Sleepy Hollow Fire Protection District
Report on Safety of PG&E Natural Gas System
Richard Shortall, Director

On August 6, 2014 I met with Ross Valley Fire Battalion Chief David Stasiowski and Pacific Gas and Electric (PG&E) Senior Public Safety Specialist James Wickham to discuss the safety of the natural gas distribution system in the Sleepy Hollow Fire Protection District. Mr. Wickham is a member of a newly created Emergency Preparedness and Public Awareness Division of PG&E. He serves as an expert consultant to public safety agencies, meets regularly with the agencies, responds to emergencies and provides regularly scheduled training to public safety agencies. Based on information provided by Mr. Wickham and BC Stasiowski at this meeting, I am pleased to state that I believe our natural gas distribution system is safe and that PG&E has adopted a very aggressive stance to ensure that their system meets or exceeds all national standards.

Natural Gas Distribution System Basics

There are two basic types of lines (pipes) that carry natural gas. There are large diameter pipes (up to 42 inches) carrying high pressure (175-900 psi) natural gas called transmission lines, which bring natural gas from the fields where it is produced, into California. It was a very large transmission line that was involved in the San Bruno incident. There are no transmission lines located near the Sleepy Hollow Fire Protection District.

There are smaller diameter pipes called distribution lines, which bring natural gas into our neighborhoods. In Sleepy Hollow, these pipes vary from 2 to 4 inches in diameter and are under a much lower pressure of 40-50 psi. These lines are buried under the street and have smaller branch lines which go to your gas meter.

Natural gas pipelines are made of both steel and plastic. Most of the primary natural gas pipes that are under the streets of Sleepy Hollow are made of steel. Many of the branch lines, also under the streets, sidewalks, etc., are made of plastic. Almost all newly installed distribution lines are made of plastic because it is a more durable product than steel. Steel is subject to corrosion and is more brittle than plastic pipe. That is not to say that steel is not safe, but plastic pipe is now commonly used in smaller distribution lines.

Is Plastic Natural Gas Pipe Safe?

Aldyl A plastic pipe was invented to fix a problem afflicting the natural gas distribution industry. That problem was metal pipe corrosion, and Aldyl, being a plastic pipe, eliminated that problem. While, Aldyl — and all the different plastic pipe materials that came after it — have apparently reduced leaks in natural gas distribution systems and enhanced reliability of these pipelines, some Aldyl pipe has generated problems and there is controversy about the relative safety of certain older “generations” of Aldyl pipe. Depending on when the pipe was manufactured, some generations are less crack-resistant than others. A crack is the way the pipe is most likely to fail, so if everything else is the same, the better the slow crack growth-resistance, the longer the pipe will last. The primary variables impacting this mechanism are the pipe performance properties, the internal pressure of the pipeline and any additional external loads on the pipe and, to a lesser degree, the operating temperature.

According to two articles in the *San Jose Mercury News* and the *Independent Journal*, PG&E is in the process of replacing this pipe [http://www.mercurynews.com/ci_19111569

and http://www.marinij.com/ci_21088917/plastic-pipe-pg-e-is-removing-from-marin]. In one of the articles, a PG&E spokesperson states that:

> *Replacing all 1,231 miles of PG&E's pre-1973 Aldyl-A pipe will take more than three years, Yura said. She said PG&E will go to the California Public Utilities Commission, probably next year, to ask for a rate increase to cover the cost, which she said the company had not finished estimating yet. The company also is building computerized maps to digitize 15,000 paper maps showing where the pipe is located statewide. It is building a database to help analyze leaks and find which sections should be replaced first, Yura added. And it will replace some of the 6,676 miles of Aldyl-A pipe built after 1973 in areas with higher-than-normal leak histories, she said, even though that vintage of pipe has not been the subject of federal advisories*.

Is pre-1973 Aldyl A natural gas pipe installed in Sleepy Hollow?

Most of the natural gas pipe installed in Sleepy Hollow was manufactured in the 1980's and 1990's. But according to Mr. Wickham, there is approximately 3000 feet of pre-1973 Aldyl A natural gas pipe still installed in Sleepy Hollow. PG&E has gradually been replacing this pipe and will continue to do so until it is completely removed. To date there is no evidence that the pre-1973 Aldyl A pipe in our District is more prone to leaks, cracking or other problems, than any of the more recently installed plastic or steel pipe.

Does PG&E have up to date maps showing the location of all its distribution and transmission lines?

Yes, PG&E has up to date hard copy and computerized maps of all its distribution and transmission lines. The maps are updated monthly and all PG&E field units in the gas division have computers in their vehicles with all of the mapping information installed. Battalion Chief Stasiowski and I were given the opportunity to review the PG&E maps, which we found to be quite detailed, including location, age of pipe and its operating pressure. Through a new program available through the Emergency Preparedness and Public Awareness Division of PG&E, a special computer portal has been created which allows public safety personnel to securely log in and get access to transmission line, valve and storage facility maps, print the maps, download GIS shape files and receive updates.

Does PG&E know where their shut-off valves are located?

Yes, all PG&E gas division personnel have up to date and accurate maps which show the location of their shutoff valves. BC Stasiowski and I were shown valve maps and the modeling which is done to determine which valves need to be closed to isolate an area with a major leak. It is important to understand that one of the goals of PG&E is to maintain gas service to as many customers as possible, while safely managing a leak. It is also important to know that the natural gas distribution system is a gridded system with many redundancies. Thus, shut off valves are located at strategic points, but the flow of gas in the system cannot be shut off by closing a single valve. For example, seven valves must be closed to shut down the flow of natural gas into Sleepy Hollow. Valves are also more much more likely to leak than closed pipe, so safety is enhanced when the number of valves are strategically engineered. PG&E engineers have also done extensive modeling to create standard

operating procedures for the sequence of closing valves to isolate areas in the event of a major leak.

How does PG&E manage leaks in the distribution system?

Sleepy Hollow recently experienced two natural gas leaks in our distribution system. The first was caused by an arc from an electrical transmission wire, which fell and struck an exposed residential natural gas pipe where it crossed a private road bridge. The second was caused by a contractor accidentally severing another residential natural gas line. Both the Ross Valley Fire Department and PG&E gas specialists responded rapidly to the leaks. Based on the experience of BC Stasiowski, Mr. Wickham and my own experience as a 29 year member of the San Francisco Fire Department, neither leak posed a serious threat to public safety. The burning outdoor flare of a natural gas leak in the distribution system may appear dramatic, but it is standard practice to allow the flare to burn until the gas is shut off, thus reducing the threat of gas accumulating.

As stated earlier, to stop the flow of gas to either of these leaks using valves would have required closing seven valves in very different locations and shutting off service to all Sleepy Hollow residents. In addition, even after valves are closed, it can be hours before all of the natural gas drains from the distribution system. Standard practice of all public utilities throughout the country is instead to quickly dig down to the distribution or branch gas pipeline and crimp the pipe. The pipe crimp immediately stops the flow of gas and the leak can be repaired relatively quickly, without having to turn off gas service for other residents. If gas service were to be shut to Sleepy Hollow, it would be necessary to relight the pilot lights in all of our homes.

New PG&E Safety Programs

As stated earlier, PG&E has created a new division of Emergency Preparedness and Public Awareness whose mission is to work closely with public safety personnel and to increase public awareness about our gas and electrical system. Personnel from this division have public safety backgrounds and provide training, consultation, and response during emergencies for our public safety personnel.

PG&E has a program called the Picarro Car. This vehicle looks a little bit like the Google Street View Car. The car drives up and down every street in a neighborhood with a highly sensitive detector looking for gas leaks. Any leaks detected are investigated by gas crews and repaired. This vehicle surveyed Sleepy Hollow just last month.

The major public safety risk involves the large transmission lines. There are no transmission lines in Sleepy Hollow, but there is a smaller transmission line which brings natural gas from San Rafael to the Ross Valley. PG&E is currently in the process of hydro testing this line. Some minor leaks were detected and they are being repaired.

And of course, PG&E and the Ross Valley Fire Department continue to respond to customers concerns about the smell of gas. According to Battalion Chief Stasiowski, the RVFD is very satisfied with the cooperation and quick response, usually in less than twenty minutes, that they receive from PG&E.

Summary

We are all aware that there was recently a terrible natural gas explosion and fire in San Bruno. There has been a lot of information related to this event in the media and there

continues to be information gathering, public hearings and law suits related to the event, which has certainly tarnished the image of PG&E. That said, it is my opinion that PG&E as an organization is aggressively taking steps to improve its safety record. I believe there are many good people among the 20,000 PG&E employees who take great pride in their job and are dedicated to making their delivery system both safe and efficient. We must understand that the delivery of vast amounts of electrical and gas energy comes with some risk. We must also expect that our public utility providers will place safety first and strive to exceed all national standards for safety in the industry.