



Avista Corp.

1411 East Mission P.O. Box 3727
Spokane, Washington 99220-0500
Telephone 509-489-0500
Toll Free 800-727-9170

September 27, 2019

Oregon Public Utility Commission
Filing Center
201 High St SE Suite 100
PO Box 1088
Salem, OR 97301

Attention: Filing Center

RE: Avista Utilities 2019 Natural Gas Safety Project Plan

Avista Corporation, dba Avista Utilities (“Avista” or “Company”), submits 2019 Natural Gas Safety Project Plan in compliance with Commission Order 17 084. Among other matters the Order requires natural gas companies to submit an annual “Safety Project Plan” (Plan) report to the Commission by September 30th of each year. The Order lays out the requirements of the Plan, which is to be provided to the Commission as an informational report only. The Company’s attached report satisfies these requirements, demonstrates Avista’s priority commitment to natural gas safety, and meets the objective of being informational and easy to understand for the public, our customers, and other regulatory stakeholders. If you have any questions regarding this filing, please contact me at (509) 495-4975.

Sincerely,

A handwritten signature in cursive script, reading "Linda Gervais". The signature is written in black ink and is positioned below the "Sincerely," text.

Senior Manager, Regulatory Policy & Strategy
Avista Utilities
linda.gervais@avistacorp.com



Avista Utilities

Natural Gas Safety Project Plan

Oregon



September 2019

Table of Contents

I. Introduction	2
II. Avista’s Perspective on “Safety Investments”	3
III. Overarching Federal Safety Regulations	4
IV. Recognized Safety Programs	4
Distribution and Transmission Integrity Management Plans.....	4
Avista’s Excavation Damage Prevention Program.....	10
Cathodic Protection Program.....	15
Atmospheric Corrosion Program	17
Leak Survey Program	19
Right of Way Clearing Program	20
Natural Gas Pipe Overbuild Program	22
Gas Cross-bore Post-Construction Inspection Program	23
V. Programs Where Safety is a Key Factor	25
Aldyl A Pipe Replacement Program.....	25
Isolated Steel Pipe Replacement Program	32
VI. Appendices	34
Appendix A: Avista Gas Excavator Letter	34
Appendix B: Safe Excavation in Our Neighborhoods	36
Appendix C: Digital Tips of the trade.....	37
Appendix D: Front Cover of the Excavation Magazine by PAPA	38
Appendix E: Avista Safe Excavation Tips Card.....	39
Appendix F: Fence Builders! Watch out for buried utility lines	40
Appendix G: Avista Pipeline Damage Tips.....	41
Appendix H: Spanish Language Natural Gas Safety Brochure	42

I. Introduction

On March 6, 2017 the Oregon Public Utilities Commission (“Commission”) issued Order 17-084, which in part required each of the natural gas distribution companies serving customers in Oregon to file with the Commission by September 30th each year an annual “Safety Project Plan” (or Plan).¹ The purpose of the Plan is to increase transparency into the investments made by each utility, based predominantly to achieve important safety objectives. More specifically, the Plan intends to achieve the following objectives:

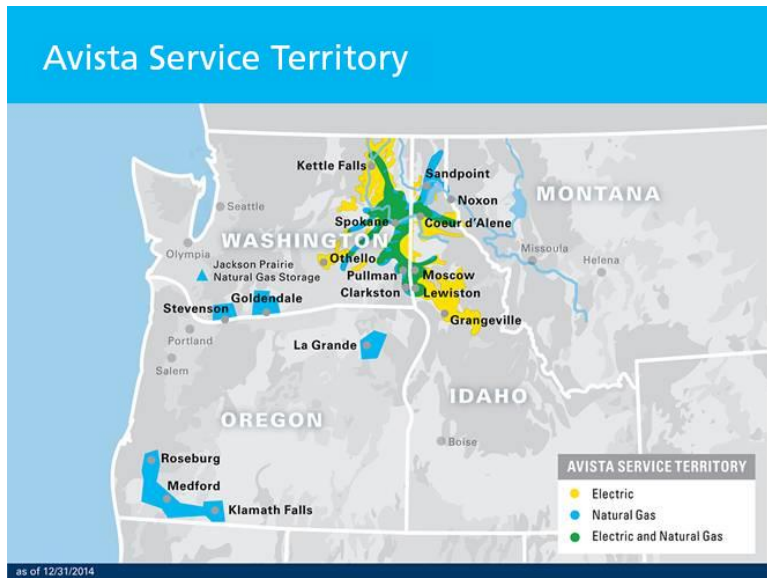
1. Explain capital and operating expenses needed to mitigate safety issues identified by risk analysis or to comply with federal and state rules;
2. Demonstrate the utility’s commitment to safety and priority to its customers;
3. Provide a non-technical explanation of primary safety reports each utility is required to file with the Commission’s pipeline safety staff; *and*
4. Identify major state and federal regulatory changes that impact the utility’s safety programs and investments.

In meeting these objectives, the Plan provides an annual “snapshot” of the utility’s expected investments in its identified safety programs along with the activities planned for each program over a period of 12 months. The Plan also includes a brief description of each safety program or initiative, the risks being addressed, a description of any supporting analysis, the costs and benefits, and an explanation of any program changes from the prior reporting year.

Importantly, the annual Safety Project Plan is not intended to replicate the analysis performed to satisfy the utility’s Distribution and Transmission Integrity Management Plans (DIMP and TIMP). Neither will the Plan provide in-depth descriptions of the analytical methods used to evaluate safety risks or replicate filings each utility already makes with the Commission’s pipeline safety staff. In this respect, the annual Safety Project Plan has been deemed by the Commission to be an “informational report” only to help the Commission better understand upcoming safety investments planned by each company, and as such, the Commission will not take any action on these informal Plans.

¹ Order of the Public Utility Commission of Oregon in Docket UM 1722, Investigation into Recovery of Safety Costs by Natural Gas Utilities. March 6, 2017.

Avista serves approximately 350,000 natural gas customers in the states of Oregon, Washington and Idaho over an extensive service territory highlighted on the map to the right. The Company has served natural gas in Oregon since 1991 when it acquired the natural gas properties of Altell / CP National in and around the communities of La Grande, Roseburg, Medford, and Klamath Falls.



II. Avista’s Perspective on “Safety Investments”

Providing service to our customers relies on complex infrastructure systems designed, built, operated, and maintained to achieve a range of important objectives. Nearly every infrastructure investment we make has at least some relationship to providing “safe” and “reliable” service, though very few of them are made exclusively to achieve a safety or reliability objective.² For the purposes of this Plan the Company distinguishes between:

1. **Recognized Safety Programs** – Those investments made to comply with federal and state-mandated programs, and other programs that have a primary safety emphasis.
2. **Safety as a Key Factor** – Investments intended to achieve other than safety objectives but that have a strong emphasis on public, customer, and employee safety.

² For example, when Avista replaces worn equipment at the end of its useful life the new equipment is more safe and more reliable than the old, but the investments are made to meet the predominant objective of replacing plant based on asset condition. We say predominant because end of life asset replacements will generally be made as planned *regardless* of whether there is an attendant safety or reliability benefit. On the other hand, true safety and reliability investments are those that would likely *not be made* absent the safety or reliability objectives they are intended to achieve.

3. **Safety as a Minor Factor** – Programs with primary objectives other than safety. Consideration of safety is either not a factor or is only one of many considerations guiding the investment.

Avista has included Recognized Safety Programs and programs where Safety is a Key Factor in this Plan.

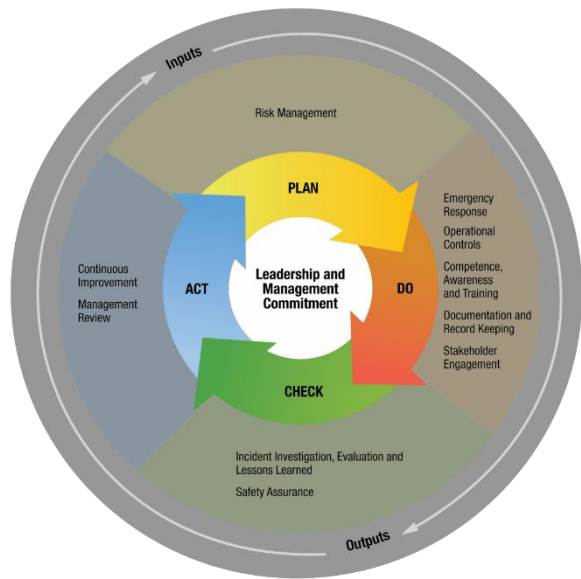
III. Overarching Federal Safety Regulations

Avista, like all other natural gas distribution utilities, is subject to a range of federal and state safety regulations, industry standards and practices, as well as its own operating requirements. While these regulations, rules, and standards are designed to achieve multiple objectives (e.g. environmental protection, security, and reliability), the safety of citizens, customers, and employees is a primary focus. The overarching rules governing pipeline safety are developed and implemented by the Pipeline and Hazardous Materials Safety Administration (PHMSA) of the U.S. Department of Transportation, and are contained in the Code of Federal Regulations (CFR), Title 49, Parts 190-199. These federal regulations continuously evolve to address existing issues more effectively as well as new threats that continue to emerge over time. In addition to developing the rules, the agency also administers and enforces them. States such as Oregon are also engaged in the business of ensuring the safe operation of natural gas systems and play a companion role in the implementation and administration of these federal regulations.

IV. Recognized Safety Programs

Distribution and Transmission Integrity Management Plans

In recent years, PHMSA has moved beyond the enforcement of individual rules to require natural gas utilities to conduct a standardized assessment of risks threatening the integrity of their pipeline systems. Known as the Distribution Integrity Management Plan (or DIMP) and Transmission Integrity Management Plan (or TIMP), these requirements were enabled by amendments to the Federal Pipeline Safety Regulations on December 4, 2009, and December 15, 2003, respectively.



Distribution Integrity Management – The purpose of these plans is to enhance pipeline safety by identifying and reducing potential integrity risks on an operator’s natural gas distribution system. Operators must base their analysis on reasonably available information about their pipelines as the basis of informing their risk decisions. The rule, symbolized in the diagram at left, requires operators to prioritize the risks identified in their planning process and to focus remediation

activities on those that could result in an incident(s) that could cause serious consequences. Finally, the rule also requires that operators implement a program to provide greater assurance of the integrity of their pipeline systems. This requirement is designed to promote continuous improvement in pipeline safety by requiring operators to identify and invest in risk control measures that go beyond previously established regulatory requirements.

Avista’s Distribution Integrity Management Plan - Managing the integrity, safety and reliability of our gas distribution pipelines has always been a primary goal for Avista Utilities, ensuring our design, construction, operations, and maintenance activities are compliant with state and federal requirements. Meeting these requirements is a key part of Avista’s goal to protect the health and safety of our customers, employees, and the communities we serve. The Company’s Plan establishes the requirements for compliance with the regulations and addresses the following key elements:

- Knowledge
- Identify Threats
- Evaluate and Rank Risks
- Identify and Implement Measures to Address Risks
- Measure Performance, Monitor Results, and Evaluate Effectiveness

- Periodic Evaluation and Improvement
- Report Results

The results of our Distribution Integrity Management Plan for our Oregon natural gas operations (including Transmission risks) have identified the following five priority risks (referred to as “sub-threats”) to our system.

Oregon Risk Ranking of Sub-Threats (Transmission & Distribution Combined)

1. Excavation Damage
2. External Corrosion
3. Material Failure – Priority Aldyl A Pipe
4. Welds/Joints - Steel Welds
5. Natural Forces – Snow

Transmission Integrity Management – As noted above, and as directed by the Pipeline Safety Act of 2002, PHMSA amended the Federal Pipeline Safety Regulations on December 15, 2003 by adding Subpart O – Gas Transmission Pipeline Integrity Management. The addition required operators of natural gas transmission pipelines to create a Transmission Integrity Management Program. The purpose of the program is to ensure the safe, reliable, and cost effective transportation of natural gas for our customers without adverse effects on the public, our customers, our employees and the environment. This program provides for the comprehensive, integrated, and systematic management of pipeline integrity in high consequence areas (HCA) as a means to improve the safety of applicable pipeline systems.

As with Distribution Integrity Management, this program provides the necessary framework for Avista to assess and mitigate risks in order to reduce both the likelihood and consequences of pipeline failures. This process enables the Company to effectively allocate resources to appropriate prevention, detection, and mitigation activities that will result in improved integrity and safety. The Plan requires primary Company documents for the management of our natural gas system to be referenced and incorporated

into the Plan, and as part of this program, procedures and standards are reviewed and modified as necessary. These primary documents include:

- Avista Utilities Gas Emergency and Service Handbook;
- Avista Utilities Gas Standards Manual;
- Avista Utilities Public Awareness Program, *and*
- Avista Utilities Operator Qualification Program.



In our development and implementation of the Transmission Integrity Management Plan, Avista has adopted a set of principles that guide the intent and specific details of the Plan. These principles are summarized below:

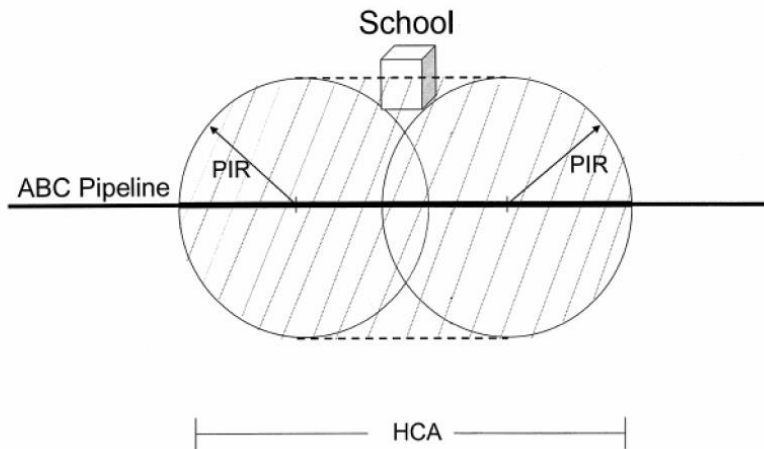
- Functional requirements for integrity management shall be engineered into new pipeline systems from initial planning, design, material selection, installation and initial inspection and testing.
- System integrity requires commitment by all operating personnel using systematic, comprehensive and integrated processes in order to safely operate and maintain the pipeline systems.
- The Integrity Management Program (IMP) will continuously evolve and improve, and is therefore, intended to be flexible. Periodic evaluation is conducted to ensure that the program takes appropriate advantage of improvements in technologies, and that the program utilizes appropriate prevention, detection, and mitigation activities.

- The integration of information is recognized as a key component for managing system integrity. Avista is committed to analyzing all pertinent information in order to effectively manage pipeline integrity.
- Avista has developed a relative risk assessment methodology and uses that methodology to determine the types of adverse events or conditions that may impact pipeline integrity. The process is also used to rank the pipeline segments for further assessment by considering the likelihood and consequence of an adverse event.
- Avista is committed to keeping abreast of new knowledge and technologies affecting pipeline integrity, evaluating those technologies and implementing them where appropriate. Avista personnel attend meetings and conferences, and perform literature searches in order to investigate and then evaluate the use of new technologies for specific application in the integrity management program.
- Avista has determined the set of performance measures that best serve the need for monitoring and evaluating the effectiveness of the integrity management program.
- Avista is committed to communicating the results of its integrity management activities to its stakeholders.
- Non-mandatory requirements from industry standards or other documents invoked by Subpart O (i.e., ASME B31.8S and NACE SP0502) are incorporated into the plan and implemented as recommended in the standard.

Avista's Distribution and Transmission Integrity Management Plans are filed with the Oregon Commission's pipeline safety staff each year.

Planned Activities for 2020 – Avista will continue its regular leak data gathering, review, and analyses for both distribution and transmission integrity management planning. For distribution, Avista will complete its annual review and revisions to our accelerated actions in relation to the current leak data analysis and risk analysis and will publish these results in our annual distribution integrity management manual. For transmission, Avista will continue to work with Dynamic Risk as a consultant who performs our class location and high consequence area analyses and our transmission risk analysis. An example high consequence area analysis is depicted in the diagram below.

Determining High Consequence Area



Planned or Anticipated Changes to the Program for 2020 – The most substantial change to either of Avista’s integrity management plans is the completion of revisions to the risk analysis algorithm for distribution planning that began in 2018. Since the implementation of our distribution integrity management plan, Avista has maintained the type and quality of data on natural gas leaks on our system that have enabled us to move to a more quantitative risk analysis algorithm and away from a mostly qualitative one. This change helps insure that data drives the outcomes of the risk analysis, limiting the opportunity for qualitative bias to influence the results.

Expenses for preparing Avista’s transmission and distribution integrity management plans, as allocated to Oregon for 2018, 2019 and 2020, are presented in the table below. These expenditures fund the processing and preparation of the plans and producing the annual reports. Implementation of measures to address key threats are funded under the respective programs responsible for their implementation.

Planned Program Expenditures

	Capital	Expenses
2018	\$0	\$274,549
2019	\$0	\$263,372
2020	\$0	\$292,939

Avista’s Excavation Damage Prevention Program

As noted above, the number one safety and integrity threat to the Company’s natural gas system results from accidental damage to underground facilities, referred to as “dig-ins,” caused by third parties excavating in the vicinity of our underground pipelines.

Avista and the natural gas industry are actively combatting this threat through a comprehensive public communication campaign known as the “811” or “Call Before You Dig” program. The purpose of Avista’s Damage Prevention Program and our customer awareness activities is to increase



public and employee safety by reducing the number of hazardous excavation damages to Avista’s natural gas (and electric) facilities. Avista communicates, cooperates, and coordinates with government agencies, utilities, contractors, engineers, customers, and the general public through membership in the “811 One-Call” centers and through other communication, education, and awareness initiatives. In addition to reducing the overall damage to our system, we also strive to meet the following objectives:

- Ensure adherence to federal and state regulations;
- Ensure adherence to Avista’s standards, policies, and procedures;
- Provide standby oversight during excavation near transmission, higher-pressure pipelines, and critical large diameter pipelines;

- Identify areas in Avista’s standards for damage prevention, such as locating, tracking of damages, and training that needs to be updated or clarified;
- Manage quality control of the Company’s contract locating services and monitor contract requirements for locators;
- Develop and provide training to increase awareness of the potential hazards to appropriate personnel and third party contractors working near and around Avista facilities;
- Provide program data and updates to appropriate key stakeholders; *and*
- Develop, analyze, and track performance metrics related to the program.

Overview of Communications and Outreach

- Avista Annual Excavator Letter and ‘Safe Excavation in Our neighborhood’ Brochure – This informative letter and brochure are provided to commercial excavators and contractors within Avista’s service territory. Based on recommendations from the 2017 Effectiveness Survey, Avista increased its outreach to excavators from once a year to *twice* each year. These documents are physically mailed in the spring to avoid the busy construction season and gain more attention. A copy of this letter and Safe Excavation brochure are in Appendices A and B respectively.
- Annual Excavator Safety Guide (PAPA publication) –This magazine is published by the PAPA, and is provided once each year to commercial excavators and contractors in the counties in which Avista operates. A copy of the front cover of the magazine is provided in Appendix D. This publication is also mailed in the spring to avoid busy construction season.
- Fence Builders! Watch out for buried utility lines - Additionally, in 2019 Avista created a brochure for fence builders so that they are not overlooking their importance of utilizing 811 by not considering themselves excavators (dirt movers). Refer to Appendix F.
- Avista Pipeline Damage Tips card - A credit card size business card was created covering 811 and steps to take in the event of a gas pipeline damage. (See Appendix G Avista Pipeline Damage Tips)

- Safe Excavation Tips - When a dig-in occurs on our system, Avista personnel responding to the emergency call typically give the excavator on site a copy of the Safe Excavation Tips sheet (Appendix E).

Avista Damage Prevention General Communications – the Company distributes a range of other education and outreach materials each year to the following groups:

- Avista Customers – Affected Public;
- Public in the Vicinity of Projects;
- Emergency Responders;
- Excavators/Contractors/Farmers/Fence Builders;
- Public Officials;
- Railroads, *and*
- Schools – targeting the third through sixth grades, providing instruction materials to teachers and students.
- Avista has a customer brochure, on Natural Gas Safety written in the Spanish Language, which is included as Appendix H.



Digital Outreach

Starting in 2019, Avista contracted with a third party company to do digital outreach with 811 and public safety messaging every quarter (Safe Digging Tips Newsletter). This email targets key issues found based on excavation damage trending data. We have also added this digital outreach to our employees.



Media Outreach – Advertising and outreach materials are distributed broadly through a range of media outlets each year in Washington, Idaho, and Oregon, including online banners (also called online marketing), radio, and promotional projects such as the 811 partnership with Papa Murphy’s. Avista also partners with different organizations to advertise the 811 Call Before You Dig program, such as local and state Utility Coordinating Councils, the Pipeline Association for Public Awareness, Paradigm, and special features like JJ the Rodeo Clown (pictured at left) who educates attendees at rodeos held across the state of Oregon.

The chart below (Figure 1) shows Avista’s trend with pipeline damages in Oregon for the last eight years of our Excavation and Damage Prevention Program. The second chart (Figure 2) shows these annual damages by excavation cause category.

Figure 1

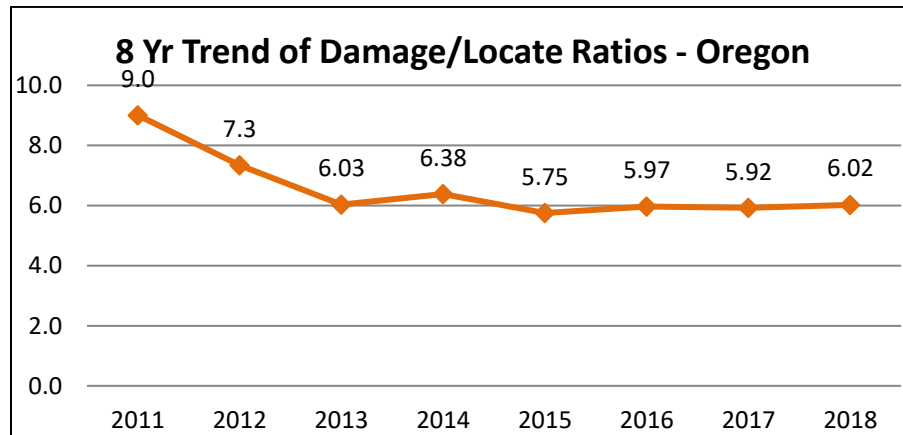
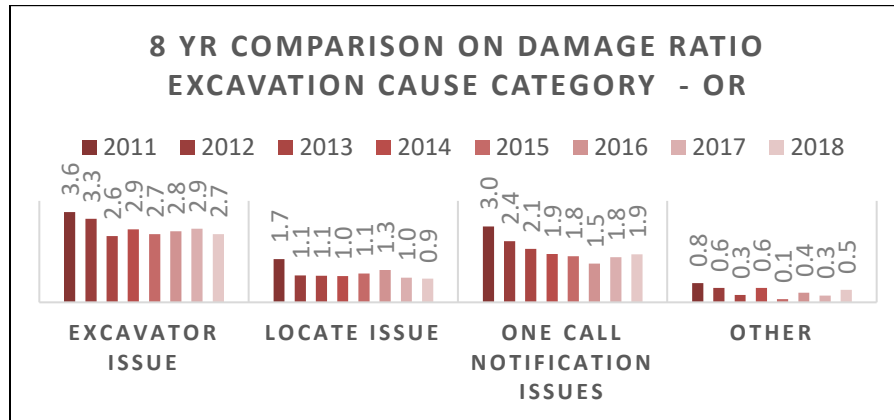


Figure 2



Activities in 2019 – Avista continues to collaborate with other organizations to spread the public safety message through outreach mailings, media, in-person events and other activities. In addition, Avista conducted its periodic effectiveness survey in 2017 and the results were compiled in 2018. Focus group sessions were wrapped-up in 2018. This survey provides input on how we can better reach our stakeholders, including any recommended changes for how we engage with affected public, excavators, public officials and emergency responders, etc.

Avista continues its targeted focus auditing the performance of contract locators through the Quality Assurance Department. These audits help identify program gaps, create standards for locating processes, and aids in the accuracy of locates. Avista also focused on repeat offenders that did not call for locates by utilizing the Oregon complaint process based on its one call trending data in the Figure 2 (above). Avista participated in the shared cost to develop an on-line Damage Prevention Training program through the Oregon Utility Notification Center, Oregon 811, which will be used by the Construction Contractor Board as part of a catalog of trainings offered to support the continuing education credit contractors need to maintain their license. The online training was implemented in July of 2019 and is currently being translated to Spanish.

Planned or Anticipated Changes to the Program for 2020 – Beyond implementing any program changes based on the results of our effectiveness survey and focus group sessions, Avista does not anticipate any other material program changes. Avista will continue to

collaborate with other organizations to spread the public safety message, and continue to do the outreach mailings, media, in-person events, locating audits and file complaints on repeat offenders similar to our activities for 2019.

Capital and operating and maintenance expenses for Avista’s Damage Prevention Program and our customer awareness communications in Oregon, for 2018, 2019 and 2020 are presented in the table below.

Planned Program Expenditures

	Capital	Expenses
2018	\$268,678	\$791,133
2019	\$269,226	\$796,585
2020	\$282,687	\$801,202

Cathodic Protection Program

Overview of Cathodic Protection Program

The purpose of the Cathodic Protection (CP) program is to provide additional protection to Avista’s buried steel pipe from the effects of natural corrosion. Cathodic protection works by utilizing a low voltage DC current source, providing an excess amount of electrons on the surface of the steel pipeline. By providing this excess amount of electron on the surface of the pipeline, an electrical attraction is created with the chemicals

in the soil resulting in an electro-chemical reaction creating a neutral PH level (7) at the surface of the pipeline, which results in a corrosion free zone at the surface of the pipeline. This forced electrochemical process directs the corrosion process to a



sacrificial metal, which protects the pipeline from corroding as long as the circuit and power source are properly maintained. Even though steel pipelines coated with protective materials are effective in preventing corrosion, the cathodic protection system provides a safety net in the event this protective coating system is compromised. Cathodic protection systems are mandatory as required by the Code of Federal Regulations (CFR) 192.463, and this program is an important element of Avista's focus on reducing the second priority threat to the integrity of our system, external corrosion.

The Company's cathodic protection technicians are responsible for ensuring Avista's pipelines are in compliance with these regulations, and that these systems are performing properly. Cathodic protection technicians take the lead in implementing corrective actions when problems arise. These technicians, shown in the photograph above, are continuously striving to upgrade and improve the efficiency of our cathodic protection systems.

Zone Isolation Points and Zone Management

Avista manages multiple cathodic protection zones across our three-state service territory. "Isolation Fittings" are utilized to electrically isolate each zone (i.e. electric current is prevented from flowing between any adjacent zones). The size of these zones is monitored and managed each year, resulting in zone boundaries being maintained in their current state, or alternatively, divided or consolidated as appropriate.

Other Program Elements

In addition to zone management, the Company's cathodic protection technicians are responsible for the following activities:

- Monitoring Pipe Casings;
- Bi-Monthly Rectifier Maintenance and Operation;
- Ground Bed Replacements;
- Annual Survey's; *and*
- Isolated Steel < / > 100'in Length

Inspection and Other Requirements

Under federal and state regulatory rules, cathodic protection programs are subject to mandated inspection activities, initiation of inspection, and frequency of inspection requirements.

Planned Activities for 2020 – Avista will continue to monitor its cathodic protection systems and perform testing throughout the year. On average, one or two anode beds must be replaced each year due to anode consumption. These replacement projects are typically scheduled for construction during the summer.

Planned or Anticipated Changes to the Program for 2020 – From 2015 through 2017, the Company installed new wireless technology to the cathodic protection rectifiers within the systems throughout Washington, Idaho, and Oregon. Remote monitoring units (RMU's) have been installed to allow technicians to remotely take readings, as well as control some system equipment.

Capital and operating and maintenance expenses for this program in Oregon for 2018, 2019 and 2020 are presented in the table below.

Planned Program Expenditures

	Capital	Expenses
2018	\$114,000	\$220,000
2019	\$114,000	\$220,000
2020	\$143,000	\$220,000

Atmospheric Corrosion Program

A companion part of the Company's response to the potential for external corrosion is the Atmospheric Corrosion Inspection Program (Atmospheric Corrosion). Similar to cathodic protection, this program is a requirement of federal regulation 49 CFR 192.481, which directs the pipeline operator to inspect its natural gas infrastructure exposed to the atmosphere for evidence of corrosion at least once every three years. The Company

conducts the atmospheric corrosion program systematically, by state and by operations district in three-year cycle. Avista’s atmospheric corrosion program is managed by the natural gas programs manager and program administrator. Field inspections are completed by contractors specializing in this activity.

At some service locations, the inspections identify “abnormal operating conditions,” which are those that exceed standard requirements and require mitigation to correct. Avista field personnel remediate these abnormal conditions on a pre-determined compliance timeline. The local construction office schedules and manages these remediation efforts. Some examples of abnormal conditions include buried meters and service valves, corroded risers and risers in need of protective wrap (protecting the riser from soil). In addition, Avista also monitors, identifies and mitigates several “continuing surveillance” items under the Atmospheric Corrosion program. Examples of the continuing surveillance items include settled meter sets, overbuilt meters, and meters in need of barrier protection from vehicle damage.

Planned Activities for 2020 – Avista will continue its practice of inspecting facilities in one third of our Oregon service territory annually on a rotating schedule, which ensures we inspect each meter and riser at least once every three-years. Remediation work is completed in accordance with the specified compliance timeline.

Planned or Anticipated Changes to the Program for 2020 – There are no anticipated program changes for 2020.

Operating and maintenance expenses for this program in Oregon for 2018, 2019 and 2020 are presented in the table below. Prior to 2017, Avista inspected all of its meters in each jurisdiction in a one-year period, which was performed once every three years. Beginning in 2017, the Company began inspecting generally one third of its natural gas meters in each state, each year. Thus, the inspection costs for 2018, 2019 and the planned spending for 2020 are for only a third of the Company’s natural gas meters in Oregon each year.

Planned Program Expenditures

	Capital	Expenses
2018	\$0	\$300,000
2019	\$0	\$280,000
2020	\$0	\$280,000

Leak Survey Program

The Company’s leak survey program is mandated by federal regulation 49 CFR 192.723 and requires the utility to survey its system for potential leaks using specialized equipment that can detect trace amounts of natural gas. These surveys must be performed in business districts at least once each calendar year, but at intervals not exceeding 15 months. Surveys include tests of the atmosphere in natural gas, electric, telephone, sewer, and water system manholes, at cracks in pavement and sidewalks, and at other locations that provide an opportunity for finding gas leaks. Outside business districts, leak surveys must be conducted as frequently as necessary, but at least once every 5 calendar years, and at intervals not exceeding 63 months. In special cases, such as “cathodically unprotected” distribution pipelines, the survey must be conducted at least once every 3 calendar years, at intervals not exceeding 39 months. The utility may also survey natural gas facilities on a more frequent basis, such as Avista’s Priority Aldyl A piping, where Avista leak surveys the facilities annually. Overall, Avista surveys its natural gas facilities in business districts, high occupancy structures and high occupancy areas, and 20 percent (one fifth) of its residential services each year. All of Avista’s residential natural gas facilities are surveyed at least once every five calendar years.

Avista field personnel remediate the detected leaks based on the grade of the leak and its required compliance timeline. The local construction office schedules and manages the remediation efforts. In general, grade 1 leaks are repaired immediately, grade 2 leaks are repaired within six months of discovery, and grade 3 leaks are repaired within one year of discovery.

Planned Activities for 2020 – Avista will continue the leak survey program in the state of Oregon at the above-listed intervals and will remediate all leaks within their respective compliance timeframes.

Planned or Anticipated Changes to the Program for 2020 – There are no program changes anticipated for 2020.

Operating and maintenance expenses for this program in Oregon for 2018, 2019 and 2020 are presented in the table below.

Planned Program Expenditures

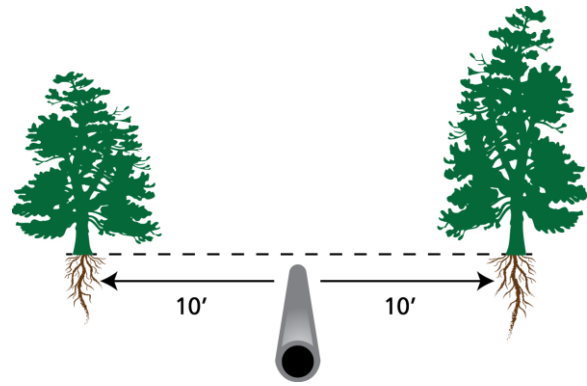
	Capital	Expenses
2018	\$0	\$450,000
2019	\$0	\$450,000
2020	\$0	\$450,000

Right of Way Clearing Program



As part of its high-pressure pipeline maintenance program Avista must clear trees and other large woody materials from the rights of way of its buried lines. Tree roots can wrap around natural gas pipes as shown in the photo below, can damage protective coatings and interfere with cathodic protection systems, increasing the risk of potential pipe failure and leaks. The clearance zone measures ten feet on either side of the pipeline for a total clear zone of 20 feet. The Company surveys rights of way for its high-pressure pipelines periodically and identifies the segments for clearing vegetation, which is performed during follow-up work by our vegetation management contractor. In addition to maintaining rights of way, Avista works with customers to make them aware of the required work in their neighborhood and to encourage them to avoid planting trees in the clearance zone, as shown in the illustration below. These contacts and communications

with customers also provide the opportunity to reinforce their awareness of pipeline safety, particularly with the need to call for utility locates before doing any digging or excavation. Avista performs right of way clearing on approximately 192 miles of natural gas pipeline in its Oregon service area.



Planned Activities for 2020 – Avista is planning to perform vegetation removal on high pressure lines in 2020 focused mainly in and around the communities of Medford and Klamath Falls.

Planned or Anticipated Changes to the Program for 2020 – There are no program changes anticipated for 2020.

Operating and maintenance expenses for this program in Oregon for 2018, 2019 and 2020 are presented in the table below.

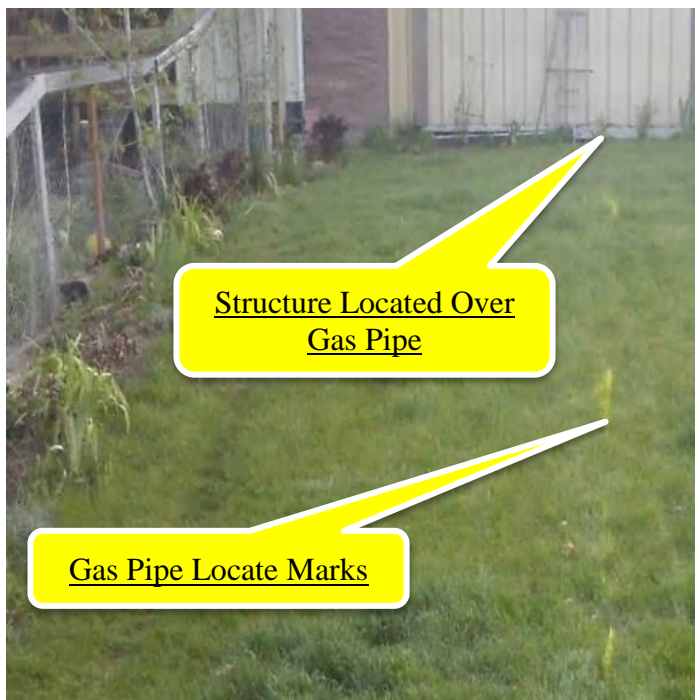
Planned Program Expenditures

	Capital	Expenses
2018	\$0	\$358,713
2019	\$0	\$60,000
2020	\$0	\$60,000

Natural Gas Pipe Overbuild Program

Among the safety standards contained in Title 49, Part 192 of the Federal Code of Regulations is the requirement to remove customer-installed encroachments or “overbuilds” that interfere with or prohibit our ability to safely operate the gas system.

Typically an overbuild situation occurs when a structure is erected over the top of our preexisting natural gas facilities. These structures or barriers prevent us from performing mandatory maintenance such as leak survey (as described above), which is typically performed by walking directly above the gas facilities while operating the leak detection equipment. Overbuild of piping not originally designed for that



condition is also a violation of the federal code. This is because the construction does not meet the code requirement for installation of the pipeline within a sealed conduit that is vented outside the overlying structure.

Overbuilds present an increased risk to customers as well as operational risks to our employees because of the potential of leaking gas to migrate into, or become entrapped within structures built over the line. Overbuilds also increase the Company’s operating costs due to the need to return to the overbuild location multiple times to attempt and complete leak survey and other maintenance tasks.

Avista’s program is focused primarily on overbuilt pipe in mobile home parks. Due to the dynamic nature of this housing, they represent areas of greatest risk because the dwellings can be easily sited over buried facilities. Because of their incidence, they also represent the greatest opportunity to cost effectively resolve these problems. However,

because overbuilds are not isolated to mobile home parks, the Company conducts the program over its entire natural gas service area.

Planned Activities for 2020 – Avista will continue to mitigate known overbuilt conditions in each district to address the high-risk projects first, as determined by the Company’s Distribution Integrity Management Plan.

Planned or Anticipated Changes to the Program for 2020 – No program changes are anticipated for 2020.

Capital and operating and maintenance expenses for this program in Oregon for 2018, 2019 and 2020 are presented in the table below.

Planned Program Expenditures

	Capital	Expenses
2018	\$453,630	\$180,000
2019	\$500,000	\$180,000
2020	\$400,000	\$144,000

Gas Cross-bore Post-Construction Inspection Program

In 2019, Avista began a company-wide cross-bore inspection program targeted specifically at finding instances where a gas line has been installed through a sewer line. In rare cases, when natural gas lines are installed by boring horizontally, they can cross or penetrate an undetected sewer line. This can happen if a sewer line wasn’t mapped and couldn’t be located on the property prior to the installation of the gas line. The safety risk created by a cross-bore comes when the gas line causes the sewer to back up and the homeowner or a plumber uses a roofer device to clean out the sewer line without checking for a cross-bore first. The roofer equipment is designed to cut roots that have gotten into the sewer line and is also capable of cutting plastic gas lines as well, causing blowing gas to enter into the sewer line and potentially into the home and neighboring homes.

The sewer inspections are completed using camera technology that travels through the inside of the sewer lines which minimizes the disruption to the customer. At times, the contractor will need access to a customer's home to access the sewer lateral with their camera equipment. Contractors will set up an appointment with the customer to complete their inspection. If a cross-bore is identified the contractor will notify Avista immediately and Avista personnel will be dispatched to the location to organize a reroute of the gas line and repairs to the sewer line.



Currently Avista's cross-bore inspection contractor is only inspecting sewer mains and laterals in proximity to new construction projects and Aldyl-A replacement projects where some form of trenchless technology was used to install the gas facilities. Avista's gas cross-bore inspection program is managed by the Pipeline Integrity Program Manager. Field inspections are completed by contractors specializing in this activity.

Planned Activities for 2020 – Avista will continue gas cross-bore inspections of new construction projects and Aldyl-A replacement projects when trenchless forms of technology are used during installation.

Planned or Anticipated Changes to the Program for 2020 – There are no anticipated program changes for 2020 in regards to new construction and replacement projects. Avista is working on beginning risk prioritization of legacy gas pipeline installations in

anticipation of beginning a cross-bore legacy program to inspect older installations that have some risk of gas cross-bores.

Capital and operating expenses for this program in Oregon for 2019 and 2020 are presented in the table below.

Planned Program Expenditures		
	Capital	Expenses
2019	\$400,000	\$0
2020	\$400,000	\$0

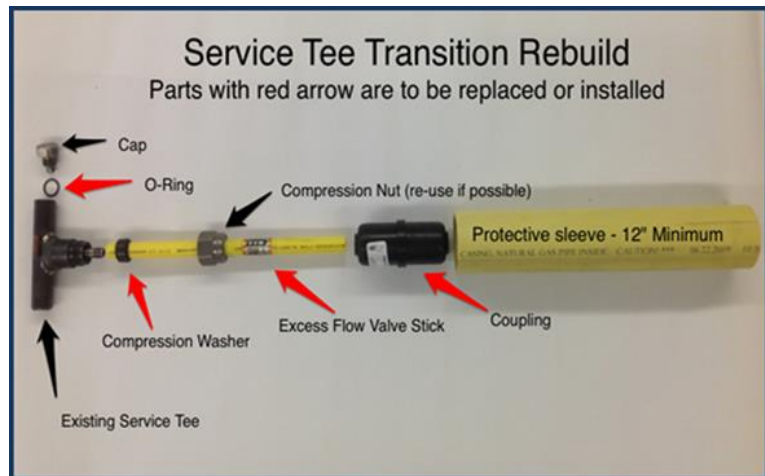
V. Programs Where Safety is a Key Factor

As noted above, the Company makes a range of investments in its systems each year to replace assets that are at or are nearing the end of their useful life (i.e. based on asset condition). While there is some element of safety and reliability in nearly every investment of this type, the predominant reason for the investment is to replace worn out equipment that has provided a lifetime of useful service for our customers. While the next two programs represent the replacement of assets based on condition, the safety of our customers and employees is a priority consideration in determining how the programs are implemented and over what period of time.

Aldyl A Pipe Replacement Program

Avista is continuing its planned twenty-year program to systematically replace select portions of the DuPont Aldyl A medium density polyethylene pipe in its natural gas distribution system. This work is accomplished by our Gas Facilities Replacement Program, which is responsible for developing and managing the overall project. This program addresses the third-highest priority threat to the Company's natural gas system. Avista's Master Plan for this program, titled "Protocol for Managing Select Aldyl A Pipe in Avista's Natural Gas System," provides the background on this pipe, the vintages and types of pipe slated for replacement, as well as the rationale for the proposed twenty-year replacement program. None of the subject pipe is "high pressure main pipe," but rather,

consists of distribution mains at maximum operating pressures of 60 psi and pipe diameters ranging from 1¼ to 4 inches. As part of this program, Avista has rebuilt or eliminated thousands of transition fittings used to connect Aldyl A service piping (one-half and three-quarter inch diameter) to steel tees that are welded to steel main pipe (“service tee transitions”). The illustration shows the replacement components of the new service tee transition.



Nature of the Safety Risk – Early vintages of Aldyl A pipe produced for natural gas service from the 1960s through the early 1980s are subject to “premature brittle-like cracking.” This failure process results from a loss of ‘ductility,’ or flexibility in the pipe material. Ductility is a fundamentally-important property of polyethylene piping, and its loss allows small cracks to form on the inner wall of the pipe, which eventually propagate through the pipe wall, resulting in failure. This tendency for brittle-like cracking renders the pipe more susceptible to failure over time than newer-generation polyethylene pipe, and this tendency to fail increases as the piping continues to age.

Completed Replacement Activities – Under guidance of the Master Plan, Avista began replacing 253 miles of select Aldyl A piping in its Oregon service territory in 2012. The group responsible for managing Aldyl A Pipe Replacement projects at Avista is known as the Gas Facilities Replacement Program (GFRP). While the GFRP’s plan was to replace 50.1 miles (19.8%) of pipe via construction projects from 2012 through 2018, the actual amount of pipe replaced during this 7-year timeframe totaled 45.8 miles (18%), a shortfall variance of 4.3 miles. Despite the shortfall via construction activities, the Company’s system of record indicates that 79.8 miles (31.5%) has been replaced or otherwise removed during the same timeframe by way of local district road projects, system repairs, and mapping corrections. From 2013 through 2017, the Company also rebuilt approximately 6,650 service tee transitions in Oregon. Total capital investment for this work from 2012 through year-end 2018 was \$36,161,531.

Construction Approach – Avista continues to complete nearly all of its Aldyl-A replacement using contract crews and equipment. This approach is more cost efficient since this effort is focused intensive, specialized, subject to seasonal constraints, and is additive to the normal workload and staffing levels required for ongoing natural gas operations at the



Company. NPL³ is Avista’s primary contractor for performing its Aldyl-A main pipe replacement and rebuilding service tee transitions. NPL’s proven expertise and mastery of specialized construction techniques has been a valuable asset in our efforts to get the work done on time and cost effectively. Avista continues to partner with NPL to refine these construction technologies, allowing the Company to improve our efficiency and cost effectiveness over time. The photograph above shows the use of vacuum excavation which is used in conjunction with “keyhole” technology to minimize the pavement impact associated with rebuilding service tee transitions. Avista continues to employ keyhole technology in support of main pipe replacement work when installing new main pipe by the using directional drilling. More specifically, in effort to avoid cross-boring or otherwise damaging adjacent utilities along the bore path, each utility is exposed, or windowed to visually ensure that the drill head clears each respective utility without conflict. From 2012 to the time of this report, this surgical and environmentally friendly approach has yielded approximately \$7.4 million road restoration cost avoidances as compared to the cost of conventional construction and road restoration.

Managing the Unit Costs of Replacement – Prior to initiating Avista’s Aldyl A Pipe replacement program, Avista’s a experience with pipe installation and the associated cost was almost exculsively with new construction. Since new construction most often involves

³ NPL, formerly known as Northern Pipeline Construction Company, has a national reputation for safe, high quality and cost-effective construction services, including the installation or replacement of over ten million feet of pipe and other underground facilities each year.

installation of main pipe and service lines in new residential or commercial developments, the activities are generally limited to trenching in open soil, installing piping and padding, filling and compacting the open ditch. 2011-2012 construction costs for new construction averaged about \$45 per lineal foot.

Replacing natural gas facilities decades after the initial installation, and after the subsequent development of these areas, turns out to be another matter entirely. Replacement pipe must now be installed in fully developed and occupied areas that consist of numerous below ground facilities, paved streets, sidewalks and arterials, landscaped residential neighborhoods, and hard-surfaced commercial developments teeming with daily traffic and other activity. New main pipe is most-often installed by either “horizontal drilling,” or open trenching, and while horizontal drilling is far less invasive, both methods require cutting into existing pavement or other hard surfaces. Care must be taken to plan and locate other existing underground facilities to avoid damaging them, new service lines



must be ditched into landscaped yards, etc., and all of these features must be restored to unblemished service once the installation is complete. The adjacent photograph shows a typical pavement cut and open trench required for the installation of new main pipe. During the first two years of the program Avista reported⁴ average per foot replacement costs ranging from \$69 to \$83

per foot. These costs included pipe replacement in hard-surfaced areas as well as areas of exposed soil, such as the shoulder of semi-rural roadways with limited adjacent facilities and road restoration. More recently, Aldyl A pipe replacement project locations have been primarily located in suburban developments in which the right-of-way is fully built-out with paved roads and sidewalks. As a result of these conditions pipe replacement costs have increased. In 2018 the average cost of main pipe replacement increased to \$152/lf (per linear foot), with a low of \$101/lf and a high of \$218/lf. in the City of Medford.

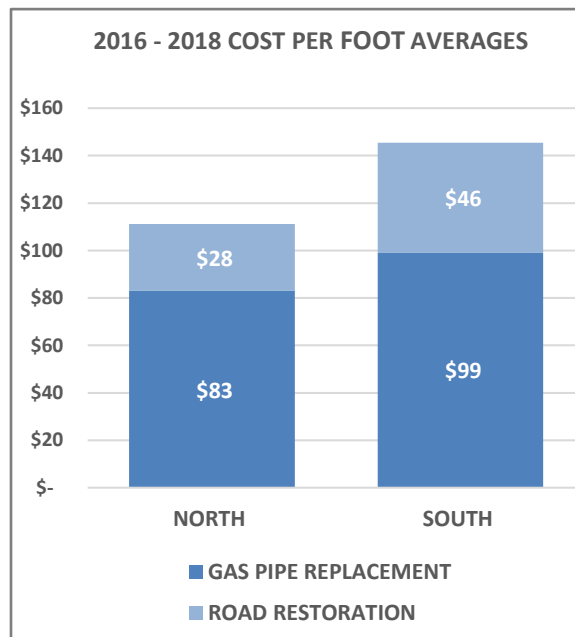
⁴ In direct testimony provided by Avista in rates proceedings in multiple jurisdictions, including Oregon.

The Company continued to report out its experience with replacement construction costs, in particular, as we experienced a trend on the part of municipalities toward more restrictive and expensive roadway restoration requirements. Over the past several years these pavement cutting and remediation policies of local jurisdictions have had a significant impact on the scheduling, logistics, operational methods, extent of the area to be repaved, and the ultimate cost of pipe replacement. In Avista’s experience, this continuing trend to enforce more restrictive moratoria on cutting in newer arterials and streets, to require more stringent requirements for backfill and compaction, for patching or repaving of streets cut



for pipe replacement, and traffic control requirements have all had a substantial impact on our installation costs. These requirements include rules on the export and import of trench backfill materials, significant soil compaction, and the width of pavement restoration, which averages four feet and can range from two feet up to 8 feet for segments of a project.

In an effort to understand, control, and document project costs, the program has been tracking system-wide cost data including cost per foot averages since its inception in 2012. The cost of completing our work in Oregon is significantly higher than other state jurisdictions. As an example, the adjacent chart shows our average cost per foot from 2016-2018 for the Company’s northern territory, which includes our Washington and Idaho service areas, and our southern territory, which includes all of our Oregon service area. Though actual pipe replacement costs are



higher in Oregon,⁵ the major element of the total cost disparity between the two territories is related to road restoration requirements in our Oregon jurisdictions. These costs are largely a direct result of municipally-driven road restoration and permit requirements, which are beyond Avista’s direct control.

Optimizing Trenchless Technology – Given the high unit costs associated with open trenching and roadway restoration, the Company has continued to work with NPL to optimize the use of trenchless technologies, including horizontal drilling and “split and pull.” The photograph below shows a horizontal drilling machine being used to replace main pipe. Not all projects, however, are suitable for using these technologies due to safety issues associated with the presence of multiple underground utilities, or when the affected area has only one source of supply. The latter case requires the coordination and logistics of an all-day customer outage and the ability to perform the procedure to allow for restoration of customers’ service the same day. Other prohibitive conditions include the presence of subsurface rock (solid rock or heavy cobble) and the lack of sufficient clearance along the pipe path to provide for adequate separation of utilities. Where conditions are favorable, however, horizontal drilling can provide a cost-effective alternative to open trench construction because the restoration footprint is significantly reduced. Since 2015, the Company has increased the use of horizontal drilling. In 2017, 88% of the main pipe replaced was installed by horizontal drilling. In 2018, 89% of the main pipe was installed by horizontal drilling. The adjacent photograph show new main pipe being installed in the bore created by horizontal drilling.



⁵ Some of the reasons for the higher construction costs include 100% import/export of trench materials, slurry back-fill, material handling requirements, native soil conditions, and installation methods used.

Continuing Annual Leak Survey – The Company has continued to conduct annual leak surveys on Priority Aldyl A main pipe since 2011., even though it is much more costly than the conventional frequency of five years. This frequency, however, provides our customers and others a prudent margin of added safety while these facilities are being replaced and rebuilt.



Heightened Risk Prioritization within High-Consequence Areas – A key tool developed by the Company for better managing the risks associated with its Priority Aldyl-A piping, is its risk consequence model. The model predicts areas in the system where leaks are most likely to occur and then incorporates information on the density of development (high-consequence areas) to assess relative priorities for pipe replacement. In 2014, Avista updated its model to distinguish schools and daycare facilities from other types of developments. These were identified as sites that would be difficult to evacuate in the event of a natural gas emergency. Though these sites were already included in designated high-consequence areas, this new designation provides them an additional layer of priority. The model highlights those instances where the Company has Aldyl-A facilities within close proximity to facilities that can sometimes encompass outdoor play areas or other areas of congregation. Avista is continuing to list and map other potential sites to determine whether they might warrant this higher-level prioritization.

Current Activities for 2019 – During the current year (2019), the Company plans to replace approximately 14.6 miles of main pipe in South Medford, plus approximately 5.75 miles of carry-over from previous years projects in the East Medford area. While the transition tee rebuild program was ramped down in December of 2017, Avista plans to rebuild or eliminate remaining tee transitions in Oregon, primarily dispersed from Ashland to Roseburg, with the greatest volume remaining in the Medford area by utilizing local office resources.

Planned Activities for 2020 – With a focus on main pipe replacement work, Avista has increased the amount of main pipe we plan to replace each year in Oregon to approximately 14.6 miles annually. The Company’s primary main pipe replacement project in 2020 will be located in the southwest portion of the city of Medford (14.6 miles). Avista also plans to address any carry-over work from the 2019 South Medford project, however, at the time of this report, the quantity of possible carry-over work is not certain.

Capital and operating and maintenance expenses for this program in Oregon for 2018, 2019 and 2020 are presented in the table below.

Planned Program Expenditures

	Capital	Expenses
2018	\$10,375,530	\$300,000
2019	\$8,514,923	\$50,000
2020	\$7,928,423	\$20,000

Isolated Steel Pipe Replacement Program

As noted earlier in this report, steel pipe that is not cathodically protected is subject to varying degrees of corrosion depending on pipe coating, the type and condition of the pipe, soil type and acidity, ground moisture, the presence of foreign utilities, and other factors. Corrosion causes the loss of metal from the pipe wall, which over time can result in a failure of the pipe and a gas leak. A safety issue can arise because in many cases these pipes are installed next to the businesses and homes of our customers.



As mandated by Federal and State regulation, Avista monitors isolated steel sections of pipeline main less than 100 feet in length, and isolated services and risers at a frequency of 10 percent per year. When identified, the Isolated Steel Replacement Program replaces those isolated

steel sections, which if not cathodically protected, could be at risk of corrosion. This preemptive effort helps reduce the potential for corrosion and a subsequent leak, thereby increasing the safety and reliability of Avista’s natural gas system.

Current Activities for 2019 - Those isolated sections of steel pipeline and steel services/risers identified in our Oregon service area are being proactively replaced at the rate of approximately 10 percent per year.

Planned Activities for 2020 – During 2020, the Company is planning to continue proactively replacing isolated steel pipeline and services/risers at the rate of approximately 10 percent per year.

Planned or Anticipated Changes to the Program for 2020 – There are no anticipated changes to the overall program for 2020.

Capital expenditures for this program in Oregon for 2018, 2019 and 2020 are presented in the table below.

Planned Program Expenditures

	Capital	Expenses
2018	\$500,000	\$0
2019	\$500,000	\$0
2020	\$440,000	\$0

VI. Appendices

Appendix A: Avista Gas Excavator Letter



March 2019

PLEASE CALL 811 TWO Business Days BEFORE YOU DIG

Go to <https://myavista.com/safety/call-811-before-you-dig> and check out our new **SAFETY Videos**

Enclosed is the Avista **Excavator Safety near Natural Gas Pipelines** brochure.

Before beginning any excavation project be sure to have all natural gas services located first. To locate what's below the ground, just call **811**. The National **811** Call Before You Dig number is available to everyone specifically contractors, excavators, and homeowners. You may also use the website www.call811.com or www.callbeforeyoudig.org. Locating underground lines is just a phone call or a click away and it may save a life. You can now use internet ticket processing in WA and OR from a smart phone at www.callbeforeyoudig.org.

Remember to call at least **two business days (excludes holidays and weekends)** before excavating or digging. Your proposed excavation area must be painted in white. This allows the utility sufficient time to mark the location of any buried wire, cables or natural gas pipe. Once the utilities have been located remember buried utilities could be up to 24" away from the locate mark. One scoop with a shovel or backhoe could strike a natural gas or electric line that may be buried close to the surface. For this reason it is required to hand dig or use non-invasive methods when digging within 24" of a marked utility. Privately owned utilities generally downstream of the meter can be located for a fee. These may include water/sprinklers, sewer laterals, utilities to a detached garage, outbuilding, etc.

You must determine the precise location of underground utilities prior to excavation or you may be in violation of OSHA and/or State Regulations. Remember our pipeline markers are **yellow** and list our name and telephone number on the marker.

Immediately Report Scrapes, Dents or Pipeline Damage

If you do expose underground utilities while working on your project and notice or cause a dent, scrape, or damage to a gas pipeline, please contact Avista at 800-227-9187 so we may inspect those lines for safety before you backfill. It is critical you do not enter an area where the gas is blowing, and do not bend the pipe over.

Watch, Listen & Smell for Signs of a Leak

Know the signs of a leak and what to do. If you see, hear or smell signs of a pipeline leak immediately leave the area in an **upwind** direction. Warn others to stay away and contact 911 from a safe distance. Do not operate machinery or electrical equipment, including cell phones, near a potential pipeline leak.

Avista is happy to provide safety information to your business. Contact us to order additional **Excavator Safety near Natural Gas Pipelines** brochures.

We have also developed a brochure for builders, contractors and homeowners to assist in understanding the importance of where to place the gas meter when building a structure. This brochure is the **Natural Gas Meter Location Guidelines** brochure and this can be found at our website under myavista.com/safety.

Fax requests for more copies to 509-777-5901 or email publicsafety@avistacorp.com, please provide name of brochure and number of copies. Also give us your feedback on our safety videos!

Company Name _____

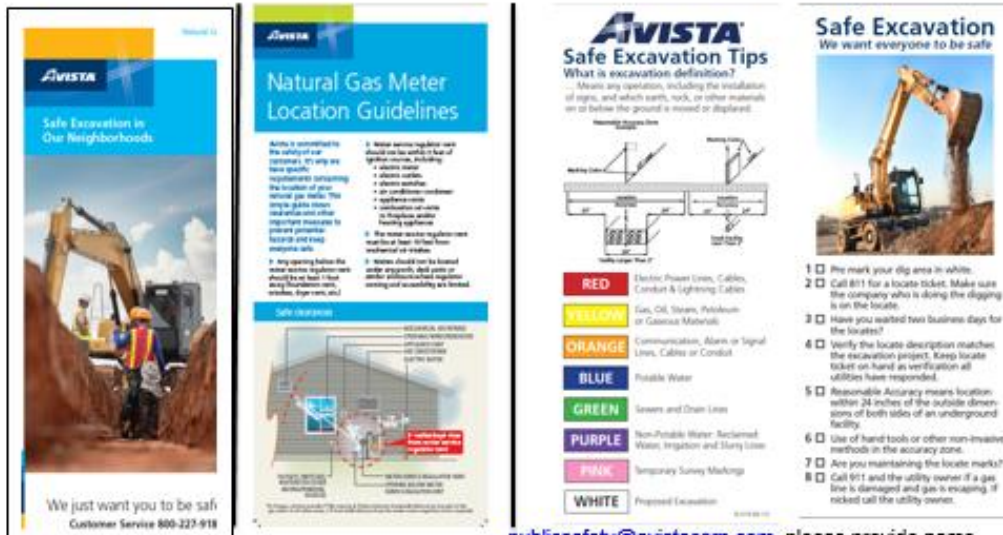
Address _____

City _____ State _____ Zip _____

Number of brochures requested _____

We just want you to be safe.

Dawn Donahoo – Public Safety Specialist
509-495-2646



"Safe Excavation in our Neighborhoods"

"Natural Gas Meter Location Guidelines"

The above brochure is the "Safe Excavation Tips" offered by Avista as an additional resource

publicsafety@avistacorp.com, please provide name

Company Name _____

Address _____

City _____ State _____ Zip _____

Name of brochures requested _____

Number of brochures requested _____

We just want you to be safe.

Dawn Donahoo – Public Safety Specialist
509-495-2646

Appendix B: Safe Excavation in Our Neighborhoods

Add this number to your phone contacts: 800-227-9187 (Avista Customer Service)

Signs of a natural gas leak



We add a sulfur-like rotten egg stench so you'll know right away if there is a problem.



Gas can hiss or even roar as it escapes pipes.



Gas may make bubbles, blow dirt and kill plants when leaking from underground pipes.

General Pipeline Markers are no substitute for calling 811

Avista's transmission and major distribution pipelines for natural gas have aboveground yellow markers along their routes, each displaying a 24-hour emergency response phone number. Please be aware that THESE YELLOW MARKERS ONLY INDICATE THE GENERAL LOCATION OF BURIED NATURAL GAS LINES and may not be located above the actual pipelines. You are still required to have pipelines located by calling 811 at least two business days before you dig.

Transmission pipeline maps by county and zip code, including the names of pipeline operators, are available by registering with the National Pipeline Mapping System at www.npms.phmsa.dot.gov.



Other materials available to order at publicsafety@avistacorp.com

- Pipeline marker wallet card
 - What to do in the event of a gas leak wallet card
 - Safe excavation tips checklist
- Please review state dig law and OSHA requirements at myavista.com/safety
Please see our safety videos at myavista.com/safetyvideos

For additional information

800-227-9187

myavista.com/safety

publicsafety@avistacorp.com

Если Вы хотели бы получить информацию о правилах безопасности на русском языке, пожалуйста звоните по телефону 800-227-9187.

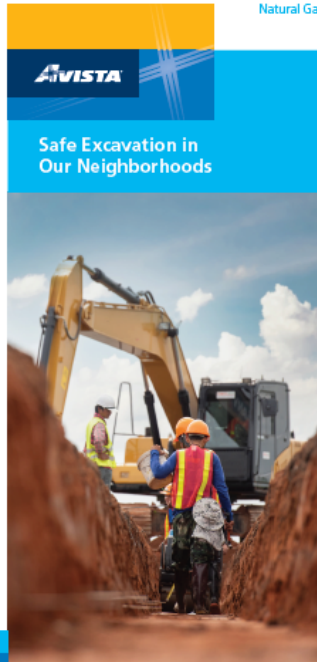
Si desea recibir información en Español acerca de la seguridad, por favor llamar a: 800-227-9187
For assistance with alternative languages please call customer service at 800-227-9187.

Avista Utilities
1411 East Mission MSC 20
Spokane, WA 99220-3727



© 2019 Avista Corporation
All Rights Reserved

Natural Gas



We just want you to be safe.
Customer Service 800-227-9187

Know what's below to be safe

It takes a system of underground pipelines to bring natural gas service to our community. Federal and state codes extensively regulate natural gas pipelines for public safety. Avista regularly maintains our natural gas facilities to ensure safety for all.



Know what's below.
Call 811 before you dig.

You are required to:

- Call 811 (or visit call811.com) at least two full business days before you dig to have underground utilities marked.
- Mark the perimeter of where you intend to dig with white paint.

Then:

- Wait for all utility lines to be marked before proceeding.
- There is a 2-foot tolerance zone on either side of markings. Hand dig in this zone to expose and determine the exact location before you proceed with mechanical equipment.
- Don't move or alter the marks until the underground facilities are exposed.
- Exposed gas pipelines need to be properly supported and protected from damage so they don't break or rupture.
- Use acceptable backfill (such as sand or rock free dirt) and proper compaction to avoid damage to pipes.
- Stop excavating immediately if you find unmarked gas or electric lines and call 811 (or visit call811.com) to have them marked.
- Never try to fix a damaged natural gas line or restrict the gas flow in any way, including bending the pipe over.

Ground marking identification

Ground markings are in different colors to indicate the locations and types of utility facilities buried below.

Locations are good for the following time:

WA - 45 days

ID - 21 days

OR - 45 days

If anyone digs after the listed times, they are digging with an invalid ticket.

Do not build over gas lines

Never build any type of structure overtop buried utility lines or where it will block access to meters. Doing so runs a serious safety risk and prevents Avista from maintaining the infrastructure that serves customers.



Hazards when natural gas is released

- Natural gas mixed with air can be highly flammable and easily ignited by heat or sparks.
- Natural gas in the air can be ignited 4 to 15-percent gas-to-air mixture.
- Gas fires may produce irritating and/or toxic fumes.
- Natural gas is lighter than air and can migrate into enclosed spaces.
- Released gas may displace oxygen without warning and can cause dizziness or even asphyxiation.

Responding to a gas leak emergency

The following recommendations apply to all natural gas lines:

- Avoid any action that may create a spark.
- Do NOT start vehicles, switch lights or use phones.
- Evacuate the area on foot in an upwind and uphill direction.
- Alert others to evacuate the area and keep people away.
- Call 911 from a safe distance to report the emergency.
- Call and report to Avista who will inspect and repair the line.
- Wait for emergency responders and Avista to arrive.
- Do NOT attempt to close any pipeline valves.

Appendix C: Digital Tips of the trade



You've notified 811, and all buried utility lines on your job site have been located and marked. Now your power-digging work can begin, right?

Not so fast. In Washington, Oregon and Idaho, before you can use power-digging equipment to excavate within 24 inches of the indicated outside edge of a marked utility line, you must first verify the line's exact location and depth by nonintrusive methods. In Idaho, that means you must hand dig. In Washington and Oregon, you can hand dig or use other industry-accepted standard practices, such as vacuum technology. You must know and follow the law in your state.

Hand-Digging Tips

Protect underground utility lines from damage and protect yourself from injury with these hand-digging tips:

- Use a rounded or blunt-edged shovel. Sharp tools like pickaxes, mattocks, pry bars, and pointed spades may gouge or puncture lines.
- Never stab at the soil or stomp on the shovel with both feet.



Prevent Muscle Strain and Injury

Always wear proper personal protective equipment (PPE). Don't twist your torso to move the dirt; move your feet to turn your entire body. Alternate shoveling between your left and right sides. Take care to prevent muscle strain, and take breaks to prevent fatigue.

Report ALL Damage

Even a slight gouge, scrape, or dent to a utility line, its coating, or its tracer wire may cause a break or leak in the future. Protect all exposed utility lines and check them regularly for damage. Before you backfill, check them again. Report any damage to Avista so our crews can inspect the line and make the necessary repairs.

Do you like this email series?

Do you find the information helpful? We would like to know. Please visit our website for other [Tips of the Trade](#). [Sign up](#) to tell us what you think, or let us know what topics you'd like to see in future emails.

Smell or hear a gas leak or need to report a downed power line?
Call (800) 227-9187.



For more safety information visit:
[Avista Natural Gas Safety](#)
[Avista Electrical Safety](#)

#12048

Appendix D: Front Cover of the Excavation Magazine by PAPA



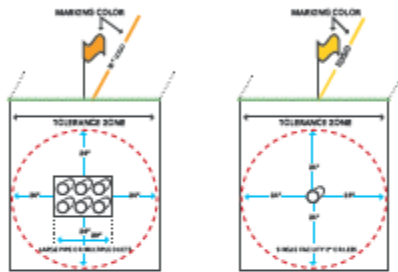
Appendix E: Avista Safe Excavation Tips Card

AVISTA[®] Safe Excavation Tips

What is excavation definition?

... Means any operation, including the installation of signs, in which earth, rock, or other materials on or below the ground is moved or displaced.

TOLERANCE ZONE



RED	Electric Power Lines, Cables, Conduit & Lightning Cables
YELLOW	Gas, Oil, Steam, Petroleum or Gaseous Materials
ORANGE	Communication, Alarm or Signal Lines, Cables or Conduit
BLUE	Potable Water
GREEN	Sewers and Drain Lines
PURPLE	Non-Potable Water: Reclaimed Water, Irrigation and Slurry Lines
PINK	Temporary Survey Markings
WHITE	Proposed Excavation

Safe Excavation *We want everyone to be safe*



- 1 Pre mark your dig area in white.
- 2 Call 811 for a locate ticket. Make sure the company who is doing the digging is on the locate.
- 3 Have you waited two full business days for the locates?
- 4 Verify the locate description matches the excavation project. Keep locate ticket on hand as verification all utilities have responded.
- 5 Reasonable Accuracy means location, within 24 inches, of the outside lateral dimensions.
- 6 Use of hand tools or other non-invasive methods in the accuracy zone.
- 7 Are you maintaining the locate marks? Means 45 calendar day period after notice.
- 8 Call 911 and the utility owner if a gas line is damaged and gas is escaping. If nicked call the utility owner.

N-2716_08 (02-19)

Appendix F: Fence Builders! Watch out for buried utility lines

Signs of a natural gas leak

Small
We add the scent of a burnt match or rotten eggs to our natural gas, so you'll know right away if there's a problem.

Hear
Gas can hiss, whistle or even roar as it escapes from pipelines.

See
Dirt blowing from a hole in the ground, an area of dead vegetation or bubbling in pooled water may indicate an underground gas leak. You may also see fire come up from or burn atop the ground.

Hazards when natural gas is released

- Natural gas mixed with air can be highly flammable and is easily ignited by heat or sparks.
- Natural gas can be ignited when there is a 4% to 15% gas-to-air mixture.
- Natural gas is lighter than air and can migrate into enclosed spaces.
- Released gas will displace oxygen and can cause dizziness or even asphyxiation.

For additional information
800-227-9187
myavista.com/safety
publicsafety@avistacorp.com

Avista is committed to safety. For additional information, call or visit us online.

Если Вы хотели бы получить информацию о признаках безопасности на русском языке, пожалуйста звоните по телефону 800-227-9187.
Si desea recibir información en Español acerca de la seguridad, por favor llamar a: 800-227-9187
For assistance in alternative languages please call 800-227-9187.

Avista
1411 East Mission MSC 20
P.O. Box 3727
Spokane, WA 99220-3727

AVISTA

© 2019 Avista Corporation
All Rights Reserved.

AVISTA

**Fence builders!
Watch out for
buried utility lines.**



**We just want
you to be safe.**

800-227-9187

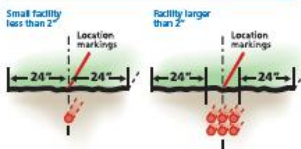
Before you break ground with a shovel, auger or other equipment, call 811 at least two business days before you dig—it's the law. A utility representative will come locate and mark buried utility lines in your dig zone. (The service is free for Avista residential customers.) Never disturb the ground until you complete these steps:

1. Use white paint to mark where you plan to dig.
2. Call 811 and wait for a utility representative to mark facilities owned by utilities. (NOTE: You must hire a private contractor to locate non-utility-owned lines.)
3. Maintain and respect these location marks.
4. Hand dig to expose and determine the exact location before you proceed with excavation (see below).

Reasonable Accuracy Zone

The utility should be found within two feet of either side of the mark, or inside a 4-foot corridor. However, if the line marks indicate the size of the buried utility and is greater than 2" in width, you will need to increase the accuracy zone by that amount.

Hand Dig Within 24"



Ground Marking Identification

Ground markings are in different colors to indicate the locations and types of utility facilities buried below.

- ELECTRIC: RED**
- GAS-OIL: YELLOW**
- COMMUNICATION: ORANGE**
- WATER: BLUE**
- SEWER: GREEN**
- TEMPORARY SURVEY: PINK**
- IRRIGATION: PURPLE**
- PROPOSED EXCAVATION: WHITE**



General Pipeline Markers are no substitute for 811

Avista's major distribution pipelines for natural gas have aboveground yellow markers along their routes, each displaying a 24-hour emergency response phone number. Please be aware that THESE YELLOW MARKERS ONLY INDICATE THE GENERAL LOCATION OF BURIED NATURAL GAS LINES and may not be located above the actual pipelines. You are still required to have pipelines located by calling 811 two business days before you dig.



What to do if you damage a line

- If you hit or nick an electric or natural gas line, immediately notify Avista at 800-227-9187.
- If you damage a pipeline and gas is escaping, DO NOT FOLD OVER THE PIPE to seal the leak. Static charge can ignite the gas. Get a safe distance away, then call 911 and Avista.

How to respond to a natural gas emergency

- Avoid any action that may create a spark.
- Do NOT start vehicles, switch on/off lights, make calls or hang up phones.
- Evacuate the area on foot in an upwind and uphill direction.
- Alert others to evacuate the area and keep people away.
- Call 911 from a safe distance to report the emergency.
- Call and report the event to Avista.

Appendix G: Avista Pipeline Damage Tips



In the event of gas pipeline damage:

- Turn off and abandon your vehicle
- Leave the area immediately
- Call from a safe distance, 911 and Avista
- Evacuate people to an upwind location
- DO NOT bend the pipe over
- DO NOT turn valves
- DO NOT drive over manholes
- DO NOT attempt to extinguish flames of burning gas

Appendix H: Spanish Language Natural Gas Safety Brochure

Nuestro sistema de gas natural
Se necesita un sistema de tuberías subterráneas para llevar gas natural hasta su hogar o negocio. Hay códigos federales y estatales que regulan exhaustivamente las tuberías de gas natural para la seguridad pública. En Avista, hacemos nuestra parte al vigilar y dar mantenimiento rutinariamente a nuestras instalaciones de gas para garantizar la seguridad. Para ayudarlo a aprovechar el gas natural al máximo, consulte nuestro sitio web en avistautilities.com bajo la pestaña de Su seguridad (Your Safety).

Inspecciones de tuberías y medidores
Para mantener seguro nuestro sistema de gas natural, Avista debe realizar mantenimiento periódico anual. Realizamos varios procedimientos, entre ellos, investigaciones de fugas, vigilancia de tuberías, inspección de medidores y cambios de medidores de gas. Por lo tanto, queremos que esté enterado de que, de vez en cuando, puede ver a alguno de nuestros inspectores en su patio.

Su medidor de gas
Es importante que los clientes mantengan un buen acceso a sus medidores de gas para las lecturas mensuales, el mantenimiento periódico y las emergencias. Lo siguiente es de ayuda para nosotros:

- Pude arbustos y plantas para dejar espacio alrededor del medidor, de modo que puedan verse los indicadores.
- Preste atención a que no se acumule tierra ni desechos debajo y alrededor del medidor para prevenir corrosión y fugas.
- Asegúrese de que siempre pueda accederse a la válvula de cierre del medidor en caso de emergencias.
- No ponga objetos encima del medidor ni lo apoye sobre éste, tampoco se ponga de pie sobre el medidor ni lo utilice para atar animales.
- Proteja el medidor contra los vehículos.

Llame al 811 antes de excavar
Si entra en contacto con una tubería de gas natural al excavar con una pala, motocultor o retroexcavadora, esto podría causar una lesión o la muerte. Así que, manténgase a salvo. Llame al 811 por lo menos dos días antes de excavar para que se localicen y marquen sus líneas y tuberías con anticipación, ¡así lo dicta la ley! El servicio es gratuito para los clientes residenciales. Si corta (mella) o daña una línea o tubería, llame a Avista al 800-227-9187. Las tuberías dañadas que se dejan sin reparar pueden convertirse en un peligro.



Entérese de lo que hay enterrado. Llame antes de excavar.

Asuntos de seguridad
Avista quiere que todos permanezcan seguros. Si su vivienda tiene inquilinos o arrendatarios, manténgalos informados al pedimos más folletos. Para obtener más información, consulte la página avistautilities.com o llame al 800-227-9187.

Si desea recibir información en Español acerca de la seguridad, por favor llamar a: 800-227-9187.
Para obtener ayuda con otros idiomas, llame al 800-227-9187.

Avista
Public Safety Dept.
P.O. Box 3727
Spokane, WA 99220-3727
publicsafety@avistacoop.com





Seguridad sobre el gas natural



Sólo queremos que se mantenga a salvo..
800-227-9187

Seguridad sobre el gas natural

Consejos de seguridad sobre el gas natural
Para ayudar a prevenir accidentes en su hogar y mantener segura a su familia, siga estos consejos generales:

- Mantenga el área alrededor del hornillo de calefacción y del calentador del agua, limpia y sin basura.
- Nunca guarde materiales y líquidos combustibles cerca de los aparatos de gas.
- Enséñeles a los niños a mantenerse alejados de la estufa de gas y de todos los otros aparatos que funcionen con gas.
- Mantenga limpios los hornos y las estufas para prevenir los incendios producidos por grasas.
- Nunca use el horno o la estufa para calentar una habitación.
- Nunca deje que los niños se columpien o se cuelguen de las tuberías de gas.

Emergencias y desastres naturales
Debe saber cómo cortar el servicio de gas natural de su casa en caso de una emergencia o desastre natural, como un terremoto o una inundación. Primero, localice la válvula de cierre en la tubería cerca del medidor de gas. Use una llave inglesa grande para dar un cuarto de giro a la válvula en cualquier dirección. Cuando la válvula esté en una posición transversal (perpendicular) respecto de la tubería, el paso del gas estará cerrado.



Corte el servicio de gas solamente si huele o escucha una fuga de gas natural, o si su vivienda sufre daños mayores. En las grandes emergencias, Avista implementará nuestro plan de emergencia para garantizar la seguridad de la zona afectada.

Reconocimiento de una fuga de gas
Las fugas de gas natural no suceden a menudo pero pueden ser peligrosas. Manténgase a salvo, sin embargo, es tan fácil como usar su nariz, oídos y ojos.

Si huele o escucha gas
Incoloro, inodoro y más ligero que el aire, el gas natural se vuelve inflamable cuando se mezcla con aire y se expone a una fuente de ignición.

Huela

Le agregamos un mal olor parecido al azufre y un huevo podrido, para que sepa de inmediato si hay algún problema.

Escuche

El gas puede sisear o incluso rugir a medida que escapa de las tuberías.

Vea

El gas puede producir burbujas, hacer volar tierra y matar plantas cuando escapa de tuberías subterráneas.

Conozca el olor del gas natural.

Rasque y huela aquí.

Si se da cuenta de que hay una fuga de gas natural, váyase de la zona. Si se encuentra en el interior, diríjase al exterior rápidamente. No use ningún teléfono, accione un interruptor ni haga nada que pueda causar una chispa. Desde la casa de un vecino o a una distancia segura, llame al 911 y a Avista al 800-227-9187.

Monóxido de carbono
El monóxido de carbono (CO) es un gas incoloro, inodoro y mortal que se produce cuando la combustión de cualquier combustible, tal como el gas natural, ocurre sin suficiente oxígeno. El envenenamiento por CO provoca dolor de cabeza, cansancio, dificultad para respirar, náuseas, mareo y la muerte. Para alertar a su familia sobre la presencia de CO, compre un detector de monóxido de carbono aprobado por UL e instálelo según las instrucciones del fabricante.



MANTÉNGASE A SALVO AL INSTALAR UN DETECTOR DE MONÓXIDO DE CARBONO.

Desbloqueo del alcantarillado
En muy escasas ocasiones, las tuberías de gas natural subterráneas se instalaron sin querer a través de tuberías del alcantarillado que no se detectaron. Estas tuberías son seguras a menos que sean cortadas por una herramienta de desobstrucción de alcantarillado, que pudiera causar una fuga de gas y producir un incendio o explosión. Antes de desobstruir una tubería de alcantarillado bloqueada, llame a Avista. Enviaremos a un técnico sin costo alguno para asegurarnos de que no represente ningún peligro.

