The Peoples Gas Light and Coke Company (Peoples Gas) is the local gas utility in the Chicago area. The company serves more than 878,000 customers and operates more than 4,500 miles of gas pipeline in its service territory.

In 2017, Peoples Gas entered into a settlement with the Illinois Citizens Utilities Board (CUB) and the Environmental Defense Fund to incorporate a pilot program for advanced gas leak detection into the company’s System Modernization Program (SMP). The pilot was approved by CUB in January 2018 and was deployed in the field later that year.

Peoples Gas selected ABB’s MobileGuard™ gas leak detection system for the pilot project. The vehicle-based system consists of ABB’s LGR-ICOS™ methane/ethane analyzer, a global positioning system unit, a sonic anemometer and innovative software capable of leak detection, mapping, and emissions quantification.

More sensitivity, more range
Prior to acquiring MobileGuard, Peoples Gas’ leak detection technologies included a remote methane leak detector (RMLD), vehicle methane leak detector (VMLD), and combustible gas indicator (CGI). The RMLD detects gas up to 100 feet away and reports in parts per million-meter (ppm-m). The VMLD is mounted to a vehicle and has a range of 1.0 – 1,000 ppm/m with a sensitivity of 0.1 ppm. It offers real-time detection and logging with GPS data. The CGI incorporates an advanced, low power, semiconductor sensor and has a range of 0 – 2,000 ppm with a sensitivity of 1 ppm or 10 ppm. The handheld CGI is used by Peoples Gas personnel to pinpoint gas leaks during leak investigations.

By contrast, MobileGuard provides sensitivity in the single parts per billion and a range of up to 600 feet. The system is fast, allowing leak surveys to be performed at normal driving speeds and it reports both methane and ethane to eliminate false positives. Most importantly, the system combines measurements of gas concentrations, locations, and wind velocity to determine the source location and relative size of natural gas leaks and displays the results onto Google Earth maps. This data is then incorporated into the user’s geospatial information system (GIS) for analysis.

Chicago’s natural gas provider cuts methane emissions while boosting gas pipeline safety with innovative leak detection.
Recently released HoverGuard™ is a drone-based version of ABB’s leak detection system.

Putting the data to work
The ability to pinpoint source of emissions allows Peoples Gas to screen out other (non-pipeline) sources of methane and estimate the amount of lost gas over time, something not possible with other technologies. Additionally, the ability to quantify the impact of replacement programs on methane emissions using actual field measurements offers a compelling alternative to relying on industry averages by pipe size. The technology has enabled Peoples Gas to use data to make construction planning decisions, which can help reduce methane emissions faster when those planning decisions are incorporated into the SMP.

Results of surveys conducted in 2018 allowed Peoples Gas to prioritize mitigation activities in 2019 and results from 2019 surveys assisted 2020 prioritization, a process that will continue going forward. In 2020, the company returned for the first time to neighborhoods that had been surveyed before leak mitigation work began and found post-construction that emissions had been virtually eliminated (reductions of 95 to 100 percent).

“Peoples Gas’ first priority when planning construction is safety, but we can overlay additional information gained from the advanced leak detection and quantification technology to prioritize neighborhoods with greater emissions and at higher risks,” says Mark Kinzle, Director of Operations Strategy and Performance.

Next steps
Peoples Gas plans to continue using MobileGuard going forward and in fact has requested to terminate the pilot program one year early in order to move directly to incorporating the technology into its SMP. Peoples Gas is also exploring other use cases such as uprating gas mains and large-scale foreign odor evaluation.