

## Inside a Natural Gas Compressor Station

Natural gas is pressurized as it travels through the interstate pipeline system. To ensure that the gas continues to flow optimally, it must be periodically compressed and pushed through pipelines. Over distance, friction and geographic elevation differences slow the gas and reduce the pressure, so compressor stations are placed typically 40 to 70 miles apart along the pipeline to give the gas a “boost.” These stations operate day and night, year-round to push re-pressurized gas through the pipelines.

### Safety Systems

Compressor stations integrate a variety of safety systems and practices to protect the public and station employees and property. For example, every station has an emergency shutdown system that stops the compressor units and isolates and vents the compressor station gas piping.

Regulations require that compressor stations periodically test or perform maintenance on the emergency shutdown system to ensure reliability. During the shutdown, natural gas in the pipeline is routed around the station.

*(For more information, see [Compressor Stations and Emergency Shutdowns](#) document)*

### Personnel

All compressor stations are monitored – and some are even controlled remotely – by highly trained personnel at a centralized gas control center. Experienced personnel operate and maintain the station equipment and pipelines.

### Key Components

A typical compressor station consists of yard piping and compressor unit(s), a gas or electric power source, safety systems and personnel, all working together for the safe and efficient transmission of natural gas.

*Paragraph numbers below correspond with the numbers in the illustration.*

### 1. Station Yard Piping

Station yard piping moves natural gas between the pipeline and compressor station.

### 2. Filter Separators / Scrubbers

Filter separators or scrubbers remove any solids or liquids from the natural gas that enters the compressor station.

### 3. Compressor Units

The compressor station runs compressor units sufficient to re-pressurize the volume of gas flowing through the pipeline.

### 4. Gas Cooling System

When natural gas is compressed, its pressure and temperature increase. The gas may be cooled before its return to the pipeline to protect the pipeline’s inner coating and increase its transmission efficiency.

### 5. Lube Oil System

Compressor units have lube oil systems to lubricate, cool and protect the moving parts.

### 6. Mufflers (Exhaust Silencers)

Mufflers decrease the volume level of compressor units to meet federal standards.

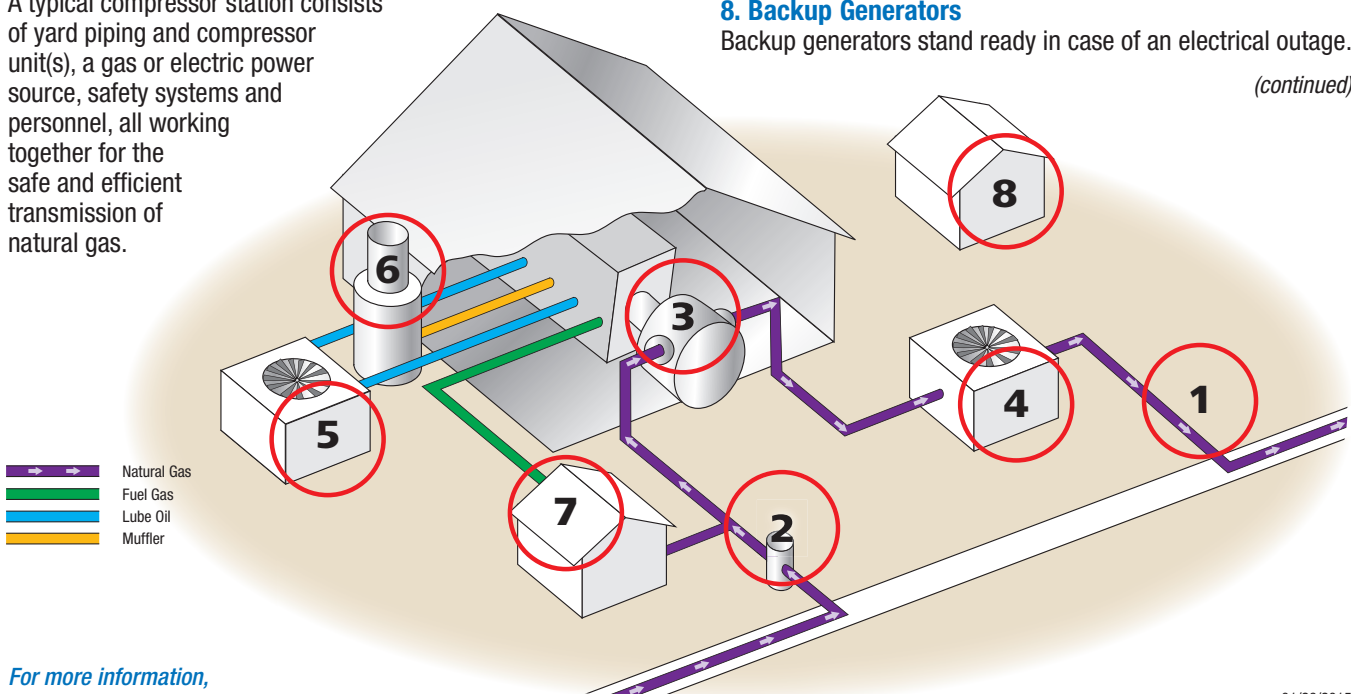
### 7. Fuel Gas System

At most stations, compressor units are fueled by natural gas from the pipeline, though some are driven by large electric motors.

### 8. Backup Generators

Backup generators stand ready in case of an electrical outage.

*(continued)*



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## Frequently Asked Questions

### *Q. How are compressor station sites determined?*

A. The Federal Energy Regulatory Commission (FERC) and U.S. Department of Transportation (USDOT) have established, respectively, rigorous siting and safety requirements for interstate pipeline compressor stations. The Environmental Protection Agency (EPA), through the state environmental agencies, strictly regulates compressor station emissions. Location criteria for compressor stations are determined by a number of factors that include: 1.) stakeholder considerations; 2.) engineering design with favorable pipeline hydraulic performance; 3.) geographic suitability; 4.) environmental resource impacts; and, 5.) constructible terrain. As part of its environmental review, FERC makes the final decision as to the compressor station location generally considering these factors.

### *Q. How are interstate pipeline compressor stations monitored?*

A. To ensure safe operations, well trained gas controllers work around the clock in a high-tech control center to monitor and control the gas as it travels through all sections of our pipeline network. Compressor stations are maintained by highly skilled and experienced pipeline personnel along our pipeline systems. Our employees operate over 100 compressor station sites around the clock – with nearly two million horsepower in the United States and over 65 years of success.

### *Q. How loud are interstate pipeline compressor stations?*

A. FERC regulates interstate pipeline compressor stations and require that the station's noise levels do not exceed an average day-night sound level (Ldn) of 55 decibels (dBA) at the nearest noise sensitive area (NSA), e.g., residences, schools, hospitals, churches, playgrounds and camping facilities, when operating at full load. Noise surveys are conducted before and after construction to verify these federal noise levels are not exceeded. As a point of reference, the average home dishwasher is 50 dBA.

### *Q. What are the public safety measures in place at compressor stations?*

A. Compressor stations are highly regulated facilities that must meet rigorous siting, safety and environmental standards established respectively by FERC, USDOT and the EPA. Spectra Energy's compressor stations integrate a variety of safety systems and practices designed to protect the public, our employees and the environment.

Compressor stations are designed with continuous monitoring devices along with emergency shutdown systems capable of isolating the station and safely venting the gas very quickly in the unlikely event of an emergency. Since natural gas is lighter than air, natural gas rises and dissipates quickly into the atmosphere. These systems are designed and routinely tested to be reliable, which is why it is extremely rare to have compressor station incidents.

Compressor stations are also designed with emergency manual shutdown buttons strategically placed throughout the facility which can be activated by station operators. Every one of our compressor stations is operated and maintained by highly skilled, experienced personnel trained to safely maintain the station and its pipelines.

### *Q. Do you coordinate with local first responders?*

A. Spectra Energy is committed to providing pertinent information about our facilities and working with nearby emergency responders. USDOT also requires interstate pipeline operators to develop a public liaison program for each municipality we go through. An emergency response plan specific to each compressor station is developed and local first responder organizations are trained in how to coordinate a response with Spectra Energy in the unlikely event of an emergency at the compressor station. Evacuation of areas surrounding the compressor station property is not typically necessary in the unlikely event of an emergency. However, if evacuation is warranted, the evacuation zone would be dependent on the nature, extent and location of the incident.

### *Q. What will the emissions be from the compressor station?*

A. The turbines that drive the gas compressors will have low emission technology and are fueled by clean burning natural gas. Federal regulations require the turbines to be designed to achieve a nitrogen oxide (NOx) emission rate of 25 ppmvd (parts per million by volume, dry basis) during normal operations. The turbines will be designed to achieve a NOx emission rate of 9 ppmvd during normal operations. This is lower than what is required by federal and state regulation.

In addition, while this is not required by any federal regulations, we will be equipping the turbines with oxidation catalysts, which are designed to significantly reduce carbon monoxide, volatile organic compounds, and Hazardous Air Pollutants emissions.

### *Q. Are pipeline liquids generated at the compressor station and how is this material managed?*

A. Stations are equipped with filter separators and/or scrubbers that remove any natural gas liquids or solid particles that may have entered the pipeline from various interconnects and/or receipt points along the pipeline prior to the gas entering the gas compressors. Any pipeline liquids collected in these systems are managed in accordance with all regulations and transported to federal and state approved sites.

### *Q. What will be seen/heard when an emergency shutdown occurs?*

A. In the unlikely event of an emergency shutdown, you would hear a very loud noise often compared to the sound of a jet engine or a freight train, depending on how close you were to the station. The sound will last anywhere from one to four minutes. This sound is the result of the release of pressure from the compressor station piping. You would likely see a vapor cloud discharging into the air.