

### Our goal...

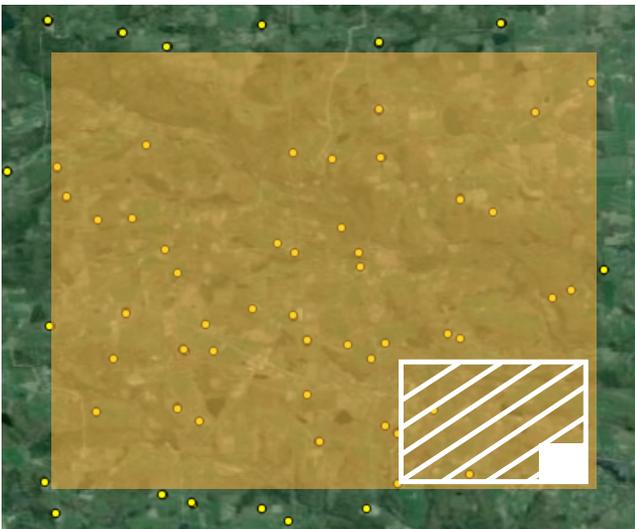
...is to minimize the total volume of fugitive methane emissions in the most cost-effective way possible. This means finding big leaks frequently, rather than finding every leak occasionally.

### We provide data.

No hardware, training, or labor. Our optical, georeferenced maps show areas of methane emission pinpointed and sized. We price on a per-well or per-acre basis, scaling easily to the needs of large or small operators.



### SINGLE DAY AREA CAPACITY



Marcellus Shale well pads shown in yellow

### Hybrid Approach Saves More Time, More Money, And More Methane

Frequent aerial surveys plus targeted follow-up ground inspections are cost-efficient and environmentally effective. Sources are often remote and far apart, and most are not emitting significant amounts of methane. Sending crews to every source wastes the time of valuable engineers at significant cost to operating budgets and to the environment.

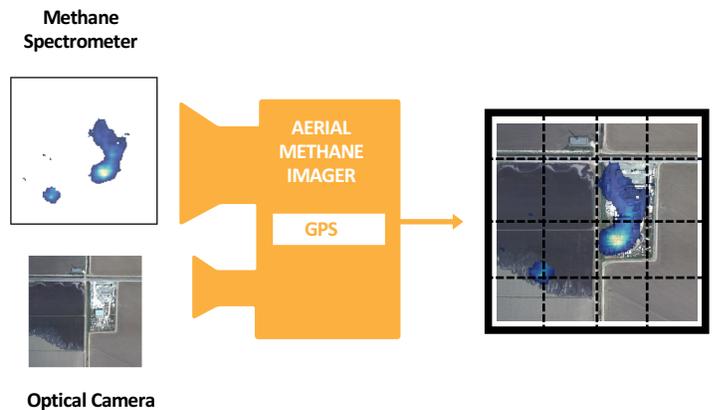
**High-speed, low-cost flights over wide areas allows more frequent surveys, so large emissions are stopped faster for a greater impact.**

#### Highly specific to methane

Our instrument combines an optical camera for visual verification, a patented spectrometer that measures methane, and a GPS and inertial monitoring unit to record precise positions.

#### Direct source identification

We produce direct images of plumes, overlaid on simultaneously captured optical imagery. This allows us to distinguish between separate point sources of methane.

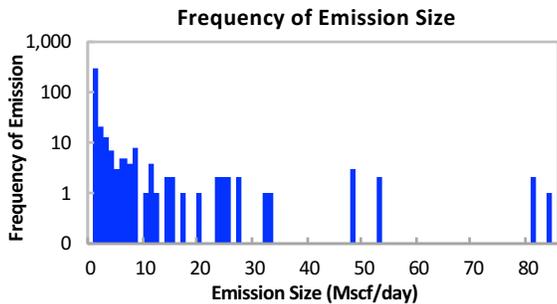


**At Kairos Aerospace, we aim to be the bridge between smart, effective policy and rapid industry adoption.**

Our aerial methane detection service, LeakSurveyor, can detect 80% of fugitive methane emissions volumes, while lowering what companies are currently spending on leak detection and repair.

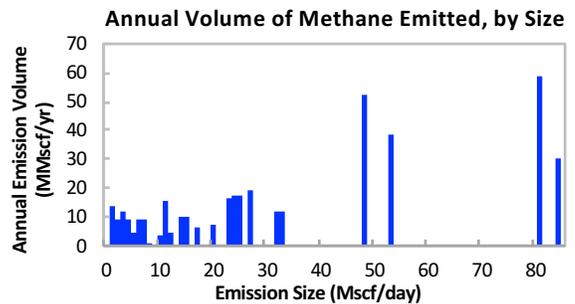
# The Distribution of Emission Sizes Is Skewed, And The Few Largest Emissions Have An Outsized Impact.

The majority of fugitive methane emissions are very small. In the data set shown below, there are 300 leaks <1 Mscf/day and three >50 Mscf/day.



Analysis based on data from a BCOG study of capped well leaks.

But the amount of gas released from a single large emission in one day equals that from a small emission over an entire year.



## Lower Emissions Nationwide

### 80% reduction in fugitive methane emissions

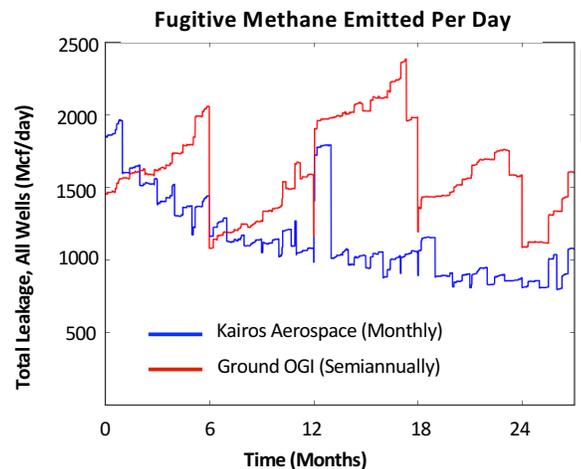
Extensive simulations show the impact of Kairos instruments deployed nationwide. The chart to the right shows that monthly Kairos surveys paired with repairs reduce fugitive methane emissions volume by ~80%.

### Rapid deployment at scale

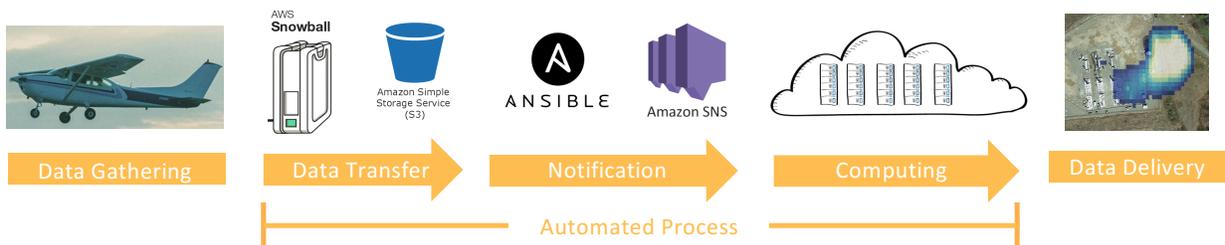
Kairos can scale to survey the entire country's oil and gas infrastructure monthly by the year 2018. Our modern "big data" analytics pipeline, depicted below, immediately, automatically, and uniformly processes data we collect into usable form.

### Reducing more methane for less money

Each Kairos survey is orders of magnitudes less expensive than a ground-based inspection, making more frequent surveys more cost-effective than sensitive, infrequent surveys.



Based on the Fugitive Emissions Abatement Simulation Testbed model developed by Chandler Kemp and Adam Brandt.



## Performance Specifications

**Architecture:** Simultaneous methane & high-res optical imaging  
**Detection method:** Aerial absorption spectroscopy  
**Measured value:** Absorption depth of methane lines  
**Computed values:** Concentration and leak rates  
**Sensitivity:** 2500 ppm-m / 50 Mscf/day  
**Calibration:** Software continuously monitors performance

**Coverage:** 50 sq mi/day/plane  
**Data turnaround:** 3 days (methane); 1 week (optical)  
**Power source:** On-board battery (6 hrs)  
**Altitude:** 3,000 ft.  
**Emission Size Precision:** ±25%  
**Ground resolution:** 3 ft. (methane); 20 ft. (optical)  
**Weather:** As a service provider, Kairos handles operations and ensures performance in all conditions