locating Electrical Power		√	√					√				
Locating Gas Lines		√	√					√			√	
Manhole Safe Lifting Procedures	20min		√			√						√
Personal Safety on the Job	20min		√			√						√
PPE	20min		√			√						√
Slips, Trips, and Falls	20min		√			√						√
SMITH Defensive Driving	4 hours	√	√			√		√			√	
Trenching & Excavating	20min		√			√						√
Work zone	20min		√			√						√
Training is conducted through internal training.												

Legend: **X** = Not Available, <blank>= Data unavailable, √ = Available

- LI employees have access to safety standards and training materials via their assigned laptop; the Website and physical documents[46].
- LI's Safety Guide is developed by their Safety Department and includes procedures from National Utility Locating Contractors Association (NULCA) and the specific guidelines from each utility LI serves[47].

[45] Data for Figure 5, Locating Inc. Safety training came from Document Request #78
[46] Document Request 78, 79
[47] Document Request 78, Document Request 79

- At LI the Safety Department is comprised of members based at LI local office, but report to the corporate headquarters and not to the local LI management. This is intended to maintain neutrality and consistency of processess[48].
- LI Safety focuses on: Vehicle – utilize Smith Document Requestiving School – annually; Jobsite Safety; and Individual Utility Safety[49].
- LI "Safety Realm" – involves specific training situations that could occasionally be encountered but not with great amount of regularity or frequency. For example, training on what to do when entering open trenches to fulfill their job requirements is covered. More common safety training includes: slips and falls, Personal Protective Equipment[50].
- LI Reporting of Incidents and Reaction - Vehicle Accident – use combination of electronic recording devices (e.g., Drivecams), self-investigation and incident reports to evaluate situation. All employees are trained in safety procedure to call for assistance if able, check the other party, and gather information. Nearest supervisor/manager responds to site and performs self investigation; each vehicle is equipped with Drivecam, a recording triggered by spike in motion back-and-forth or up-and-down, to record actions of the driver 15 seconds prior to, during and up to 15 seconds after. Training and other actions are determined based on the findings[51].
- LI Near-Miss and Root Cause - Respond by performing jobsite observations – "Meet-up" which is described as a spontaneous visit to the site while employee is working; since teams are very mobile the supervisor may have to ask where they will be in the next few visits and then shows up. Observation will include: Personal Protective Equipment, Cones, and Parking Safety[52].

[48] Document Request 78, 79
[49] Document Request 78, 79
[50] Document Request 78, 79
[51] Document Request 78, 79
[52] Document Request 78, 79

5.2.7.6 Heath Safety Training

- Training is very important at Heath and is available to all[53].
- At Heath, safety begins at New Employee's Orientation where information on safety is presented to the employee along with the technical aspects of the job. Staff members are instructed to always be safe and when a situation appears unsafe take the appropriate safest course of action then contact their supervisor accordingly. Weekly documented safety meetings are mandatory. Specific training provided by Heath is contained in Figure 6 - Heath Safety Training[54].

[53] Document Request 78, Pending Document Request 166
[54] Data for figure 6, Heath Safety training came from Document Request 78.

Figure 6 - Heath Safety Training

Heath Consultants: Safety Training												
Subjects	Training Time	Textbook/ Booklet/ Manuals	Instructor Led Training (Class)	Information Exhange, Video Demo	Computer Based Training	Web Based Training	Simulation Session	Field Training	On-The-Job Training	Simulation/ Skills Testing	Field Evaluation	Written Exam
"Share the road" WA state bicyclist/motorist rule		√		√								
Aggressive Drivers		√		√								
Auto Accidents and Procedures		√		√								
Backing Safety - Smith System		√		√								
Bug bites - prevention & treatment		√		√								
Company vehicle use - release Agreement		√		√								
Confined Space		√	√	√								
Distracted driving & cell phones		√		√								
Dog Bite Prevention		√		√								
Driving in rain & snow		√		√								
Driving Vehicles		√	√	√								
Emergency Action on the Job		√		√								
HAZCOM Training		√	√	√								
Hot tips for outdoor workers- hot and cold weather		√		√								
Insects, walking on rocky Landscape		√		√								
Observing eye level objects during survey		√	√									
Plunger Bar Safety		√		√								
Poison Plants		√		√								
Power lines/utilities awareness		√		√								
Safety & Quality Enforcement		√		√								
Short Duration Work Zone Safety		√	√									
SMITH Defensive Driving	8 hours	√	√			√		√				
SMITH Driving - 5 keys to safety		√	√									
Stolen Gas & other AOC's		√	√									
Traffic Safety for Pedestrian Workers		√	√									
Trees and power lines		√		√								
Use of eye protection - sunglasses		√		√								
Walking on slippery surface, use proper footware		√		√								
Training is conducted through internal training.												

Legend: **X** = Not Available, <blank>= Data unavailable, √ = Available

- Heath's Director of Safety is based in Houston, Texas and oversees the elements of safety for the company. Tracking of safety training and metrics goes through the Tucson, Arizona office then to Houston for filing in corporate records[55].
- Documented mandatory safety meetings are conducted once a week by crew leaders. It is at these meetings where safety information is relayed to crew members[56].

5.2.8 OQ Technical Training

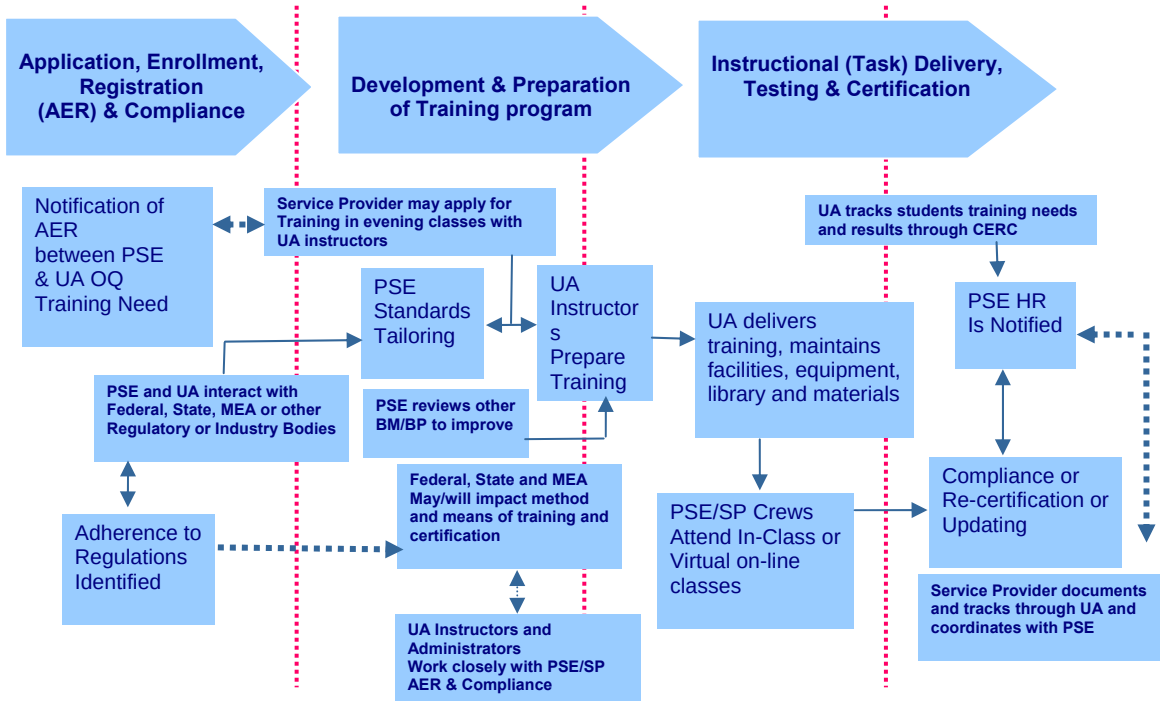
The OQ training program was assessed in the Safety Audit Section with portions repeated here.

5.2.8.1 PSE OQ Technical Training

- The OQ training has a direct bearing on the safety culture of PSE. Through the review and observation of the administrative, classroom and functional aspects of the OQ training program an assessment was completed. A flow of the OQ training process was identified along with supporting findings. Refer to 7 – The OQ Training Flow Diagram. A very good OQ training program exists and appears to be quite effective in training field crews at PSE. The OQ Training Flow Diagram below depicts the basic process for OQ training. It appears that training is effective given the low error rate seen in the Field Observation data collected by the observations team[57].

[55] Document Request 78
[56] Document Request 79
[57] Document Request 16

Figure 7 - The OQ training Flow Diagram



- There are three main categories: Application, Enrollment, Registration; Development & Preparation of Training program, and Instructional (Task) Delivery, Testing & Certification. Within each of these categories flow the process steps. Fundamentally, students are enrolled for training (or certification) while operational standards are developed and interfaced. Preparation of certain training-approach methods and their best mode for delivery follows.
- OQ training is conducted through the UA Plumbers and Pipe Fitters Local 32 (UA) in collaboration with PSE Gas Operations Training or PSE/UA Training Trust. The training program is well organized and very effective in preparing crews for completing work on the system in a safe quality-oriented manner[58].
- There are four Gas Operations Training Consultants, one Administrative Assistant plus one Gas Operations Supervisor from PSE and three Trainers, one Weld Instructor and one Development and Support Specialist from the PSE/UA Training Trust. Subject matter experts (SMEs) are brought in from various parts of the PSE organization as necessary. Gas Operations Training Department also provides support to the PSE Standards Department when requested[59].

[58] Document Request 84
[59] Document Request 1, 84

- Instructors are experienced and dedicated in delivering various types of OQ training information including: technical, quality-oriented, and safety-oriented[60].
- OQ training is based on Midwest Energy Association (MEA) training program and is tailored to PSE operational standards. Please refer to Figure 8 - Gas Operations Required Training[61].
- Administratively, the training records are current and accurate with a library of training manuals readily available, properly coordinated and kept up-to-date. Instructors are not only certified and aligned by task but knowledgeable and positively motivated to instruct others with interest and dedication. PSE and the UA are very collaborative and function together in a positive, constructive manner in preparing and delivering training to PSE and service provider crews[62].
- Administrative records of crew certifications, courses completed, refresher or enhancement training are tracked and maintained in a database OQ+ and CercPlus designed for the utility industry. The library, while physically small, has the necessary manuals and related documents readily accessible to all seeking need to reference them. The various manuals and related training tasks are based on industry gas operation standards and tailored to PSE standards. The task sections are coordinated and current[63].
- The approach toward training is straight-forward and effective. It starts with traditional "Classroom Learning" involving lectures on particular practices or procedures using test books, manuals, materials, tools, or equipment to explain and discuss the details of various technical topics. Instructors review the task standard being discussed, and identify key elements and areas of the tasks requiring special attention. The instructor then links theory to practice often injecting an explanation about the field conditions or what to expect and how to approach the final test[64].
- "Observation and Practice" involves seeing the actual procedure applied. Enabling the students to receive a practical first-hand view of the procedure forges a lasting image and links the words to an action. Two instructors participate in this aspect of the training. One instructor reviews the task standard from a book or manual while a second instructor demonstrates the actual task. Students observe the task standard being completed while relating to the written and oral explanation at the same time[65].

[60] Document Request 84
[61] Document Request 84
[62] Document Request 84
[63] Document Request 84
[64] Document Request 84
[65] Document Request 84

- From this point, hands-on “Apply and Test” is completed allowing the trainee to perform the task and use their newly acquired skills. Measures of the student’s level of proficiency are realized[66].
- Gas Operations Department completed over 15,000 student hours of training, 300 class days training to 140 Access Center staff, 4 technical and 6 gas worker phase training sessions in 2008. These figures are anticipated to increase in the future as more on-line courses and OQ classes are added[67].

66 Document Request 84
67 Document Request 84

Figure 8 - PSE Gas Operations Required Training

Gas Operations Required Training

Gas Worker - Basic Phase	Gas Worker - Basic Phase	Gas Worker - Intermediate Phase	Gas Worker - Advance Phase	Gas Worker	Journey Level
6 months	(Continue)	6 months	6 months	24 months	
AOQ	Securing welding cylinders	702a - Checking regulator pressure 2# set (KNT only)	802 - Protection during	Active in local S&H committee	501 - CP System maintenance
CNG - Gas Emergencies	CAD welding		disturbance of segment support		505 - CP System Training
401 - Corrosion Monitoring	CAD welding	702c - Checking regulator pressure	804 - Damage prevention during		512a - CP PSP Instant-off Criteria
402 - Coating Maintenance	Splicing wire	1411 - Inspection	excavating activities		702b - pressure regulator / sidewalk vault
503 - CP Electrical Connections	PSP reads	1427 - Valve maintenance	1413 - Line Markers		
512 - PSP Testing	Squeeze plastic pipe	Plidco	1414 - Pipeline shutdown		1201 - Leak investigation inside
701 - Locating, Installing,	Flagging	Changing the meters	1415 - Protection from Hazards		1202 - Leak investigation outside
protecting customer meters and	Mapping	Locating and operating valves	1417 - Protection when minimum cover not met		1401 - Abandonment / Inactivation
regulators	Intro to customer relations-mod. Phone pro	Lubricating Valves	1418 - Purging		1431 - Segment Removal
801 - Locating pipelines	Meter reads	Meter mix-ups	1424 - Support / Anchor Maintenance		2010 - Service Line / segment
803 - Inspection for damage	Overview of regulators, meters and meter reading	Inside meter set surveys	Annual Safety Committee Training		replacement
1005 - Mechanical Joints (No lycofit)		Chart Changing (see Wallace)	Odor investigations (outside)		Fitter
	Gas Emergencies	Underground shorts - 1/2hr	Leak Investigation (outside)		901 - System Patrolling
1005a - lycofit	Intro to basic electricity	Meter shorts	Heath Leak surveys		1002 - Electrofusion
1301a - Leak and strength testing	Materials Mngmt Training - Obataining Material - 1hr	Basic Electricity / wire boards	Inside meter set surveys		1003 - Butt fusion
1402 - Backfilling		Cust. Relations & communications	Bridge Surveys (Not slides)		1004 - Sidewall fusion
1405 - Underground clearances	Equipment tool maintenance (add CP Tools)	Meter Reading and evaluation	Trailer Park Surveys		1401 - Abandonment / Inactivation
1408 - Installation of PE pipe		Limited light ups - 2 days	Underground shorts		1404 - Casing vent & sleeve
1410 - Cover services and mains	Phone & radio use - 1hr	Incident command - 1hr	Meter shorts		1409 - Installation of steel pipe
1432 - Leak clamps and sleeves	Atmospheric Corrosion Survey	Incident Response Mgmt (Jim to	Incident Command - 8hr		1426 - Tapping steel and PE pipe
2011 - Prevention of accidental ignition	CP Terminology	define) - 1hr	Incident Response Mgmt - 4hrs		CFS Techinical Training
2014 - Service line not in use/discontinuance	CP Instruments	Code awareness (lease svcs &	Dispatch training - 2hrs		GFR Fitter Training
20 item pre-drive	Underground Locating	piping) This will need to be developed.	Pressure Control - 1hr		CP Technical Training
Cutting / reaming pipe	Lycofit - 1 hr	Meter mix-ups	Instrumentation - 1hr		Dispatch Technical Training
Threading pipe	Install vent for relief	Stroke & lockup - 2 hrs	Industrial Meters - 1hr		Industrial Meters School
Wrapping pipe		Odor Investigations (inside)	Gas Measurement		
(Continue Next Column)		Leak Investigation (inside)	Pipeline Markers		

- As for technical courses and procedures, there is a certain coordinated effort on the part of the instructor and the trainee as to the engineering of a procedure and the safety related to the worker and to that part of the system being worked. Observed classroom instruction explained the procedure and the impact to the worker and to the system in completing the task correctly or incorrectly. For a list of courses see Figure 9. PSE OQ and Non-OQ Training[68].
- There were some differences in terminology and content descriptions with the courses between PSE and its service providers. In some instances, the same wording was used and at other times it was different[69].

68 Document Request 79, 84, 90
69 Document Request 78, 79, 84

Figure 9 – PSE OQ and Non-OQ Training

Company Name	Courses	Non OQ	OQ	Total # of Students	Total Class Hours
Puget Sound Energy	AED	√	X	0	0
	Electric Operations Training - Distribution System Operations	X	√	0	0
	Electric Operations Training - Electric First Response	X	√	0	0
	Electric Operations Training - Load Office (Transmission & Generation)	X	√	0	0
	Electric Operations Training - Meter/Relay Technician	X	√	0	0
	Electric Operations Training - Substations (wiremen)	X	√	0	0
	Energy Resource Training - Combustion Turbine Specialist	X	√	0	0
	Energy Resource Training - Hydro Electrician	X	√	0	0
	Energy Resource Training - hydro Mechanic	X	√	0	0
	Ergonomics	√	X	0	0
	Forklift	√	X	0	0
	Gas Worker Group 1 - Advanced	X	√	13	120
	Gas Worker Group 1 - Basic	X	√	15	160
	Gas Worker Group 1 - Intermediated	X	√	15	152
	Gas Worker Group 2 - Advanced	X	√	0	0
	Gas Worker Group 2 - Basic	X	√	12	160
	Gas Worker Group 2 - Intermediated	X	√	12	152
	Journey Level Techinical School - CFS	X	√	13	120
	Journey Level Techinical School - Fitter	X	√	9	144
	Journey Level Techinical School - Pressure Control	X	√	0	0
	Journey School - CP Technical Training	X	√	0	0
	Journey School - Dispatch Technical Training	X	√	0	0
	Journey School - Industrial Meter Schools	X	√	0	0
	Mobile Initial	√	X	364	824
	Mobile Refresher	√	X	144	60
	Operations - ACIF	√	X	27	64
	Operations - Atmospheric Corrosion Update	√	X	198	69
	Operations - Boom Truck	√	X	38	12
	Operations - CP Refresher	√	X	19	32
	Operations - Duty Supervisor	√	X	22	16
	Operations - Flagger Initial Certification	√	X	33	32
	Operations - Flagger Re-Certification	√	X	72	20
	Operations - Incident Command	√	X	229	88
	Operations - Isolated Facilities	√	X	30	8
	Operations - Low Voltage	√	X		0
	Operations - Meth Lab	√	X	198	46
	Operations - PLIDCO Practical	√	X	32	32
	Operations - PLIDCO Training	√	X	32	32
	Operations - Relief Vent / PVC	√	X	45	6
	Operations - Stroke and Lock	√	X	36	16
	Operations - Supervisor Light-up training	√	X	36	32
	Operations - Supervisor OQ	√	X	62	32
	Operator and Qualification - Weld and Fusion	X	√	116	384
	Operator Qualification - OQ	X	√	685	616
		PSE Total:		**2507**	**3429**

Legend: **X** = Not Available, <blank>= Data unavailable, √ = Available

- PSE standards for OQ training and certification comply with the various Federal, State and industry requirements.
- The service provider OQ crew training is conducted through PSE/UA Training Trust. Training of SP crews is conducted at various times but mostly during the evening, and on weekends. Most training is not necessarily scheduled at the same time with PSE crews and is conducted at separate times. This is not a deficiency in training or a scheduling issue. It may be due to availability of resources as reflected in budget or available time of trainee[70].
- SP OQ crew training and certification is recorded and tracked by PSE and UA. SP crew members for the most part comply with and meet these certification standards[71].

5.2.8.2 Pilchuck OQ Technical Training

- Pilchuck OQ crew training and certification is coordinated with PSE/UA Training Trust. Training of Pilchuck operators and labors is through another union, Local 302. Training of crews is conducted at various times but mostly during the evening, on weekends and occasionally during the day. Most training is not necessarily with PSE crews and is usually separate. Again, this is not a deficiency in training or a scheduling issue. It may be due to availability of resources as reflected in budget or available time of trainee. For a list of courses see Figure 10. Pilchuck OQ and Non-OQ Training and Figure 11 - Pilchuck OQ Technical Training Delivery[72].

70 Document Request 84
71 Document Request 84
72 Document Request 78, 79, 84, Pending Document Request 168

Figure 10 - Pilchuck OQ and Non-OQ Training

Company Name	Courses	Non OQ	OQ
Pilchuck	40 Hr Haz Mat Refresher	√	X
	Anode Installation	X	√
	Anode Requirements	X	√
	Audiometric Testing and Hearing Protection	√	X
	Construction Liability	√	X
	Corporate Emergency Response Plan	√	X
	Equal Employment Opportunity and Harrassment	√	X
	Excess Flow Valves	X	√
	Final backfill for pipelines	X	√
	Flagging	√	X
	Gas Scope accuracy checks	X	√
	Good Heart Health	√	X
	How to read a leak ticket	X	√
	Inspecting Valves	X	√
	Interpretation of Requirements of Pilchucks' Leak Procedure	X	√
	Meter valve realignment best practice	X	√
	Performing bar test	X	√
	Proper Painting of MSA's	√	X
	Proper process of completing the site audit forms	X	√
	Repairing Leaking bolts-on tees	X	√
	Storm Water BMP	√	X
	Take pipe to soil potential reads	X	√
	Taking gas reads using the mas 60 scope	X	√
	Tighten & orient the MSA valve to provide immediate access to & for the operation of the grease fitting.	X	√
	To conduct leak audits by verifying gas reads and how to read a leak report.	X	√
	To improve our recording of zero perimeter reads at the "leak cloud"	X	√
	Trenching & Excavating	√	X

Legend: **X** = Not Available, <blank>= Data unavailable, √ = Available

- Pilchuck crew members do comply with and meet certification standards, as prescribed by Federal, State and industry requirements.
- Pilchuck has a quality control process with PSE to issue and coordinate standards and procedures training of field crews through meetings, training sessions or simple tailgate meetings. Please refer to Figure-10 Pilchuck OQ and Non-OQ Training and Figure-11 Pilchuck OQ Technical Training Delivery noting the types of courses and the method of delivery for various subject matters.
- Assurance that the information is delivered, documented and understood is at times uncertain and inconsistent however.

Figure 11 - Pilchuck OQ Technical Training Delivery

Pilchuck: Technical - OQ Training												
Subjects	Training Time	Textbook/Booklet/ Manuals	Instructor Led Training (Class)	Information Exhange, Video Demo	Computer Based Training	Web Based Training	Simulation Session	Field Training	On-The-Job Training	Simulation/ Skills Testing	Field Evaluation	Written Exam
Anode Installation			√									
Anode Requirements			√									
Excess Flow Valves			√									
Final backfill for pipelines			√									
Gas Scope accuracy checks			√									
How to read a leak ticket			√									
Inspecting Valves			√									
Interpretation of Requirements of Pilchucks' Leak Procedure			√									
Meter valve realignment best practice			√									
Performing bar test			√									
Proper process of completing the site audit forms			√									
Repairing Leaking bolts-on tees			√									
Take pipe to soil potential reads			√									
Taking gas reads using the mas 60 scope			√									
Tighten & orient the MSA valve to provide immediate access to & for the operation of the grease fitting.			√									
To conduct leak audits by verifying gas reads and how to read a leak report.			√									
To improve our recording of zero perimeter reads at the "leak cloud"			√									
Training is conducted through PSE and the PSE/UA Local 32 Training Trust.												

Legend: **X** = Not Available, <blank>= Data unavailable, √ = Available

5.2.8.3 Potelco OQ Technical Training

- Training is very much part of Potelco. Various safety, technical OQ and Non-OQ, employee development and customer care service training are available to the staff. A great amount of time, resources and energy go into training the Potelco staff. Referred to Figure 12 - Potelco OQ Technical Training Delivery and Figure 13 - Potelco OQ and Non-OQ Technical Training. To repeat, as for technical courses and procedures, there is a coordinated effort on the part of the instructor and the trainee as to the correct way of performing the engineering of a procedure and the safety related to the worker to the part of the system being worked. Observed classroom instruction explained the procedure and the impact to the worker and to the system in completing the task correctly or incorrectly. This same approach to link safety and regulatory compliance to the procedure is delivered in the SP course[73].
- At Potelco, every March there is a three-hour review of the latest edition of *PSE's Field Procedures Manual*. Technical information is covered within a classroom having 15-20 crew members, or having 10-15 field engineering crew members. Two instructors present the material[74].

73 Document Request 79, 119
74 Document Request 79, 119

Figure 12 - Potelco OQ Technical Training Delivery

Potelco: Technical - OQ Training												
Subjects	Training Time	Textbook/Booklet/ Manuals	Instructor Led Training (Class)	Information Exhange, Video Demo	Computer Based Training	Web Based Training	Simulation Session	Field Training	On-The-Job Training	Simulation/ Skills Testing	Field Evaluation	Written Exam
2-Outlet - Meter Manifold		√	√									
Anode Installation		√	√									
Applying Cold-Applied Mastic		√	√									
Backfill for Pipelines		√	√									
Cathodic Protection Requirements		√	√									
Collecting Failed Pipeline Specimens		√	√			√						
Construction Runoff Control Procedure		√	√									
Customer Trench and Backfill		√	√									
D-4 Cards		√	√									
Excavation, Underground Clearance, Cover, and Restoration		√	√									
Flange Tee Usage		√	√									
Installing Cathodic Protection Test Stations		√	√									
Installing Meter valves		√	√									
Installing Residential and Commercial / Industrial Service and Meter Set Assembly		√	√									
Installing Service Risers for PE Pipe		√	√									
Investigating Failures of Pipeline Facilities		√	√									
Meter valve realignment best practice		√	√									
Protecting Aboveground Facilities		√	√									
Purging		√	√									
Scope		√	√									
Selecting the Service route and Sizing the Service		√	√									
Service Components		√	√									
Training is conducted through PSE and the PSE/UA Local 32 Training Trust.												

Legend: **X** = Not Available, <blank>= Data unavailable, √ = Available

Figure 13 - Potelco OQ and Non-OQ Training

Company Name	Courses	Non OQ	OQ
Potelco	2-Outlet A250/275 Meter Manifold	X	√
	Anode Installation	X	√
	Applying Cold-Applied Mastic	X	√
	Backfill for Pipelines	X	√
	Cathodic Protection Requirements	X	√
	Collecting Failed Pipeline Specimens	X	√
	Construction Runoff Control Procedure	X	√
	Contract Crew Coordinator	√	X
	Crane Operation	√	X
	Crew Coordinator	√	X
	Customer Trench and Backfill	X	√
	D-4 Cards	X	√
	Damage Assessor (Train the Trainer)	√	X
	Engineering	√	X
	Excavation Shoring	√	X
	Excavation, Underground Clearance, Cover, and Restoration	X	√
	Field Telecom	√	X
	Flange Tee Usage	X	√
	Forklift	√	X
	GOS Review	√	X
	Helicopter Training & retraining	√	X
	Installing Cathodic Protection Test Stations	X	√
	Installing Meter valves	X	√
	Installing Residential and Commercial / Industrial Service and Meter Set Assembly	X	√
	Installing Service Risers for PE Pipe	X	√
	Investigating Failures of Pipeline Facilities	X	√
	Major Account	√	X
	Meter valve realignment best practice	X	√
	NESC Joint Use	√	X
	Primary Cable Thumper	√	X
	Process & Function of the MLM & MCP Groups	√	X
	Protecting Aboveground Facilities	X	√
	Purging	X	√
	Safety Leadership	√	X
	Scope	X	√
	Selecting the Service route and Sizing the Service	X	√
	Service Components	X	√
	Traffic Zones Flagging	√	X
	Truck Inspections CDL's	√	X
	WBS	√	X

Legend: **X** = Not Available, <blank>= Data unavailable, √ = Available

5.2.8.4 Central Locating Services OQ Technical Training

- CLS is responsible for field location and marking of utilities. CLS provides a limited amount of OQ training but mostly emphasizes locator training. CLS coordinates their training programs with PSE. Training records are tracked by CLS and there is a link between safety and compliance of the procedures being implemented[75].
- Although requested, we were unable to obtain additional information regarding CLS training program.

5.2.8.5 Locating Inc. OQ Technical Training

- LI is responsible for field location and marking of utilities. The training encompasses the standard OQ requirements for utility locates; they customized training to address PSE documentation requirements. This covers all the steps in the process from the starting point when the ticket is submitted by a contractor through to the actual location of the utilities. The work performed by a locating company is critical to the safety of the people and system involved. Therefore complete and proper training in all aspects of the work is essential. Industry standards reference and are in accordance with National Utility Locating Contractors Association (NULCA)[76].
- LI training is comprised of both classroom lectures and field experience. Approximately 50% of the time is spent in each training environment over a 3 – 4 week period. At the end of this initial training a new hire is required to achieve a 100% passing grade to graduate. Final examinations are conducted in the field; candidates must complete 6 – 8 live locator requests – from retrieving request ticket, performing required tasks, and a closing ticket. Trainer reviews on-site after each locate is finished to determine the quality and completeness – must receive 100% rating on all locates to pass. Please refer to Figure 14 - Locating Inc. OQ Technical Training Delivery and Figure 15 - Locating Inc. OQ and Non-OQ Technical Training[77].

75 Document Request 122
76 Document Request 79
77 Document Request 78, 79

Figure 14 - Locating Inc. OQ Technical Training Delivery

Locating Inc.: Technical - OQ Training												
Subjects	Training Time	Textbook/Booklet/ Manuals	Instructor Led Training (Class)	Information Exhange, Video Demo	Computer Based Training	Web Based Training	Simulation Session	Field Training	On-The-Job Training	Simulation/ Skills Testing	Field Evaluation	Written Exam
Day 1 - Live Locate Requests	1 day		√			√		√				
Day 2 - Live Locate Requests	1 day		√			√		√				
Day 3 - Live Locate Requests	1 day		√			√		√				
Day 4 - Live Locate Requests	1 day		√			√		√				
Day 5 - Live Locate Requests	1 day		√			√		√				
Field Training - Footage Mark Out Located	4 hours		√			√		√				
Field Training - Multi Family Residence Locate	4 hours		√			√		√				
Field Training - Single Family Residence Locate	4 hours		√			√		√				
Field Training Project Job Locate	4 hours		√			√		√				
Global Gas OQ			√			√				√		√
Natural Gas Operator Qualification			√			√						√
Training is conducted through internal training.												

Legend: **X** = Not Available, <blank>= Data unavailable, √ = Available

Figure 15 - Locating Inc. OQ and Non-OQ Training

Company Name	Courses	Non OQ	OQ
Locating Inc	Accessing and working on Private Properties	√	X
	Cable TV Plant	√	X
	Computer Basics, Laptop Care, and Acceptible Use	√	X
	Day 1 - Live Locate Requests	X	√
	Day 2 - Live Locate Requests	X	√
	Day 3 - Live Locate Requests	X	√
	Day 4 - Live Locate Requests	X	√
	Day 5 - Live Locate Requests	X	√
	Documentation Photo/Video	√	X
	Documentation Sketch	√	X
	Electric Plant	√	X
	Electromagnetic Theory	√	X
	Excavation Equipment and Practices	√	X
	Field Training - Footage Mark Out Located	X	√
	Field Training - Multi Family Residence Locate	X	√
	Field Training - Single Family Residence Locate	X	√
	Field Training Project Job Locate	X	√
	Gas Plant	√	X
	Global Gas OQ	X	√
	Marking Standards	√	X
	Natural Gas Operator Qualification	X	√
	Pro 10 Steps to a Proper Locate	√	X
	Telephone Plant	√	X
	Understanding One Call Systems	√	X
	Water/Sewer Plant	√	X

Legend: **X** = Not Available, <blank>= Data unavailable, √ = Available

- Certification - OQ certified training is required to work on gas distribution systems. LI maintains a list of all personnel and their training. All personnel carry a picture ID certifying them as 'Locate Corporate Damage Prevention Specialist." Personnel that have been certified to work on gas utility systems obtain a specific additional certification as "only officially operator qualified for gas." These personnel carry a separate picture ID gas certified and this certification is renewed every 12 – 18 months[78].
- Recordkeeping - Test.com is the Website created by LI to centralize their "specific training records" and testing materials and library of standards. They utilize the internet Website to upload tests, individuals complete the testing on-line and their scores and completions are automatically tracked. Safety training of the worker and compliance to meet standards within the system is carefully tracked and are available for review.

5.2.8.6 Heath OQ Technical Training

- Heath has developed its own OQ certification program which was reviewed and approved by PSE. Testing is administered and scored by Heath. The results are delivered to PSE. Please refer to Figure 16 - Heath OQ and Non-OQ Training and Figure 17 - Heath OQ Technical Training Delivery[79].
- Safety training of the worker and compliance to meet standards within the system is tracked but not necessarily readily available for review.

Figure 16 - Heath OQ and Non-OQ Training

Company Name	Courses	Non OQ	OQ
Heath	Compressed Gas Cylinders	X	√
	Leak Survey (Gas)	X	√
	Leak Survey (Water)	X	√
	Workers Comp Card	√	X

Legend: **X** = Not Available, <blank>= Data unavailable, √ = Available

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Figure 17 - Heath OQ Technical Training Delivery

Heath Consultants: Technical - OQ Training												
Subjects	Training Time	Textbook/Booklet/ Manuals	Instructor Led Training (Class)	Information Exhange, Video Demo	Computer Based Training	Web Based Training	Simulation Session	Field Training	On-The-Job Training	Simulation/ Skills Testing	Field Evaluation	Written Exam
Abnormal Operating Conditions	15 days			√					√		√	√
Atmospheric Corrosion, external	15 days			√					√		√	√
Compressed Gas Cylinders		√		√					√			
Leak Survey (Water)		√		√					√			
Leakage Survey: Distribution and Transmission	15 days	√		√					√		√	√
Leakage Survey: Propane (Developed for Heath Consultants)	15 days			√					√		√	√
Line Markers	15 days			√					√		√	√
Locating Pipelines	15 days			√					√		√	√
System Patrolling	15 days			√					√		√	√
Training is conducted through internal training.												

Legend: **X** = Not Available, <blank>= Data unavailable, √ = Available

- Field Crews are issued the *Heath Field Manual* and *PSE Field Procedures Manual* and all information is available on the company's Website. Meetings occur every morning where new information is shared on standards, procedures, safety, etc.[80]

5.2.9 Non-OQ Technical Training

5.2.9.1 Pilchuck Non-OQ Technical Training

- Pilchuck views training to be very important from a safety, technical and employee development perspective. Safety and technical training are critical to the people and the system. Expectations are very high in being safe and well-trained (certified) in technical matters. Culturally, Pilchuck appears to sense that the relationship between itself and PSE is transparent – "working together." Figure 18 - Pilchuck Non-OQ Technical Training Delivery highlights the difference in the delivery of courses[81].

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Figure 18 - Pilchuck Non-OQ Technical Training Delivery

Pilchuck: Technical - Non OQ Training												
Subjects	Training Time	Textbook/ Booklet/ Manuals	Instructor Led Training (Class)	Information Exhange, Video Demo	Computer Based Training	Web Based Training	Simulation Session	Field Training	On-The-Job Training	Simulation/ Skills Testing	Field Evaluation	Written Exam
Audiometric Testing and Hearing Protection	30-40 minutes		√									
Construction Liability	45 minutes		√									
Corporate Emergency Response Plan	1 hour in each base	√	√									
Equal Employment Opportunity and Harrassment	30 minutes		√									
Flagging	6 hours		√									
Good Heart Health	90 minutes		√									
Proper Painting of MSA's			√									
Storm Water BMP	2 days		√									
Trenching & Excavating	4 hours		√									
Training is conducted through PSE and the PSE/UA Local 32 Training Trust.												

Legend: **X** = Not Available, <blank>= Data unavailable, √ = Available

- Pilchuck continues to provide the staff and crews leadership training and development. The current economic conditions have prevented much turnover or movement in positions despite the steady growth seen from 1985 to 2008 and so far 2009[82].

5.2.9.2 Potelco Non-OQ Technical Training

- Potelco training for compliance in standards, procedures, and equipment is based on and coordinated with PSE requirements. Monthly training occurs for non-field staff regarding engineering practices, policies, and best practices. Quality control training is required for two hours per month. Field crews are trained annually. Please refer to Figure 19 - Potelco Non-OQ Technical Training Delivery and note the method of delivery of course work[83].
- On the gas operations side of Potelco, there are frequent informal training reviews of storeroom parts and equipment to allow staff and crews to handle the

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item before doing so in the field. Demonstrations also are held when necessary to present certain additional information[84].

Figure 19 - Potelco Non-OQ Technical Training Delivery

Potelco: Technical - Non OQ Training												
Subjects	Training Time	Textbook/ Booklet/ Manuals	Instructor Led Training (Class)	Information Exhange, Video Demo	Computer Based Training	Web Based Training	Simulation Session	Field Training	On-The-Job Training	Simulation/ Skills Testing	Field Evaluation	Written Exam
Contract Crew Coordinator	3 hours		√									
Crane Operation			√					√			√	
Crew Coordinator	2 hours		√									
Damage Assessor (Train the Trainer)	3 hours		√									
Engineering	2.5 hours		√									
Excavation Shoring			√									
Field Telecom			√						√			
Forklift			√									
GOS Review			√									
Helicopter Training & retraining		√	√									
Major Account	3 hours		√									
NESC Joint Use	6 hours		√									
Primary Cable Thumper	1 hour		√									
Process & Function of the MLM & MCP Groups	2 hours		√									
Safety Leadership	8 hours		√									
Traffic Zones Flagging			√									
Truck Inspections CDL's			√									
WBS	2 hours		√									
Training is conducted through PSE and the PSE/UA Local 32 Training Trust.												

Legend: **X** = Not Available, <blank>= Data unavailable, √ = Available

5.2.9.3 Central Locating Services Non-OQ Technical Training

- The training at CLS is comprehensive and ongoing to a certain extent. Locating utilities is a critical and important role. Being well-trained and safe is paramount[85].
- As training is very important at CLS and involves primarily safety and technical training and certification, communication with PSE appears to be regular with regard to training[86].

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- Interviewing Process: Training begins at the interviewing process in getting a potential hire briefed on what will occur during the interview selection process and on-the-job. Background checks, document requests, testing, and any experience or education are highlighted. The candidate goes through multiple interviews with supervisors and managers finally ending with CLS upper management. This process initiates training by invoking the importance of safety and proper technical capabilities or at least how to supplement those lacking skills in the future[87].
- Technical Training: A twenty-day or four-week course with a daily agenda and work plan begins upon hiring a staff member. The basics are reviewed: material, equipment and field work/procedures (field locating theory). Annual gas certification is required. The certification test is coordinated with PSE but administered and scored by CLS. Results are then presented to PSE[88].
- A supervising team oversees field work (on-the-job) efforts with a span of control ratio of 1:12. Training may be identified due to the need for behavior modification, quality control, damage prevention or result investigation, or a safety infraction but also certification, and employee development[89].
- Each year senior leadership conducts a "Hand Shake Meeting" with the staff. Several issues are covered: progress in current position, where the staff member wants to take their career, and survey potential candidates for leadership positions. A file is kept of the individuals interested in moving ahead in management so that when the opportunity avails itself there is a pool to choose from[90].
- According to CLS, the historic turnover rate was extremely high at approximately 70-80% due to the high-level of stress. However, this rate is falling and reversing to a tenure rate of an 82%[91].

5.2.9.4 Locating Inc. Non-OQ Technical Training

- LI Trainers are local to Seattle, WA and Portland, OR. Trainers have backgrounds that include practical experience with critical systems, QA advanced and difficult, and high-profile locates[92].

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- LI uses the guidelines established by NULCA and customizes to individual centers and the utilities they serve to develop practical training programs. With respect to gas utility, it covers General Plant, Gas Safety and Operator Qualifications – OQ[93].
- LI employees are non-union personnel.

Figure 20 - Locating Inc. Non-OQ Technical Training Delivery[94]

Locating Inc.: Technical - Non OQ Training												
Subjects	Training Time	Textbook/ Booklet/ Manuals	Instructor Led Training (Class)	Information Exhange, Video Demo	Computer Based Training	Web Based Training	Simulation Session	Field Training	On-The-Job Training	Simulation/ Skills Testing	Field Evaluation	Written Exam
Accessing and working on Private Properties	30 minutes		√			√	√					
Cable TV Plant	2 hours		√			√						
Computer Basics, Laptop Care, and Acceptible Use	90 minutes		√			√	√			√		
Documentation Photo/Video	30 minutes		√			√						
Documentation Sketch	30 minutes		√			√						
Electric Plant	2 hours		√			√						
Electromagnetic Theory	5 hours		√			√						
Excavation Equipment and Practices	30 minutes		√			√						
Gas Plant	2 hours		√			√						
Marking Standards	30 minutes		√			√						
Pro 10 Steps to a Proper Locate	30 minutes		√			√						
Telephone Plant	2 hours		√			√						
Understanding One Call Systems	80 minutes	√	√			√	√				√	
Water/Sewer Plant	2 hours		√			√						
Training is conducted through internal training.												

Legend: **X** = Not Available, <blank>= Data unavailable, √ = Available

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- Evaluation of performance at LI is based on the following criteria:
  - Incident Report of Damage – report of damages on-site triggers review of quality, counseling 101 to determine which areas need improvement and target training in those areas – for example, may have to redo Safety or Smith Driving Course.
  - General No Cause – frequency every 12 – 18 months individuals recertify in-house; LI states their recertification program exceeds industry requirements; every individual needs to complete a final field assessment written exam.
  - New Equipment or Standards – triggers review of the training documents, update and conducting training sessions in a method appropriate to the instance. Certifications are updated.

- LI previously used an outside third-party for training and then decided to develop their own program. They had multiple meetings with PSE to be sure they comply and exceed PSE requirements.
- With respect to first response matters, locators are part of the first response team; they never enter a site until the emergency personnel (e.g., Fire Dept) deem the site safe and then the locators work with the utility repair team[95].
- LI has developed an additional training program launched this year and intended to be renewed annually – every 12 – 18 months. One program called, "CORE 10" is comprised of the "Top 10 Most Influential Pieces of Training[96]."
- Locating theory and practice may include a great deal of technical information that they may not run into everyday (i.e. ElectroMagnetic signals) but the belief is knowledge is a key to increasing awareness and good behavior. It was noted that when multiple teams are on one site, it is LI's role to assist in responding to a ticket request for a locate or damage and then fulfill the request and file the resolution. Please refer to Figure 20 - Locating Inc. Non-OQ Technical Training Delivery and note method of delivery of course work[97].
- Another example is "Ten Steps to Best Locates Guide" which uses LI in-house software to track, receive, bill and measure performance of successful locates, review of locate request tickets to check understanding of all the information on the form and what a quality ticket contains, if a locate ticket does not contain

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enough information on what to do – how to get more information from the contractor or customer[98].

- LI Human Resource Management and Employee Development and Customer Service are covered initially at hiring with regular refreshers annually. Advancement to supervisor or management levels is limited as there are few positions available so opportunities arise on an as needed basis[99].
- LI provides documentation to PSE and includes a list of all personnel, types of certification, and dates of certification. LI developed what they call the "PSE Smart Book" which is a book of guidelines of PSE procedures and reporting methods that is provided to each LI employee for use. If there is a contradiction in training, PSE guidelines will prevail and in most instances their guidelines are consistent with PSE and augment them. Some of the smaller utility customers LI services accept LI guidelines with no need to customize[100].
- LI relates to PSE training and safety culture in several ways though the training union halls are not used as LI found that this training did not meet LI's locating needs and standards[101].
- LI conducts annual evaluation of personnel performance and their policies and procedures; additionally, their program includes a process that allows for interim evaluations of specific circumstances to assess appropriate action required and level of additional training as necessary. LI states they have a regular line of communication with PSE about their safety program and are willing to make accommodations as necessary to assure alignment with PSE culture[102].

5.2.9.5 Heath Non-OQ Technical Training

- There is a training program at Heath that deals with technical aspects of leak survey, safety and employee development. Please refer to Figure 21- Heath Non-OQ Technical Training Delivery[103].
- Training begins when an individual is first hired. Trainee is given policy manuals on various topics covering all aspects of technical, safety and employee development. The new employee is then put in the field for 3-4 weeks along with a supervisor. Customer contact is not unusual and tends to deal with kids, dogs, property owners, etc. The trainee is briefed on some matters in dealing

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with the public but no formal classes or training is available. Crew leader randomly evaluates crew performance in this area[104].

Figure 21 - Heath Non-OQ Technical Training Delivery

Heath Consultants: Technical - Non OQ Training												
Subjects	Training Time	Textbook/ Booklet/ Manuals	Instructor Led Training (Class)	Information Exhange, Video Demo	Computer Based Training	Web Based Training	Simulation Session	Field Training	On-The-Job Training	Simulation/ Skills Testing	Field Evaluation	Written Exam
Workers Comp Card			√									
Training is conducted through internal training.												

Legend: **X** = Not Available, <blank>= Data unavailable, √ = Available

- Training is "rolled-up" and combines technical, safety and employee development.

5.2.10 Management & Employee Development Training

- PSE's Human Resources - Organizational Effectiveness Department - offers 90 different "Corporate Talent Management Programs and Services" training programs to approximately 1100 PSE staff in 2008 (some overlap of attendees was noted in this number). While these programs involve computer skills, career planning, business acumen, new employee orientation, interpersonal skills, etc., providing this type of training is both significant and important in maintaining, sustaining and enhancing the delivery of safe reliable for utility service. Figure 22 - PSE employee development training captures the broadness of PSE's training program[105]. Having a staff that is well-trained, motivated, knowledgeable and productive creates a positive culture. If such training was unavailable or lacking PSE would be greatly compromised and challenged in providing safe and reliable utility service[106].
- Two large session venues were offered in 2008 on "Leadership with Influence" in an effort to begin sharing more and more knowledge of the organization and start considering a succession plan at all levels as needed[107].
- Service Providers have their own respective Human Resource employee development training and coordinate with PSE on matters of safety and technical

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training. “There is no training link to PSE except perhaps in OQ training or some aspect of safety[108].”

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Figure 22 - PSE Employment Development Training

Puget Sound Energy: Employee Development Training												
Subjects	Training Time	Textbook/ Booklet/ Manuals	Instructor Led Training (Class)	Information Exhange, Video Demo	Computer Based Training	Web Based Training	Simulation Session	Field Training	On-The-Job Training	Simulation/ Skills Testing	Field Evaluation	Written Exam
Employee Professional Skills Development			√			√						
Gas Operations Training Consultant			√									
Materials Mngmnt	1 hour		√									
PSE Advanced Leader Program			√									
PSE Leader Program	5 days		√									
Change Management	1 day		√									
Managing with impact at PSE	2 days		√									
Leading with Influence			√									
Crucial Confrontations	2 days		√				√					
Encore! Presentation Skills	1 day		√	√			√					
Supervisor Gas Operations			√									
Real World Supervision: Developing the PSE Supervisor	5 months		√						√			
Team Building and Interventions			√									
Computer Software Training			√		√							
Enerdynamics Gas and Electric E-Learning Training	6 hours				√	√						
Business Brown Bag Sessions	monthly		√									
NEO (New Employee Orientation) Jumpstart	60 days		√		√	√						
Common Grounds New Employee Coffee Session			√	√								
Career Management Workshop: Taking Ownership of Your Development			√									
Get that Job! - How to Prepare and interview for Career Advancement at PSE			√									
Effective Feedback and Listening Techniques			√									
Team Communication Skills			√									
A Systems Approach to Time Management			√									
Toastmaster			√									
Training is conducted through PSE and the PSE/UA Local 32 Training Trust.												

Legend: **X** = Not Available, <blank>= Data unavailable, √ = Available

- The implementation of a “Learning Management System” by PSE will enable all training to be stored and accessible in one database. The plan is to have a records and “college curriculum” type database accessible by managers and staff alike. Currently, the four training groups at PSE analyze, design, develop, implement and evaluate their respective training programs. Tracking these separately has caused some confusion or consistency in the past[109].

5.2.11 Customer Care Service Training

- PSE offers Customer Care training for both Customer Construction and Customer Service Call Centers. Please refer to Figure - 23 PSE Customer Care Training Delivery for a partial list that includes in this instance construction and call centers[110].

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Figure 23 - PSE Customer Care Training Delivery

Puget Sound Energy: Customer Care Training												
Subjects	Training Time	Textbook/ Booklet/ Manuals	Instructor Led Training (Class)	Information Exhange, Video Demo	Computer Based Training	Web Based Training	Simulation Session	Field Training	On-The-Job Training	Simulation/ Skills Testing	Field Evaluation	Written Exam
Access Center Gas 101	72 hours		√									
Access Center Gas Storm Refresher	12 hours		√									
Customer Construction Services	3 weeks		**X**						√			
Customer Service Training - Customer Service Rep 1	86 days		√ **4 weeks**				√	√	√ **3 mos**			√
Customer Service Training - Customer Service Rep 2			√									√
Gas Worker Journey School - Customer Field Service (CFS) Technical Training	13 weeks		√			√	√	√		√	√	√
Journey School - Dispatch Technical Training			√					√			√	√
Meter Network Services - Meterman Field Reps	30 days						√		√			
Meter Network Services - Meterman Field Reps Apprentice	3 years		√									
Phone Pro Training	8 hours						√			√		
Training is conducted through PSE and the PSE/UA Local 32 Training Trust.												

Legend: **X** = Not Available, <blank>= Data unavailable, √ = Available

- Potelco managers noted their training included listening and identifying needs of the customer to get positive results and customer satisfaction.
- All the service providers wrapped Customer Care Service training in with primary various types of training. It was noted that the foreman- or supervisor- level tended to have more training in dealing with the customer or the public[111].
- CLS Customer Service training is very basic and begins with initial training and through an individual's career[112].
- LI Customer Service training is very basic and includes programs such as: Bark & Bite Dogs, Locked Gates, "Get to a Safe Situation", etc.[113]

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- Heath Customer Service training is indirectly delivered and is a basic overview in dealing with customers in general. No formal Customer Care training is available[114].

5.2.12 Other - Special Regulations, Subject Matter Experts, etc.

- Training on gas operations issues and techniques, special regulations or specific subject matter was observed and noted at PSE. It appears time is regularly allocated for PSE crew members to gain training or familiarization with a new procedure or standard. For example, a 30-minute safety training DVD on proper wrenching technique was available at the time when Jacobs was observing on December 12, 2008. Open and frank discussions on new procedures or lessons learned, field experiences, etc. were also observed suggesting a culture that is open and seeking to learn and share important information. Additionally, subject matter experts (SMEs) are often invited to present information on a specific topic such as a new procedure, products and personal safety[115].
- The service providers approach towards managing information regarding special regulations and technical subject matter differs from that of PSE. PSE manages standards information differently and presents and exchanges this information in a more organized and controlled manner. SPs appear not to approach managing in the same way. Standard's management and delivery is not the same as PSE. Observations conducted on December 9, 2008 noted a differing approach. Information released from PSE seemed to reach the SPs but from here it was difficult to track if the information was documented, distributed, and more importantly, communicated effectively to be understood and properly applied when called to do so by the SP crew members. This difference in the approach could equate to less effectiveness or unsafe methods[116].

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5.2.13 Industry Associations

PSE and its service providers are aligned with several peer industry associations. These associations aid in guiding training such as Midwest Energy Association (MEA), for example. Benchmarking and best practice comparisons on the other hand were not obvious by any one interviewed or was it noted in any of the data collected for this report section. One exception may be The Great Place to Work Survey that compared PSE survey results to Great Pace to Work Trust Index. Other than this comparison no formal benchmarking or best practice studies were conducted by PSE.

5.3 Conclusions

Training plays an important and critical role at PSE. The company has several training units that serve the staff in an effective manner to foster professional and personal growth toward providing a safe and reliable utility service. There are three main areas that will be discussed: Central versus decentralization and communication of training; benchmarking and best practice studies; and common training among PSE and the Service Providers. The following discussion identifies several conclusions and recommendations for training as related to the safety program at PSE and its service providers.

Training at PSE is decentralized. The four primary training groups deliver training courses separately to the PSE staff. While this in of itself is not unusual as subject matter experts from various disciplines develop and conduct quality instruction it seems the issue arises from an administrative position. The four different groups training the staff do not operate from a common database where the staff's transcripts, course schedules, offerings and descriptions may be stored and readily accessed by authorized individuals or the trainee. A learning management system (LMS) is being considered and of course would address this administrative challenge though it has not yet been implemented. This will enhance effective communication among the training managers and trainees as well as maximize the development and delivery of training courses. Weaving and interfacing LMS into PSE must be considered. It simply cannot be purchased with out carefully considering how it will function and be applied (See Recommendation 5.4.1).

PSE's service providers each have training programs in place that involve OQ and Non-OQ training. In some areas the programs parallel PSE OQ training, while in other areas such as Customer Service, the training differs. PSE's programs are more robust while the service providers seem less so. In looking at PSE and the services providers' training programs side-by-side there is an obvious distinction, yet common goal. It appears technical content is there, though the communication style in delivering the training is different. This communication style tends to lead one to suspect information is not always reaching the service provider crews effectively.

PSE or the SPs have not incorporated the benchmarking/best practice methodology to enhance or improve its systems or processes in the area of training. Although PSE has noted that the company does participate in some benchmarking and best practice studies, no clear evidence of an accepted methodology or the results of such practices can be seen as part of PSE's training procedures or within the work environment itself.

As with the safety program, this is a limiting factor that prevents the organization(s) from growing into and becoming a knowledge-based or learning organization. While becoming a learning organization may or may not be the intent of these companies benchmarking/best practice studies offer new and perhaps better ways to perform. Such a study would at least validate what is or is not being done and the results achieved by the other organizations.

Lessons learned from other companies or associations will in the long-run enable and benefit PSE and its SPs. The initial investment to learn other ways of conducting business may deter a benchmarking/best practice study in the beginning but this investment must be weighed against inaction or recreating a system or practice without prior knowledge or experience of others externally having gone through a similar situation.

Even from an internal standpoint there were no benchmarking/best practices studies conducted from one division of PSE to another division of PSE. There were potential systems and practices observed that could be used internally by others but were not. This again prevents the genesis of a new and better learning generation to be communicated and therefore developed (See Recommendation 5.4.2).

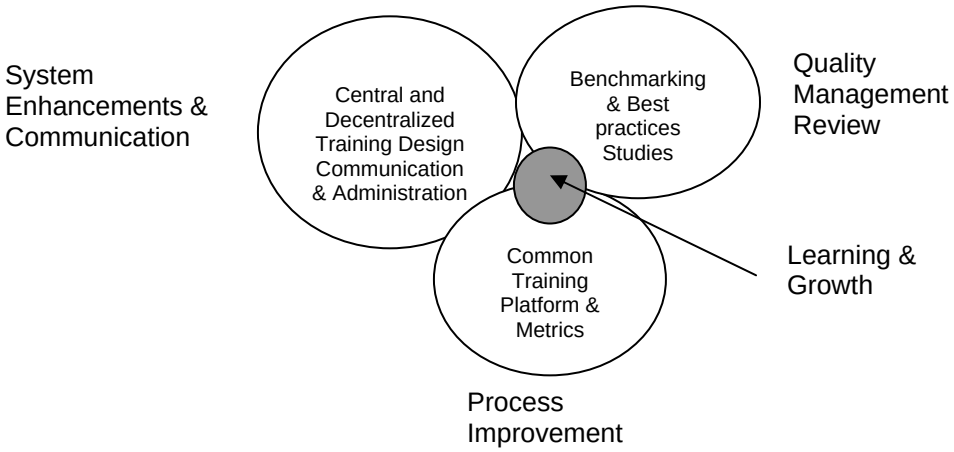
There is a common training process between PSE and the service providers though it is partially standardized in the review, delivery and tracking of training by each of the respective companies. The training at PSE is very good. The service providers also have sound training programs yet when comparing the courses and the delivery of the subject matter, there are differences. Terminology and course titles may have similar titles and descriptions though at times it was open to interpretation or assumption as to whether the course was the same as another course in a different company. In addition, there appeared to be a somewhat inconsistent and objective review process for assessing SP programs by PSE. A common PSE approach to assess any or all of the SP training programs requiring PSE approval did not seem to be applied consistently though efforts were being made to address this issue. Also, a question of a common baseline of courses required for technical or safety training in particular by PSE was evident. As for post-training, there is an unclear understanding of how a new or modified standard is delivered and understood by the field crews. Simply speaking, by issuing a standard and inserting a hard-copy of it in an operations manual does not assure that an understanding of the technical aspects or considerations were captured by the crew members at PSE or the SP.

Once formal training is complete there remains a question of updating staff on the new information regarding technical standards and safety. Assuring PSE's requirements for courses, use of common terminology, standards, and testing results are being met is the goal here. Perhaps a color-coding system to identify priority of importance, level of

criticality, or complexity could be created to establish greater or lesser attention to the post-training information as some information will be more critical than other information. The fact that post-training information is delivered and understood by those involved is most important. To improve and enhance the review, compliance and coordination of Service Provider's training programs establishing a methodology that tracks confirmation of certain technical issues, techniques, etc. being covered by the SP would begin to identify that the information was delivered and understood. In addition to this, it is recommended that metrics-measures beyond compliance be introduced that go into identifying what the impact training has on safety and quality (See Recommendation 5.4.3).

Figure 24 - Enhancements in Training depicts the conclusions and places them into three basics categories: System Enhancements & Communication, Quality Management Review, and Process Improvement. At the center is Learning and Growth of the organization.

Figure 24 - Enhancements in Training



Note that there are additional factors that must be considered by PSE in this regard which go beyond the scope and limits of this report.

The following Recommendations Section addresses the central-decentralized training design, communication and administration; benchmarking and best practices studies; and, common training platform and metrics.

5.4 Recommendations

5.4.1 Institute a centralized administrative system to enable effective communication of information by decentralized training teams.

5.4.2 Identify training systems or processes that would be benefit from a benchmarking/best practice study. Introduce and incorporate accepted methodologies or the results of such studies into the work environment.

5.4.3 Establish a common, uniform process to assess and assure training programs among PSE and the service providers can be evaluated and measured in an objective, consistent manner.