

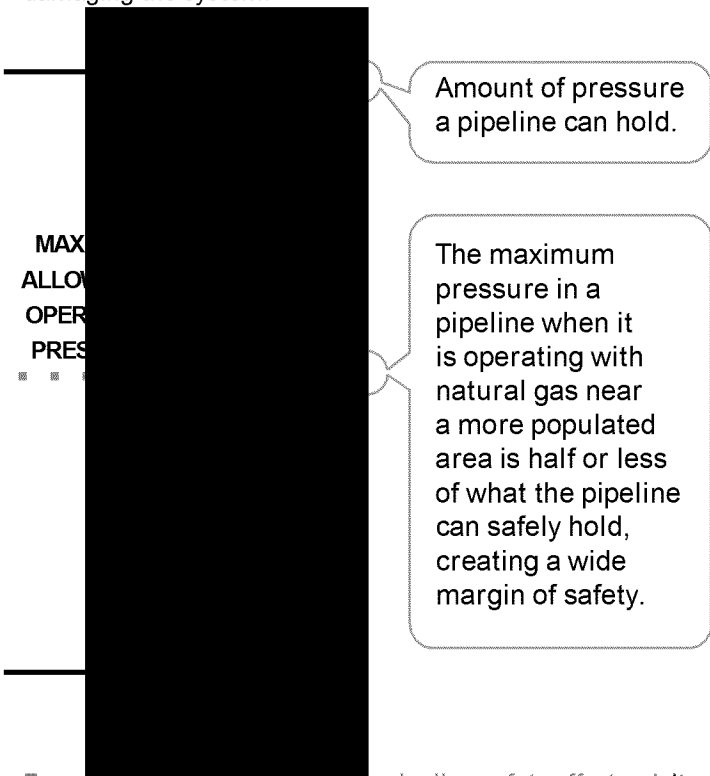


# Pipeline Pressure Safety

Just like the underground pipes that deliver water to your home, natural gas pipelines require pressure to keep their contents flowing. But how much pressure is the right amount?

Too little pressure in gas pipelines can result in a loss of service to homes, schools, businesses, and hospitals. Without a steady flow of gas, pilot lights on furnaces, hot water heaters, and stoves can go out and need to be re-lit manually once adequate pressure is restored. Delays in restoring full service can leave people without heat or the ability to cook. That's not only inconvenient, it's potentially dangerous. Yet too much pressure in any pipeline can risk damaging the pipe. It's critical, then, to strike the right balance, while always leaving a wide margin for safety.

That's where Maximum Allowable Operating Pressure, or MAOP, comes in. Federal law requires that utility operators establish MAOP for all pipeline segments. MAOP includes a wide margin of safety and near more populated areas is typically set at half the amount of pressure that a transmission pipeline can hold without running the risk of damaging the system.



## Frequently Asked Questions

### How is Maximum Allowable Operating Pressure determined?

MAOP is determined by one of three ways. First, MAOP can be determined by calculating the Specified Minimum Yield Strength, or SMYS, of the pipe. SMYS is the minimum pressure at which the pipe is expected to begin deforming. MAOP is then set at a fraction of the SMYS, thus allowing for a wide safety of margin. For example, MAOP is 50 percent or less for a pipeline in a more populated area. Second, MAOP can be set based upon pressure tests, where MAOP is set safely below the pressures used in the pressure test. Third, for pipe installed years ago, the MAOP can be based upon the pressure at which the pipeline has operated safely for years.

### Who sets MAOP levels?

Federal law requires that pipeline operators establish MAOP for each section of pipeline or each distinct segment of a gas pipeline system.

### How is pipeline pressure controlled?

PG&E controls pressure on its pipeline system through a series of safety measures, including pressure regulator stations and overpressure protection devices. These systems operate to keep pressure within specified limits. They are surveyed and maintained regularly.

### Does PG&E intentionally increase pressure above MAOP?

No.

### Can pressure accidentally exceed MAOP?

Yes. Despite safety systems in place to regulate pressure and survey and monitor them, there can be times when the pressure on a pipeline may operate outside of the specified limits. This can occur due to a variety of reasons including equipment failure, liquid contamination, or human error. PG&E has already taken significant steps to improve the safety of our natural gas pipeline system and we have plans to do much more. Actions already taken include reducing the pressure on pipelines that had segments with characteristics similar to the San Bruno pipeline and had not been pressure tested, conducting an additional leak survey of the entire natural gas pipeline transmission system, and launching a comprehensive review of operations records for the approximately 1,800 miles of transmission pipeline in more populated areas, with specific focus on such issues as pressure testing data.

For more information about our pipeline safety efforts, visit our website at [www.pge.com](http://www.pge.com), or call us at 1-800-743-5000.