

CRS Insights

Shale Gas Gathering Pipelines: Safety Issues

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The recent expansion of U.S. natural gas resources extracted from unconventional sources, primarily shale, has resulted in a glut of U.S. natural gas supply and the lowest domestic gas prices in over a decade. Absent any new constraints, unconventional gas is projected to become the dominant source of the U.S. natural gas supply by 2040. This unprecedented growth of natural gas production is driving massive infrastructure investments by the U.S. gas industry. Such infrastructure includes new roads to access gas fields, well sites, drilling equipment, gathering pipelines to collect produced gas from the wells, processing facilities to separate the natural gas from other products, transmission pipelines to transport the gas long distances, and natural gas storage facilities. Of these infrastructure investments, new pipelines have received particular attention among policy makers because they are widespread and essential for transporting natural gas from producing regions to consuming markets.

If the growth in U.S. shale gas continues as projected, the ultimate requirement for new pipelines could be very large. An [INGAA Foundation analysis](#) in 2011 estimated that the cost of new gas gathering and transmission pipelines (including storage), taken together, could average over \$8 billion per year and total over \$200 billion through 2035. Intrastate gas gathering pipelines may account for a substantial share of these new investments. Gathering pipelines in conventional natural gas production are typically smaller than interstate transmission pipelines—usually 20 inches or less in diameter. Lines of this size were expected to account for 45% of planned gas pipeline mileage in the United States in 2013. (*Oil and Gas Journal* (subscription required)) However, due to differences in extraction techniques, gathering lines in some shale gas production exceed 20 inches in diameter and operate at higher pressure. Adding these larger gathering lines to the planned mileage above suggest that gathering lines overall actually may account for well above 50% of new pipeline mileage nationwide during the shale gas expansion.

The construction of shale gas gathering lines has raised safety concerns among federal officials because they may present a greater risk than older gathering lines due to their greater size and pressure, yet they are excluded from Department of Transportation (DOT) safety standards. As a [2011 DOT briefing paper](#) stated, "the framework for regulating gas gathering lines may no longer be appropriate" because the physical characteristics of new shale gas gathering lines were "far exceeding the historical operating parameters of such lines." The [DOT website also states](#),

The lines being put into service in the various shale plays like Marcellus, Utica, Barnett and Bakken are generally of much larger diameter and operating at higher pressure than traditional rural gas gathering lines, increasing the concern for safety of the environment and people near operations.

Unregulated shale gas gathering lines have also become an increasing concern among local governments and the general public in regions with heavy shale gas development.

In August 2011, the DOT published in the *Federal Register* ([76 F.R. 53086](#)) an Advanced Notice of Proposed Rulemaking (ANPRM) to begin examining, among other things, whether new regulations are needed to govern the safety of natural gas gathering lines—with specific reference to shale gas lines. An ANPRM is issued primarily to seek public comment on regulatory changes being considered by the agency. Accordingly, the DOT has accepted written comments on potential rural gathering line regulations (through January 20, 2012). Among other comments, community stakeholders have argued that new safety regulations are needed to take account of increased gathering line size and pressure. Some pipeline operators have countered that gathering lines constructed in rural areas pose a minimal public risk, regardless of size or pressure, and that proximity to population—which already determines the regulatory status of a gathering line—should be the primary consideration. They further have argued that the risk posed by any specific rural gathering line can be reclassified under current

regulations should there be future encroachment of residential development on historically rural tracts where the pipelines had been constructed. Some gas producers are particularly concerned that increased safety costs could cause producers to cease producing from marginally profitable wells, which account for about 10% of U.S. gas production.

The DOT has been considering comments in response to its ANPRM but has not yet proposed any new rules. DOT officials state that the agency does plan to expand its jurisdiction over rural gathering lines, but due to limited resources and the requirements of its rulemaking process, the DOT has not set a deadline for any new rulemaking decisions. If the agency ultimately concludes that new safety regulations for unregulated pipelines are necessary, the DOT would need to initiate another rulemaking process to determine what those new regulations should be. In the absence of DOT rules, states may act to impose their own safety regulations on gathering pipelines within their borders, as long as they do not conflict with any federal requirements.

As the growth in shale gas gathering lines proceeds, related safety issues may become a policy consideration for Congress—especially where both federal and state authority are involved or where the long-term interests of key economic stakeholders do not clearly align. In particular, imposing and enforcing new safety regulations on thousands of miles of previously unregulated pipeline could require more funding for the DOT and state pipeline safety agencies. In addition, because the safety impacts of gathering pipeline expansion are concentrated in areas of the country where shale gas is produced, balancing safety risks in these areas against the economic benefits of shale gas development for the nation as a whole may be an issue for Congress.