

# Are U.S. Federal Reporting Thresholds Adequate to Address an Interdependent Electricity and Natural Gas Grid?

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## Overview

The recent decrease in the price of natural gas in the United States coupled with state policy action to reduce greenhouse gases has increased the use of natural gas for bulk and back-up power generators throughout the country. This increase in natural gas-fuelled electricity generation share has created interdependencies between the electricity and natural gas grids in the United States. Of particular concern to the reliability of the energy grid are possible electricity generator outages caused by natural gas pipeline failures. The North American Electric Reliability Corporation's (NERC) recent reliability assessments acknowledge a lack of comprehensive data identifying natural gas pipeline failures. Here we examine whether current reporting standards for both systems are good enough to determine the risk to power generators from pipeline outages.

## Methods

We conducted a side-by-side comparison of incident reporting standards required by reliability organizations and federal statutes for the natural gas system and the electricity grid. Where possible, we quantitatively compared the numerical thresholds of the reporting requirements of the two systems, and examined the underlying assumptions of the comparison and the results. We highlight areas where standards are compatible and where they are not.

## Results

While reporting thresholds for the electricity and natural gas grids are compatible for comparison in a number of areas (e.g. destruction of a facility or property damage), there are a number of reporting requirements for stakeholders in the electricity grid that do not have a clear corresponding requirement on the gas side. The key areas where reporting thresholds are not aligned that should be addressed concerning the interdependent gas and electricity grids are:

1. Electrical grid operators are required to report a system-wide voltage reduction. But gas pipelines have no requirement to report a reduction in gas system pressure. Significant gas system pressure reduction could adversely affect operation of gas-fuelled power generators in the area regardless of the generator's fuel supply contract status (firm or interruptible).
2. For all natural gas federal reporting requirements to the Pipeline and Hazardous Materials Safety Administration (PHMSA), a release of gas or a hazardous liquid must occur along with another qualifying event such as a death or large property loss to trigger a mandatory report. This potentially allows reliability events on gas pipelines that do not result in a release of gas or liquid to go unreported.
3. Reporting requirements for electric reliability events identify specific numerical thresholds for loss of generation and transmission capacity, whereas gas event thresholds do not.

And,

4. The last threshold required for PHMSA reporting states: "An event that is significant in the judgment of the [gas system] operator, even though it did not meet the criteria of [the previous thresholds specified in] this definition" must be reported. This regulatory language is unclear as compared to the more explicit reporting standards for the electricity grid event reports.

## Conclusions

Overall, the federal reporting thresholds for electricity system operators are both more stringent and more clearly specified than for gas system operators. To properly manage an increasingly interdependent gas and electricity system, the federal reporting thresholds for natural gas pipeline incidents should be updated to better align with the electricity standards. We recommend additional federal natural gas incident reporting standards for pipeline systems with active firm supply contracts with power plants. These standards should be based on gas power plant heat rates and updated periodically as technology advances. We suggest that gas pipeline operators with firm service contracts to serve power plants of over 20 MW nameplate capacity should report events that reduce the pipeline's ability to serve the plant by 25,000 standard cubic feet per hour (scf/h). Pipelines with firm service contracts in place to serve power plants with nameplate capacity of 20 MW or less should report events that reduce the pipeline's ability to serve by 900 scf/h. Furthermore, both the Pipeline and Hazardous Materials Safety Administration (PHMSA) and the North American Electric Reliability Corporation (NERC) should provide guidance to the government in order to clarify what "an event that is significant in the judgment of the [gas system] operator" should include for natural gas pipeline incident reporting.