

APPLICATION BRIEF

The Picarro natural gas asset management system pinpoints leaks where traditional survey equipment sometimes fails to accurately do so. Often such leaks have extended migration patterns (in some cases several hundred feet) due to substructures such as sewers, conduits or porous soil. By quickly surveying an entire neighborhood with the Picarro system, a holistic view of all sources of methane in the area quickly provides data and enables survey technicians to hone in on the exact location of the leak rather than being overwhelmed by leak indications within or on the edges of the migration pattern. Examples of hard-to-discover leaks include leaks in the middle of freeways or other large areas covered by concrete, leaks migrating into sewers, leaks migrating across roads through drainage culverts and leaks traveling extended distances along mains before emerging into the atmosphere.

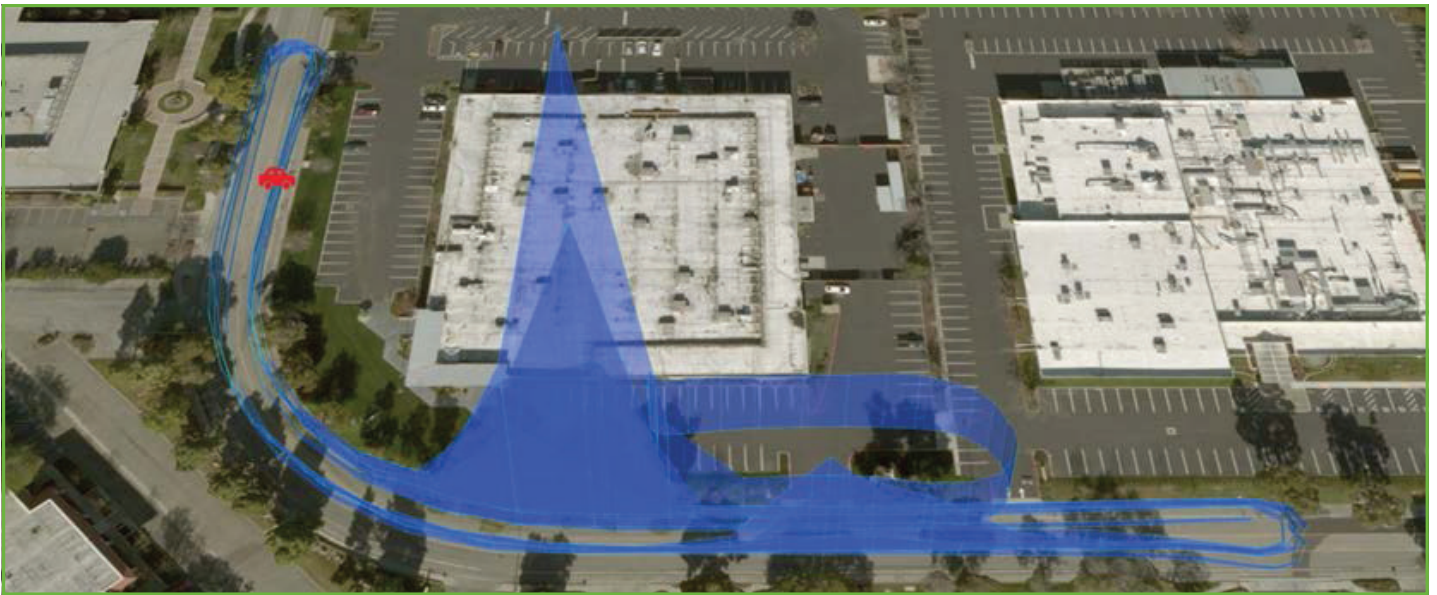


Figure 1. Picarro's "curtain view" used to pinpoint exact leak locations for hard-to-find leaks.

The Protocol used in pinpointing hard-to-find-leaks varies to suit the particular geography and gas asset details. Typically, the area is driven with the Picarro system a number of times (day or night) in the vicinity of the suspected leak. Driving continues in a spatial pattern radiating outwards from a starting point and continuing outward until the number and relative intensity of the leak indication markers produced by Picarro begins to decrease. By starting the leak investigation at the indication with the highest amplitude, the actual source of the leak can often be determined.

PG&E Leak Pinpointing Use Case Examples

The first example is one where the Picarro system was deployed to help pinpoint a troublesome grade-2 leak. Crews had attempted to locate and repair this leak five times, each time resulting in dry holes without finding the leak. Picarro was quickly able to pinpoint the location with the highest methane readings in the area. The Picarro

leak indication was investigated on foot as well, and confirmed 100% gas was venting out of a hole on the side of the street. Within minutes, Picarro source discrimination capabilities confirmed this to be natural gas (not sewer gas or other methane source). Once the gas had a chance to vent, the Picarro system was used to pinpoint the most likely leak location. The crew found the leak precisely where Picarro had indicated and was able to find and fix the leak.

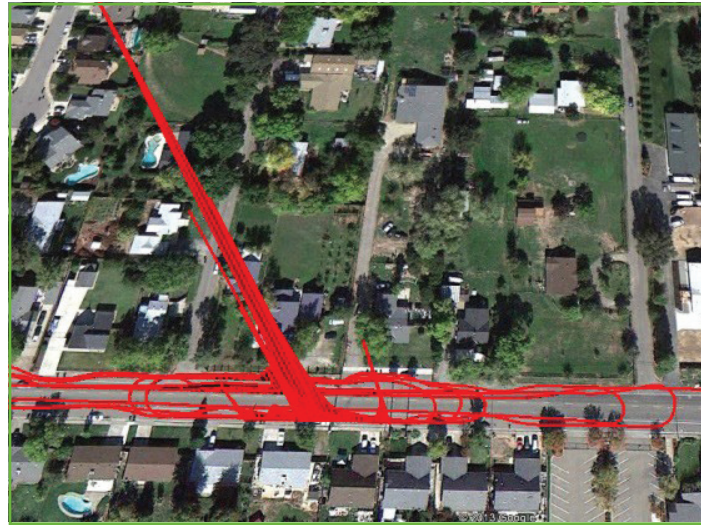


Figure 2. Picarro system visualization output used to locate a leak.

In another example, the Picarro system was brought in to assist with a leak that had been reported but not located. Within two hours, the leak had been pinpointed by the Picarro system at a location 600 feet from the original reported leak location, and Picarro’s source discrimination capabilities confirmed within minutes that it was natural gas. Days of chasing the leak, drilling and digging dry holes and sending samples into the lab to confirm it was natural gas were avoided.

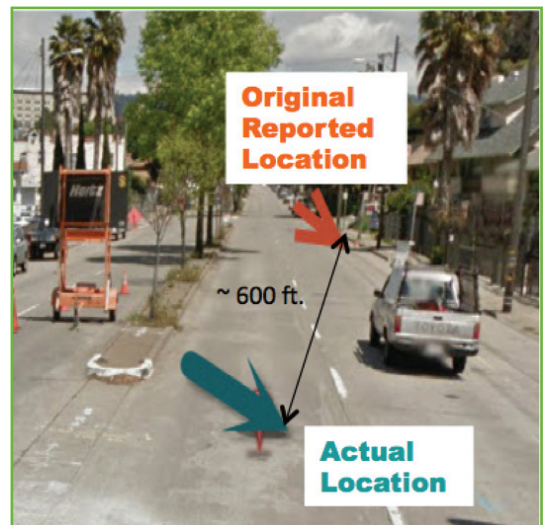


Figure 3. Picarro leak indications and leak location.