



THE EMERGING U.S. METHANE MITIGATION INDUSTRY

Datu Research
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This research was prepared on behalf of Environmental Defense Fund:

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Datu Research provides economic analysis to inform strategies to protect natural resources, improve food security, and develop local economies.

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Companies and Policy Views: Inclusion of company names in this report does not imply a position on federal or state policies regarding methane emissions.

None of the opinions or comments expressed in this study are endorsed by the companies mentioned or individuals interviewed. Errors of fact or interpretation remain exclusively with the authors. We welcome comments and suggestions.

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Executive Summary

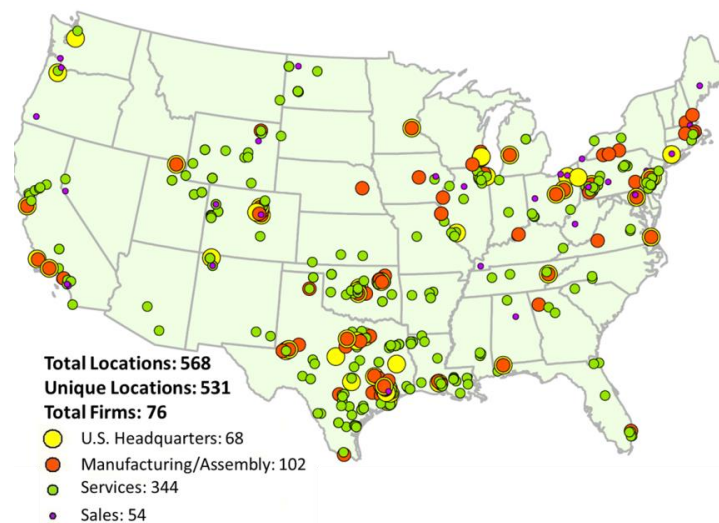
Methane is a powerful greenhouse gas. Over 20 years, each molecule of methane has 84 times the climate change potential of a molecule of carbon dioxide (IPCC 2013). The U.S. oil and natural gas system, including the production, gathering and processing, transmission, and distribution of natural gas, is the nation's largest industrial source of methane emissions (EPA 2014b). Methane emissions also present an economic challenge for the oil and gas industry. Total methane emissions across the oil and gas sector are estimated to be worth \$1.8 billion.¹ To help the oil and gas industry meet these challenges, dozens of companies from different backgrounds have developed technologies and services to reduce methane emissions. The result is a new and rapidly emerging methane mitigation industry.

Historically, many of the companies highlighted in this report have operated in broader markets as makers of valves or pneumatics or sealing technology. As the importance of controlling methane emissions from oil and natural gas production increases in the United States and internationally, these firms have an opportunity to grow, speak with one voice, and evolve to provide the oil and gas industry further solutions to address methane challenges.

The purpose of this national economic assessment is to identify and exhibit the companies that provide methane mitigation technologies and services. The following is a summary of our findings:

- At least 76 firms manufacture methane mitigation equipment in the U.S and/or offer services
- 59% of methane mitigation firms qualify as small businesses
- Methane mitigation companies provide U.S. jobs in at least 531 locations across 46 states
- The methane mitigation industry employs at least 30 key job types
- The median hourly wage for the industry is \$30.88, compared to \$19.60 for all U.S. jobs

U.S. map of employee locations in the methane mitigation industry²



¹ Per the EPA's 2014 emissions inventory of 7.7m metric tons, multiplied by the 12-month average Henry Hub gas price from August 2013-September 2014 per the EIA of \$4.38/mcf.

² Visit www.edf.org/methanejobs to explore an interactive map with the location and distribution of methane mitigation industry firms.

Introduction

Methane is a powerful greenhouse gas. Over 20 years, each molecule of methane has 84 times the climate change potential of a molecule of carbon dioxide (IPCC 2013). The U.S. natural gas system, including the production, gathering and processing, transmission, and distribution of gas, is the nation's largest industrial source of methane emissions (EPA 2014b). Methane, the primary component of unburned natural gas, can emanate from a variety of sources along the natural gas supply chain, including equipment designed to release methane as a matter of mechanical operation (i.e. venting) and from unintended leaks throughout the system (i.e. fugitives).

The Environmental Protection Agency (EPA) estimates 29% of all industrial U.S. methane emissions can be linked to oil and natural gas production (EPA 2014b). While the US natural gas system is already a significant source of emissions, there is potential for emissions to grow. The U.S. Energy Information Agency (EIA) forecasts U.S. production of natural gas to grow significantly in coming years, rising 56% from 2012-2040 (EIA 2014). ICF International expects emissions to rise 5% by 2018 (ICF International, 2014).

Methane emissions also present an economic challenge for the industry. Scientific studies have found a range of emission rates showing that 1-10% of U.S. natural gas is lost to the atmosphere before reaching the end consumer (Allen 2014), costing the oil and gas industry billions of dollars every year in lost revenue (ICF International 2014). Finding ways to reduce this loss presents an opportunity for the oil and gas industry and the firms that manufacture and provide methane mitigation technologies and services.

At least two recent reports have identified proven technologies and services that can greatly reduce methane emissions, and in some cases, increase profits for oil and gas companies (ICF International 2014). Some companies in the oil and gas industry have started adopting these technologies. Full industry adoption could result in an estimated 40% reduction in onshore methane emissions, saving the U.S. economy and consumers \$100 million each year (ICF International 2014).

Historically, many of the companies highlighted in this report have operated in broader markets as makers of valves or pneumatics or sealing technology. As the importance of controlling methane emissions from oil and natural gas production increases in the United States and internationally, these firms have an opportunity to grow, speak with one voice, and evolve to provide the oil and gas industry further solutions to address methane challenges.

The purpose of this national economic assessment is to identify and exhibit the companies that provide methane mitigation technologies and services. Our research finds at least 76 firms that manufacture the equipment and/or provide services at over 500 U.S. employee locations. These companies make up an emerging U.S. methane mitigation industry, providing innovative and proven solutions to help the oil and gas industry protect the environment and reduce costs.

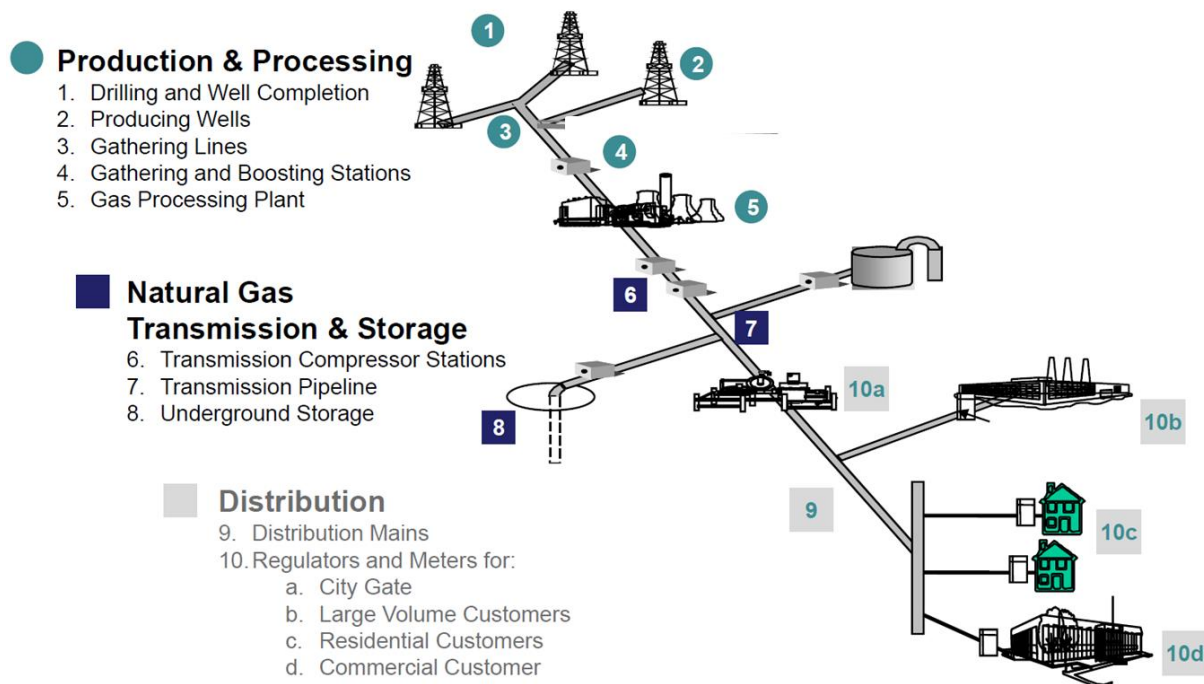
Companies and Policy Views: Inclusion of company names in this report does not imply a position on federal or state policies regarding methane emissions.

Methane Emission Reduction Technologies in the Oil and Gas Sector

Methane emissions occur in all segments of the natural gas supply chain, which consists of three stages: production and processing, transmission and storage, and distribution (see Figure 1). Production and processing occurs at or near the site of the well. In this phase, companies drill, build (or “complete”) and operate wells to produce natural gas. Once the gas is produced, compressors gather and “boost” it, sending it to plants where it is processed before moving to the next phase. In the transmission and storage phase, a series of compressors move the gas from the well site through pipelines to customers or storage facilities. Distribution occurs in the end market area, where natural gas is delivered to end users of various sizes.

Methane emissions in the supply chain occur in two ways—vented emissions and fugitive emissions. Vented emissions are intentional and occur by product and/or process design. Fugitive emissions are unintentional, primarily in the form of leaks. Both types of emissions occur in all phases of the natural gas supply chain.

Figure 1. Three stages of the natural gas supply chain



Source: (EPA 2014a)

There are many ways to reduce both vented and fugitive methane emissions in all phases of the natural gas supply chain. The major available methane control technologies and services are summarized in Table 1.

Table 1. Methane mitigation technologies: 8 categories

Technology	Supply Chain Segment	Source of Emission
1. Leak Detection Technologies and Services	All	Leaks
2. Rod-Packing and Dry Seal Replacement	All ³	Compressors
3. Low-Emissions Valves	All	Valves
4. Low/No-Bleed Pneumatic Controllers	All	High-bleed pneumatic devices
5. Solar and Electric Pumps	Production & Processing	Pneumatically-driven Pumps
6. Reduced Emissions Completions ("Green Completions")	Production	Well Completions
7. Plunger Lifts & Velocity Tubing	Production	Liquids Unloading
8. Vapor Recovery Units (VRUs)	Production & Processing	Vent lines and storage tanks

The following section discusses these technologies in greater detail, providing information on the number of firms that manufacture each technology and the number of U.S. employee locations.

1. Leak Detection Technologies and Services

Source of Emission: Fugitive emissions from wells, pipelines, seals, valves	
Number of Tech Firms	10
Number of Tech Employee Locations	33
Number of Service Firms	6
Number of Service Employee Locations	30

Infrared Camera



Source: Flir

TDLAS Detector



Source: Heath Consultants

³ There are no compressors in the distribution segment. However, many distribution utilities use compressors which technically operate in the transport and storage segment.

Leak Detection Technologies

Leak detection technologies can identify fugitive methane leaks that occur at several points along the natural gas supply chain. Each potential source of emission—wells, pipelines, compressors, valves, or seals—hosts numerous points of potential leakage. Improvements in leak detection technologies enable users to more quickly and precisely locate leaks, allowing oil and gas firms to improve safety and save money from lost product.

The two most commonly used leak detection tools are infrared (IR) cameras and tunable diode lasers. An IR camera is an optical gas imaging technology that uses infrared light to identify methane emissions, which are invisible to the human eye. Because methane emissions absorb infrared light in a particular wavelength, IR cameras are able to convert methane emissions into a moving image that can be witnessed in real time (EPA 2003). Tunable diode laser absorption spectroscopy (TDLAS) uses a laser beam to measure a specific gas that crosses its path. Like IR cameras, TDLAS cameras identify methane by its particular light absorbing properties. Both technologies can be handheld for conducting routine inspections, or mounted permanently to monitor facilities.

Leak Detection and Repair Contractors

Many oil and gas companies find it cost effective to outsource leak detection and repair (LDAR) services. LDAR contractors specialize in using leak detection equipment to quickly identify leaks at natural gas production, processing, transmission and distribution facilities. It is estimated that by implementing quarterly LDAR programs, oil and gas companies could reduce methane emissions by up to 60%, for a total of 5.6 Bcf of methane per year (ICF International 2014).



Source: Heath Consultants

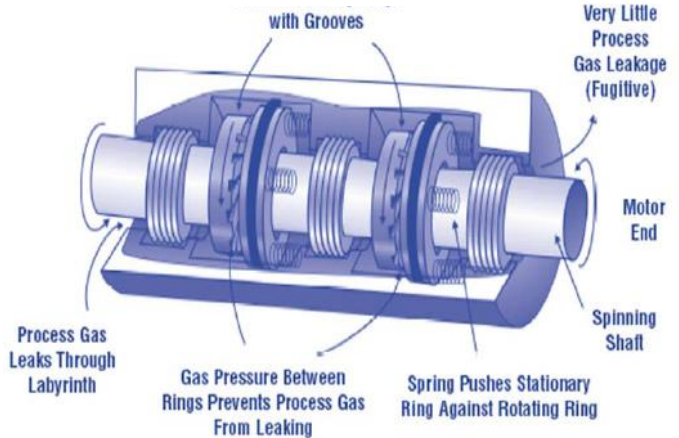
2. Rod Packing and Dry Seal Replacement

Source of Emission: Fugitive leaks from compressor seals	
Number of Firms	13
Number of Employee Locations	157

Seals in the compressors used to pressurize and transport natural gas are another source of fugitive methane emissions. Two types of seals are responsible for methane emissions: wet seals used in centrifugal compressors, and rod packing seals used in reciprocating compressors.

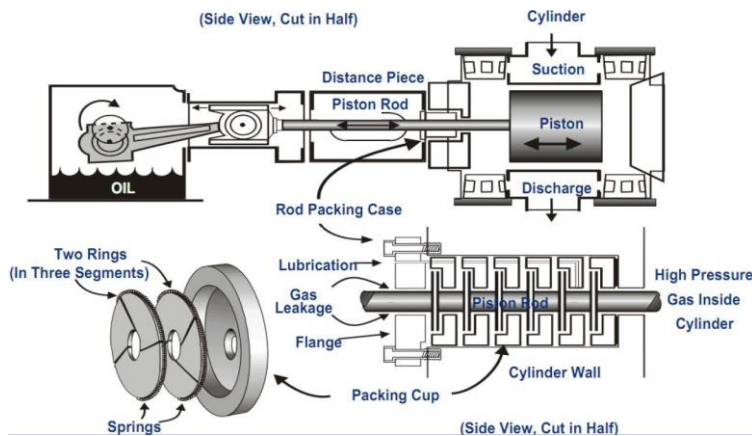
Wet seals in centrifugal compressors use oil or another liquid to prevent leakage. Over time, the liquid absorbs considerable quantities of gas, which are then vented into the atmosphere. Wet seals can leak up to 200 standard cubic feet per minute (scfm), costing firms hundreds of thousands of dollars per year (EPA 2006b). To avoid these emissions and save money, oil and gas companies can replace wet seals with dry seals, which use mechanical sealing technologies to eliminate the need for liquid. Replacing wet seals with dry seals can pay for itself in as little as eleven months (EPA 2006b).

Dry Seals



Rod Packing Seals

Rod packing seals surround the piston rods in reciprocating compressors and prevent gas from escaping. Over time,



these seals become worn from use and begin to leak methane. Oil and gas companies can reduce these emissions and save money by replacing rod packing seals on a regular schedule. Worn rod packing seals can leak up to 900 scfm, costing firms hundreds of thousands of dollars a year (EPA 2006c).

3. Low-Emission Valves

Source of Emission: Fugitive emissions from wells, compressors and pipelines	
Number of Firms	6
Number of Employee Locations	65

When the pressure of natural gas surges to unsafe levels, pressure release valves (PRV) open to vent excess gas. PRVs are used in many parts of the natural gas supply chain, including wells, compressors and pipelines. Over time, the valve seat—where the valve rests when not open—wears down and/or becomes clogged with debris and begins to leak gas. Oil and gas companies could reduce these emissions and save money by implementing a regular PRV screening and replacement program, and

replace old PSVs with EPA-certified low-leaking valves, guaranteed to leak less than 100 ppm for five years (Boyson 2012).

Fugitive methane leaks from PRVs can be substantial, costing oil and gas companies hundreds of thousands of dollars. A single PRV can leak over 35,000 Mcf/year⁴, a value of nearly \$110,000 at \$3/Mcf (EPA 2011a). The losses compound quickly with additional faulty PRVs. In a recent EPA test program, one oil and gas company identified a faulty PRV rate of 25% during a single inspection (EPA 2011a).



4. Low/No-bleed Pneumatic Devices

Source of Emission: Vented emissions from high-bleed pneumatic devices	
Number of Controller Firms	11
Number of Controller Employee Locations	71

A pneumatic device is any apparatus that uses energy from pressurized gas to operate mechanical devices. In the natural gas supply chain, where in many places electricity is not available, pneumatic devices use pressurized natural gas to maintain a process condition, such as temperature, liquid level, or gas flow and pressure. The two pneumatic devices relevant to natural gas supply are pneumatic controllers and pneumatic pumps.

Pneumatic controllers, such as regulators, controllers, and valve actuators, vent gas continuously or intermittently to modulate a process control device. Pneumatic controllers, categorized by level of gas they vent or “bleed,” include high-bleed devices (>6 scf/hr)⁵ and low-bleed devices (<6 scf/hr) (ICF International 2014). In facilities with electricity, pneumatic controllers can be configured to run on compressed instrument air rather than the natural gas line, making them no-bleed devices.

Low-bleed pneumatic controller



Source: [Wellmark](#)

⁴ Mcf=1,000 cubic feet

⁵ Scf/hr = standard cubic feet per hour

Oil and gas companies can reduce methane emissions significantly by replacing high-bleed devices with low or no-bleed devices. According to the 2014 ICF report, in the production segment, low-bleed devices account for nearly half of the emissions reductions thought to be possible (ICF International 2014).

5. Solar and Electric Pumps

Source of Emission: Vented emissions from pneumatic pumps	
Number of Pump Firms	8
Number of Pump Employee Locations	25

Two types of pneumatic pumps—chemical injection pumps and glycol pumps—are sources of vented methane emissions. Chemical injection pumps are used to maintain gas wells by injecting methanol and other chemicals. In sites without access to electricity, the injection pumps are pneumatically-driven, powered with the pressure of natural gas. Once the gas pressure finishes driving the pump, it is released into the atmosphere. Oil and gas companies could prevent up to 4.8 billion cubic feet per year (Bcf/yr) in methane emissions by replacing pneumatic injection pumps with solar powered pumps (ICF International 2014).

Pneumatically-driven glycol pumps are used at well sites or collection points to remove liquids. Solar-powered pumps are not strong enough to provide a replacement for glycol pumps. However, replacing pneumatically-driven glycol pumps with electric pumps at

Solar-powered pump



Source: Txam Pumps

Electric glycol pump



Source: Kimray

sites with stable electricity can prevent substantial quantities of methane emissions, making this the most profitable methane control measure in ICF's 2014 report, with a potential savings of \$4.05 per Mcf (ICF International 2014).

6. Reduced Emissions Completions (“Green Completions”)

Source of Emission: Vented emissions from wells	
Number of Firms	3
Number of Employee Locations	74

To hydraulically fracture a well, natural gas companies drill into the ground to areas where gas is trapped between layers of shale rock or other tight geological formations. They then inject large amounts of highly-pressurized liquids and propellant to fracture the shale rock and release the gas. Before routine production can begin, excess fracturing fluid and produced water must be removed from the well. During this process, a significant quantity of methane escapes into the atmosphere. Firms started using reduced emissions completions (REC)—also called green completions—to capture natural gas during the completion stage. REC equipment is brought to the well to separate the gas and send it to the sales line where it can be sent to market. A recent study from University of Texas showed that using RECs can reduce emissions from completions by 99% (Allen et al. 2013). Once the completion is finished, the REC equipment is removed, and the well is connected directly to the sales line (EPA 2011b). Instead of purchasing their own equipment, many oil and gas companies prefer to hire third-party operators to assist with a completion (EPA 2011b).

Under the New Source Performance Standards, RECs are required for new gas wells. However, they are not required for hydraulically fractured oil wells that may also emit methane during the completion stage (EPA 2011c).



Source: (COGCS 2008)

7. Liquids Unloading: Plunger Lifts and Velocity Tubing

Source of Emission: Vented emissions from wells	
Number of Firms	18
Number of Employee Locations	183

Plunger lifts and velocity tubing are used increase efficiency in older wells, but have the added benefit of reducing methane emissions. After a year or two of operation, accumulating liquids in the well shaft can impede a well's productivity. The most common way to remove these liquids,

called a "blowdown," is to simply open the well, allowing the gas under pressure to push the liquids out. Blowdowns often release substantial quantities of methane into the atmosphere, emissions that can be greatly reduced by two technologies: plunger lifts and velocity tubing.

Plunger Lifts

A plunger lift is an automated device attached to the surface of a well, designed to restore productivity by removing accumulated liquids. On

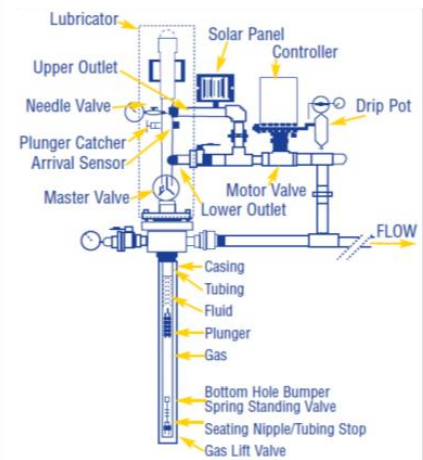
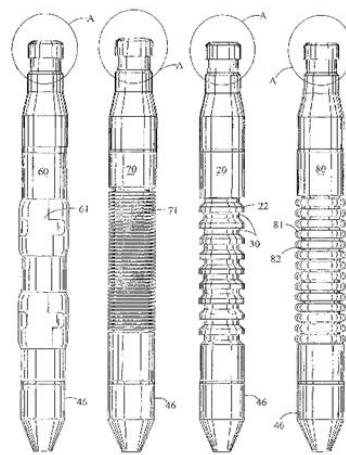
scheduled intervals, the plunger lift drops a long cylinder into the well to separate the liquids from gas, letting the liquids rise while the gas accumulates and builds pressure below. Once sufficient liquid has been gathered above the cylinder, gas pressure lifts the device to the surface where the liquid is removed and gas is diverted into the sales line.

By increasing well productivity and reducing emissions, plunger lifts are cost-effective. On average, plunger lifts save 18,250 Mcf of gas each year per well, valued at up to \$127,750 (EPA 2006d).

Velocity Tubing

Also known as velocity strings, velocity tubing provides another means to increase well productivity while reducing methane emissions. Essentially a long, coiled tube, usually 1"-3 ½" in diameter, velocity tubing is inserted into the well to reduce the well's diameter (Koperna Jr. 2004). As the well's diameter is reduced, the velocity of produced gas increases, pushing the liquids up and out of the well without releasing methane (EPA 2011d).

Plunger Lifts



Source: (EPA 2006b)

Velocity Tubing



8. Vapor Recovery Units

Source of Emission: Vented emissions from oil storage tanks; Equipment vent lines	
Number of Firms	10
Number of Employee Locations	29

Vapor recovery units (VRUs) are used to collect gas vapors from crude oil and natural gas storage tanks. During periods when crude oil and natural gas are stored, waiting for available pipeline or trucking for transport, methane vaporizes and collects in the space between the liquid and the top of the tank. These emissions are then typically vented or flared. With VRUs, potential emissions are instead captured for on-site generators or compressed into a sales pipeline. VRUs can thus save individual oil and gas companies hundreds of thousands of dollars each year (EPA 2006a). One constraint in using VRUs is they require electricity, which is not available at all storage sites. Low production volumes at certain well sites may also make their use uneconomical.



Source: Tescorp

Company Profiles

John Crane

Sealing devices play a vital role in a wide array of industries when transporting or processing oil, gasses, chemicals and other fluids. In the oil and gas industry, mechanical seals can help reduce fugitive emissions of methane.

Founded as the Crane Packing Company in 1917, John Crane has researched and developed sealing solutions, including the design of the first ever automotive mechanical seal and the introduction of the Type 28 non-contacting, gas-lubricated seal.

Approaching its 100th year in the industry, the company continues to engineer and manufacture products for a global customer base of energy service providers and other major process industries. John Crane currently offers a range of mechanical seals and sealing support systems, bearings, power transmission couplings, filtration systems and artificial lift equipment. In the US, John Crane is a market leader in manufacturing mechanical seals that can help reduce fugitive emissions from vital applications.

Company Quick Facts

Headquarters: Chicago, IL

Founded: 1917

Total Employees: 6,900 worldwide; 2,000 U.S.

Number of locations: 43 U.S. locations

Website: www.johncrane.com



different countries worldwide.

John Crane's engineering department continues to develop solutions to meet their customers' growing processing demands, while reducing their environmental impact and improving efficiency. In March 2014, John Crane was awarded both a U.S. and a European patent for its gas seal monitoring technology, which will further improve product performance and lifespan and continue to reduce emissions from oil and gas operations.

John Crane has 6,900 employees worldwide – about 2,000 based in the United States – and global revenues in excess of \$1.5 billion in 2013. Headquartered in Chicago, IL, John Crane has manufacturing and service facilities across the United States, including locations in Morton Grove, IL, Swedesboro, NJ, Grafton, WI, Baton Rouge, LA, Tulsa, OK, Cerritos, CA, and Pasadena, TX. Beyond the U.S., John Crane has more than 230 locations in over 50

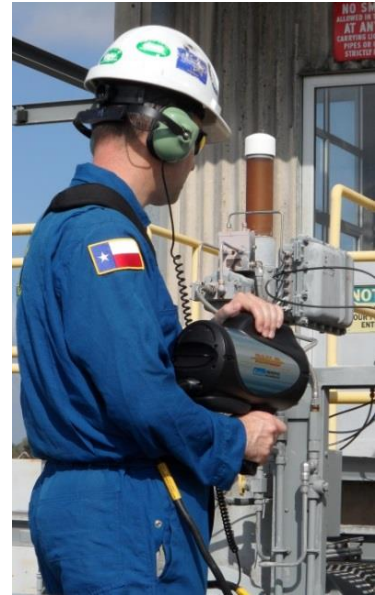


Heath Consultants Incorporated

Texas-based Heath Consultants Incorporated has more than 80 years of experience providing solutions to address methane leaks from the natural gas industry. Since its inception in 1933, the company has grown from a small consulting firm to a national leader in methane detection.

Founded by Milton Heath, Sr., the company started out providing vegetation surveys that could help locate natural gas leaks. The company made its first major expansion when it started developing a product line of methane detection systems to meet evolving demand from a variety of gas suppliers. The company now designs, manufactures and sells sophisticated technologies to identify fugitive methane emissions, such as the Remote Methane Leak Detector (RMLD-IS[®]), which uses tunable diode laser spectroscopy to find leaks. Capable of detecting leaks up to 100 feet away, the RMLD-IS[®] saves time for field technicians inspecting and servicing natural gas pipelines. Other tools, like the Hi Flow Sampler™, measure natural gas concentrations to calculate leak rates, allowing operators to determine the quantity of methane being leaked from natural gas facilities.

The company expanded again when it developed Heath's Services Business Unit, providing a range of leak detection services to



Company Quick Facts

Headquarters: Houston, TX (~100 employees)

Founded: 1933

Total Employees: >1,200

Number of locations: 32

Website: www.heathus.com

upstream, midstream, and downstream oil and gas companies. Heath technicians stationed around the country conduct leak field audits for clients using mobile, aerial, and portable methane detection technologies. Heath also provides industry training programs to help oil and gas companies screen and quantify methane emissions so they can comply with

federal regulations. These training programs have helped companies improve safety and manage lost and unaccounted for gas.

Now in its third generation as a family-owned company, headed by Carolyn Heath Haag, Heath employs more than 1,200 workers and has annual revenues exceeding \$100 million. The organization recently expanded its operations with a new 20,000 square foot manufacturing facility site in Texas and the creation of a new sales division focused on upstream and midstream customers. The latest expansion allows Heath to continue to help the oil and gas industry mitigate methane emissions.

Heath has experienced significant growth in recent years due to an increase in U.S. natural gas production and a trend among some oil and gas companies giving higher priority to methane detection and capture. A full-service company with the adaptability to keep pace with shifting customer needs, Heath Consultants Incorporated is well poised for continued growth.

Tescorp

Small business has long played an essential role in building Oklahoma's energy industry—first as a state with deep roots in oil production, and now as the state develops its abundant natural gas reserves. Tulsa-based Tescorp is a small yet well-established firm with over 25 years of experience manufacturing innovative technologies to safely and efficiently transfer hydrocarbons and industrial gases from oil and gas production.

Vince Thomas founded Tescorp in 1987 to help oil and gas producers recover costs by using specially designed gas capture equipment to reduce leakage during routine operations in and around well sites. One of the company's most important products is the Vapor Recovery Unit (VRU). VRUs safely capture, handle, and store valuable gasses like methane that escape into the air during oil and gas production. In recent years, VRUs have gained more prominence in response to a greater focus on measures to reduce Volatile Organic Compounds (VOCs), a co-pollutant with methane from natural gas production that contributes to ozone formation.

Tescorp's success in Oklahoma and other major oil-and-gas producing states is largely attributed to the company's ability to customize its products. Tescorp designs each device and service plan specifically to meet the operator's needs. Whether the operator wants to collect VOCs, methane or other industrial gasses, Tescorp's custom-built systems allow the operator to overcome challenges and improve efficiency. By working with companies to develop unique gas recovery devices, Tescorp also helps operators comply with regulations and avoid shut downs that could result in millions of dollars in lost revenue.



Company Quick Facts

Headquarters: Tulsa, OK

Founded: 1987

Total Employees: 32

Number of locations: 3

<http://www.tescorp.com/>

"Tescorp is known for engineering solutions where off-the-shelf products will not work," according to Justin Little, Engineer. "It's why the company has had the opportunity to design machines that capture some of the most dangerous emissions. Our customers rely on us for delivering the reliable and safe solutions they need, when they need it."

In addition to VRUs, Tescorp also provides engineering solutions to capture emissions from oil and gas stock tanks, gas processing separators, compressors and valves.

Tescorp has achieved significant growth in the emerging methane mitigation industry. Today, Tescorp is a multi-million dollar company that employs engineers, drafting specialists, welders, electrical and instrumentation technicians, industrial painters, and certified field service operators. With service facilities in Tulsa, OK and Cartersville, Georgia, it is equipped to provide the nation's dynamic energy industry with technologies to effectively reduce oil and gas emissions.

FLIR

Oregon-based FLIR has designed and produced thermal and optical gas imaging systems since 1978. FLIR was the first company to design and build a passive infrared camera for gas detection, and today, these technologies are increasingly used to detect methane leaks from the oil and gas industry.

FLIR's optical gas imaging cameras have identified thousands of small and large fugitive emissions, and the company frequently adapts its technologies to increase effectiveness. FLIR's technologies can adjust device sensitivity to detect smaller leaks, streamline spot surveys, or allow for continuous leak surveying, increasing safety, reducing product loss, and preserving environmental integrity.

FLIR now controls a significant share of the gas imaging market and has become a world leader in the infrared detection industry. A publically traded company listed on the NASDAQ, FLIR oversees manufacturing and service facilities in more than 60 countries and last year generated revenue of more than \$1.5 billion.

While the company has a global presence and employs more than 2,800 professionals worldwide, FLIR continues to design and manufacture all of its critical systems components in-house, with manufacturing plants in California, Massachusetts and Oregon. The company also has service locations in California and New Hampshire. These manufacturing and service locations provide jobs to more than 1,600 U.S. engineers, field technicians, consultants, service operators and optical gas specialists.



In its 30-plus years of experience, FLIR has been refining infrared camera technology. As the oil and gas industry further prioritizes methane detection and capture, the market for optical gas imaging technologies will likely expand. Further technology improvements can be expected, along with reductions in costs, creating an even greater impact on reducing methane emissions.

Company Quick Facts

Headquarters: Wilsonville, OR

Founded: 1978

Total Employees: >1,650 in USA (~2,800 worldwide)

Number of locations: 3

<http://www.flir.com/US/>

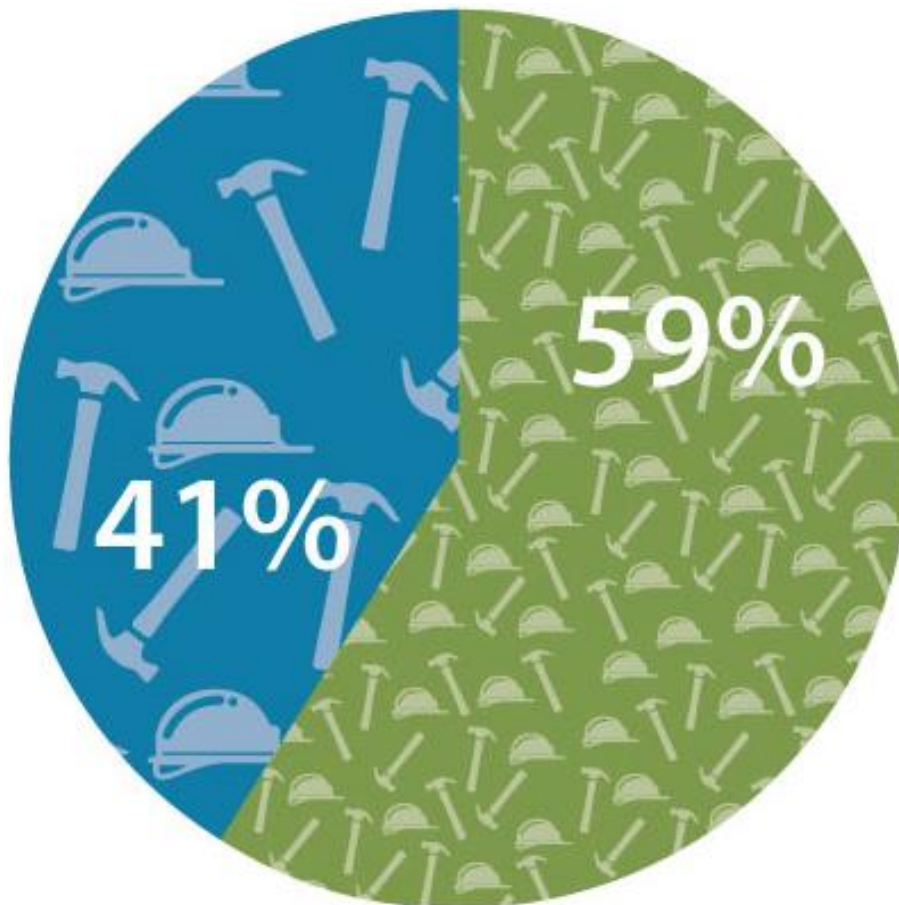
As the industry evolves, and demand increases for thermal imaging products, FLIR will continue to invest in trained specialists and product development to meet client specifications and demands.

Size of Firms: Small Businesses Drive Methane Mitigation Industry

We identified 76 firms that manufacture technologies or provide services to reduce methane emissions in natural gas production. To construct this list of relevant firms, we first reviewed Environmental Protection Agency (EPA) documents that outline proven technologies to effectively mitigate methane emissions. We then performed a Web-based search of companies and industry associations to identify firms capable of providing relevant solutions. We later called each firm on our list to verify their product lines and capabilities. For a complete list of these firms and their characteristics, see the Appendix on page 38.

Figure 2 shows that the majority of firms identified in the study qualify as small businesses. The U.S. Small Business Association (SBA) provides varying definitions of small businesses, according to the characteristics of a given industry. To qualify as a small business, firms in the petroleum and natural gas extraction industry must have fewer than 500 employees (SBA 2014). According to this criterion, nearly 60% of methane mitigation industry firms qualify as a small business.

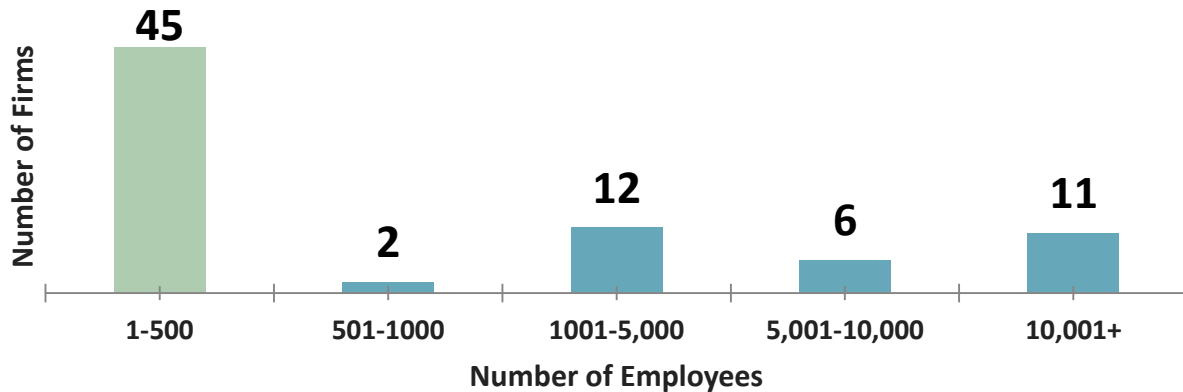
Figure 2. 59 % of methane mitigation firms qualify as a small business



Source: Company websites and industry interviews

Figure 3 shows the distribution of firms, according to their number of employees. Of the 76 firms identified in this report, 45 have fewer than 500 employees and qualify as small businesses.

Figure 3. Distribution of firms, by SBA employee guidelines, methane mitigation industry



Source: Company websites and industry interviews

Table 2 provides a better sense of the size of different methane mitigation industry firms, according to their respective technology fields. Generally speaking, manufacturers of valves, pneumatic controllers and vapor recovery units tend to be larger, with employees numbering well over 10,000, and annual sales of more than a billion dollars. Companies in the seals, pneumatic pumps, and leak detection technology fields tend to be relatively smaller, having on average fewer than 10,000 employees.

Table 2. Average size of firm, by technology category, methane mitigation industry

Technology	Average Total Company Employees	Average Total Company Sales (in millions)
Low-emissions Valves	37,802	\$11,091
Pneumatic Controllers	19,221	\$5,900
Vapor Recovery Units	15,716	\$2,778
Reduced Emissions Completions	9,773	\$7,442
Liquids Unloading - Plunger Lifts & Velocity Tubing	6,014	\$2,913
Seals	5,223	\$2,030
Pneumatic Pumps	5,694	\$3,329
Leak Detection Technologies and Services	374	\$105

Source: Company websites and industry interviews

Methane Mitigation and Jobs: Highly-Skilled Jobs are in Demand

In addition to reducing greenhouse gas emissions and reducing product loss for the oil and gas industry, reducing methane emissions has the potential to create jobs. Rather than counting jobs, this following analysis intends to gain an understanding of the scope and nature of employment involved in manufacturing methane mitigation solutions. This section will address jobs in two ways: types of jobs and geographic distribution of jobs.

The firms described in this study represent a large number of occupations, the most important of which are listed in Table 3. The firms also hire for a wide array of job types, including traditional construction and manufacturing jobs, such as engineers, machinists, and equipment operators, as well as jobs in science, sales, software, and finance. Median hourly wages in selected relevant occupations range from \$86.07 per hour for Engineering managers, to \$21.96 for machinists, to \$13.83 for laborers (BLS 2014).

Most industry representatives interviewed for this study emphasized the need for quality mechanical and electrical engineers, technicians, and machinists. Many of these positions, such as mechanical engineers and machine operators, are difficult to fill. In addition to jobs directly linked to manufacturing these technologies, almost every firm employs numerous administrative and accounting positions. Representatives interviewed for this study say these positions are easier to fill.

Table 3. U.S. median wages of key occupations linked to methane mitigation technologies

Occupation	Median Hourly Wage (\$US)
Manufacture and Assembly	
Engineering Managers	\$86.07
Mechanical Engineers	\$67.08
Engineers	\$66.25
Mining and Geological Engineers, Including Mining Safety Engineers	\$53.65
First-Line Supervisors of Mechanics, Installers, and Repairers	\$40.43
Production Workers, All Other	\$33.08
Electro-Mechanical Technicians	\$32.76
Electricians	\$30.88
Electrical and Electronics Repairers, Commercial and Industrial Equipment	\$30.83
Electrical and Electronic Equipment Mechanics, Installers, and Repairers	\$29.71
Plant and System Operators	\$27.91
Installation, Maintenance, and Repair Occupations	\$26.60
Pump Operators, Except Wellhead Pumps	\$25.38
Gas Compressor and Gas Pumping Station Operators	\$25.01
Service Unit Operators, Oil, Gas, and Mining	\$22.81
Machinists	\$21.96
Extraction Workers	\$20.64
Welders, Cutters, Solderers, and Brazers	\$20.15
Construction Equipment Operators	\$17.87
Laborers and Material Movers, Hand	\$13.83
Laborers and Freight, Stock, and Material Movers, Hand	\$13.83
Other	
Sales Managers	\$67.63
Sales Representatives, Wholesale and Manufacturing, Technical and Scientific	\$47.84
Software Developers and Programmers	\$47.27
Environmental Scientists and Specialists, Including Health	\$46.27
Financial Analysts	\$43.95
Compliance Officers	\$36.45
Accountants and Auditors	\$35.05
Operations Research Analysts	\$32.36
Customer Service Representatives	\$22.21
Order Clerks	\$17.94

Source: (BLS 2014)

Geographic Distribution of Jobs: Widely Distributed Across 46 States

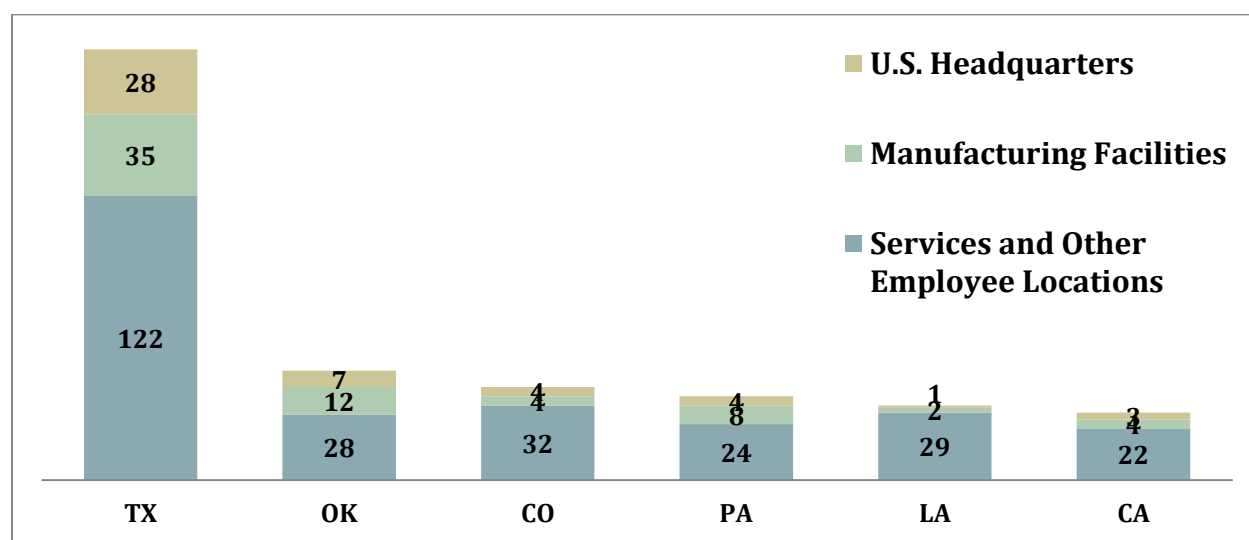
The distribution of jobs involved in methane mitigation technologies and services is robust, with 68 U.S. headquarters distributed across 20 states (see Table 4). Since some headquarter locations also double as manufacturing or service locations, the table only notes the 531 “unique” physical locations. Those 531 employee locations span 46 states, with 102 manufacturing and assembly sites, and nearly 400 service and sales locations.

Table 4. National data on firms in the methane mitigation industry

Number of Unique Locations	531
Number of Firms	76
Number of U.S. Headquarters	68 ⁶
Number of Manufacturing and Assembly Locations	102
Number of Service and Other Locations	398
Number of States with Employee Locations	46
Number of States with Headquarters	20
Number of States with Manufacturing Locations	25
Number of States with Service or Other Locations	43

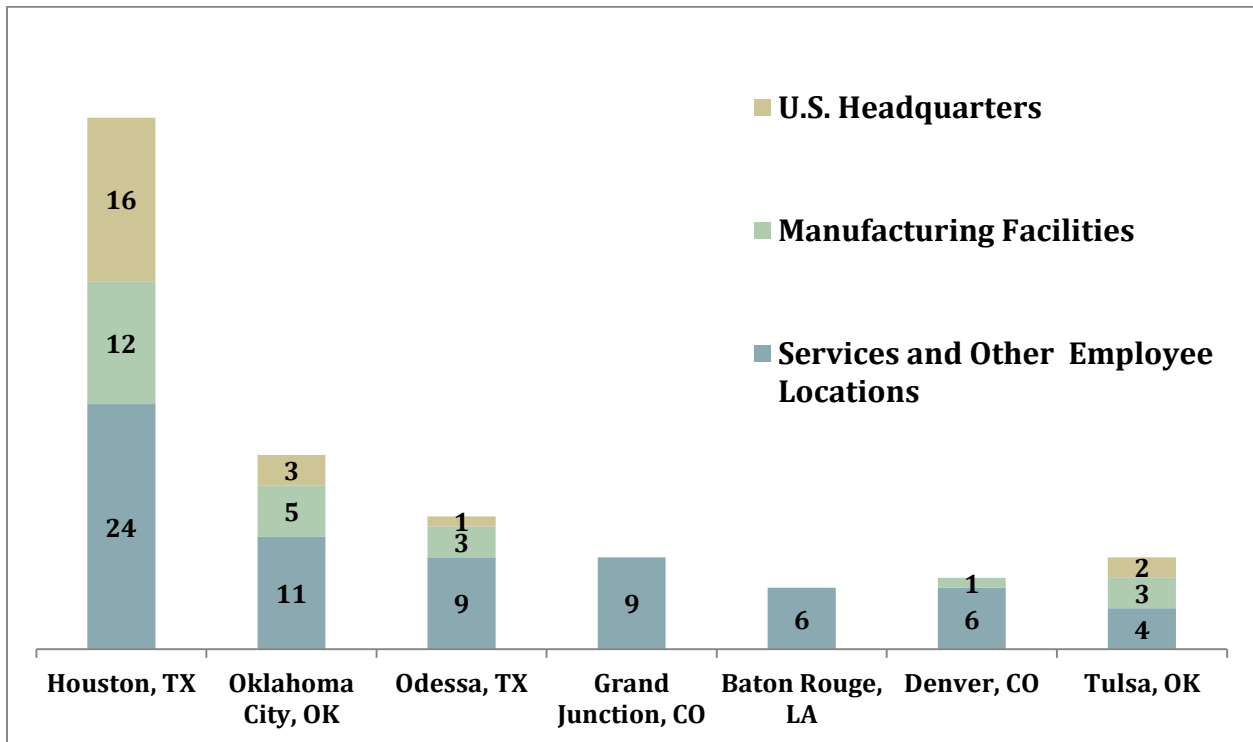
The heaviest concentrations of firms are clustered in oil and gas-producing states (see Figure 4). Of the 531 total locations nationwide, 313 locations, or 60%, are in the five states of Texas, Oklahoma, Colorado, Pennsylvania, and Louisiana. Similarly, of the 68 U.S. company headquarters, 47 locations, or 68%, are in the five states of Texas, Oklahoma, Ohio, Colorado, and Pennsylvania. The city of Houston alone hosts 16 company headquarters (see Figure 5).

Figure 4. Distribution of firm locations in the U.S. methane mitigation industry, top six states



⁶ Headquarters for eight international firms are located outside the United States. These firms were included in the analysis because they contribute substantially to the U.S. economy and provide U.S. jobs, collectively hosting over 80 U.S. employee locations.

Figure 5. Distribution of firm locations in the U.S. methane mitigation industry, top seven cities



Maps of Methane Mitigation Industry Employee Locations

The following section provides a series of maps, showing the distribution and type of employee locations relevant to methane mitigation technologies. The series begins with a map of employee locations in the United States, followed by maps for the ten states with the highest number of employee locations. With each state map is a corresponding table of firms located in the state. The following key of abbreviations is used to identify the technologies and services each firm provides.

LD	Leak detection technologies & services	S&EP	Solar & electric pumps
RPS	Rod-packing & seal replacement	REC	Reduced-emissions completions
LEV	Low-emissions valves	PL/VT	Plunger lifts/Velocity tubing
PC	Pneumatic controllers	VRU	Vapor recovery units

In cases where clusters of firms are located in the same zip code, multiple firms will appear as one dot, which explains why the number of visible dots is lower than the total locations identified. For a closer look at the location and distribution of methane mitigation industry firms, visit www.edf.org/methanejobs to explore an interactive map of firm locations.

Figure 6. U.S. map of employee locations relevant to methane mitigation technologies and services

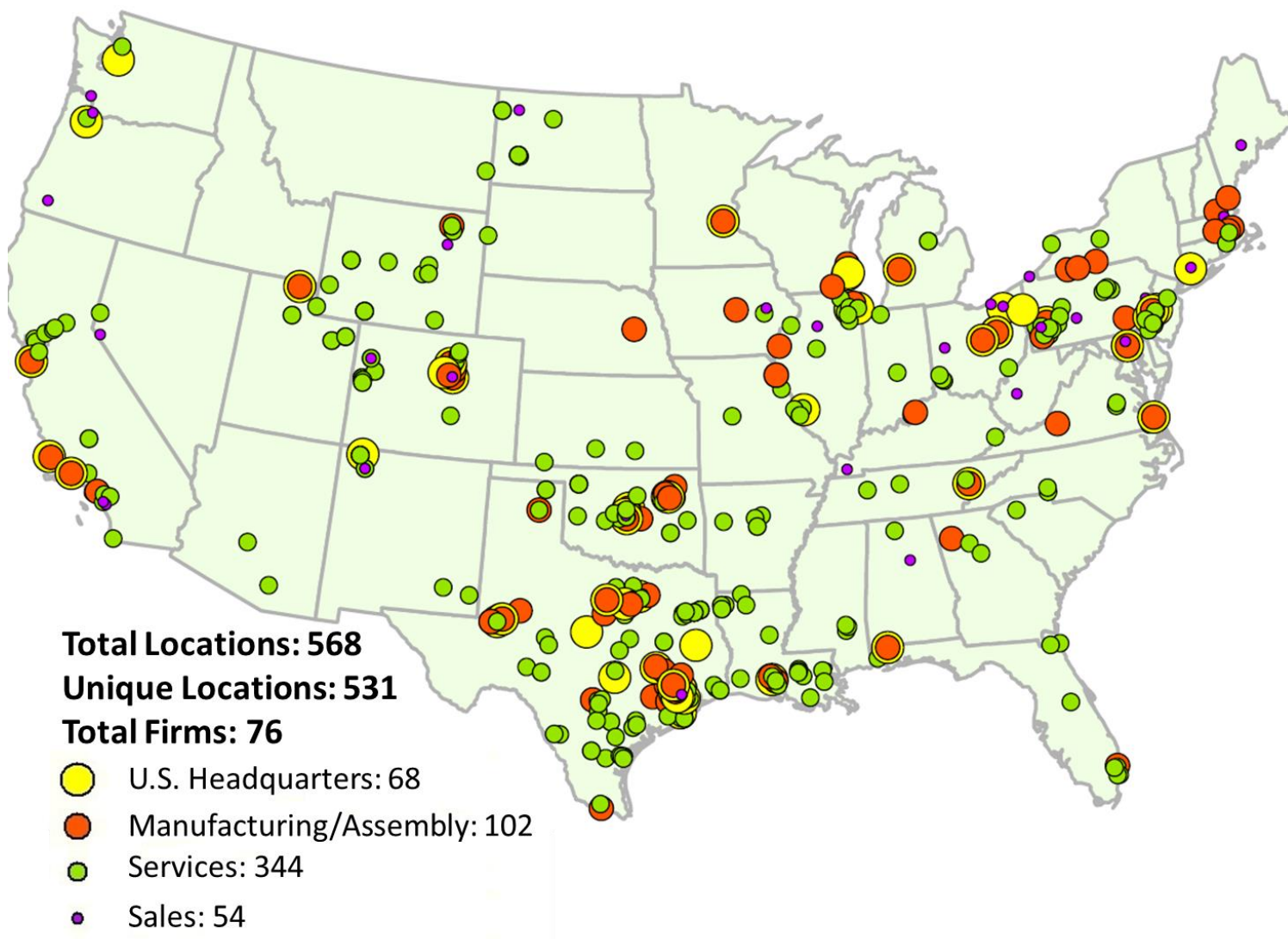
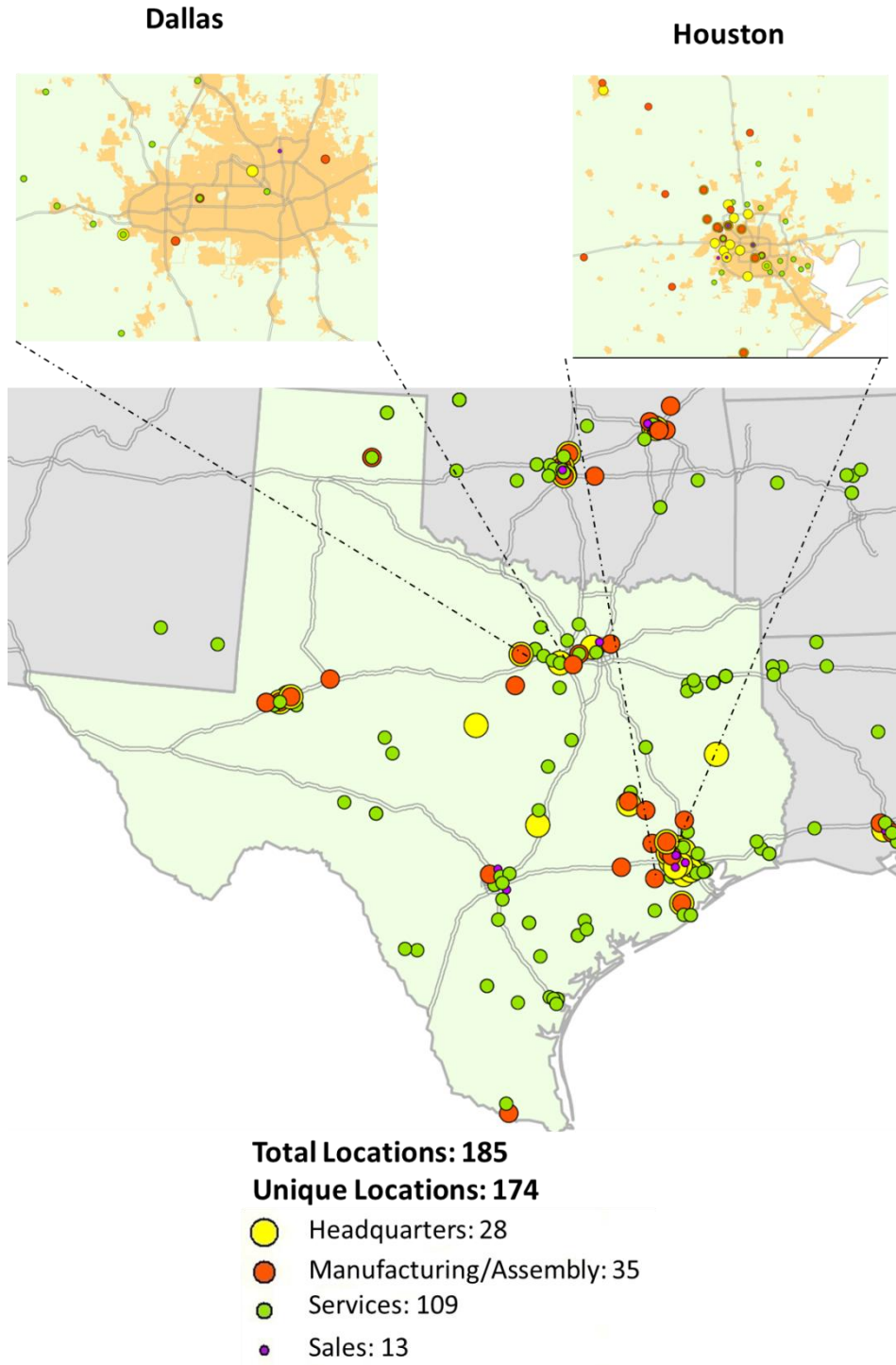


Figure 7. Maps of top 10 states in employee locations relevant to methane mitigation technologies and services

1. Texas

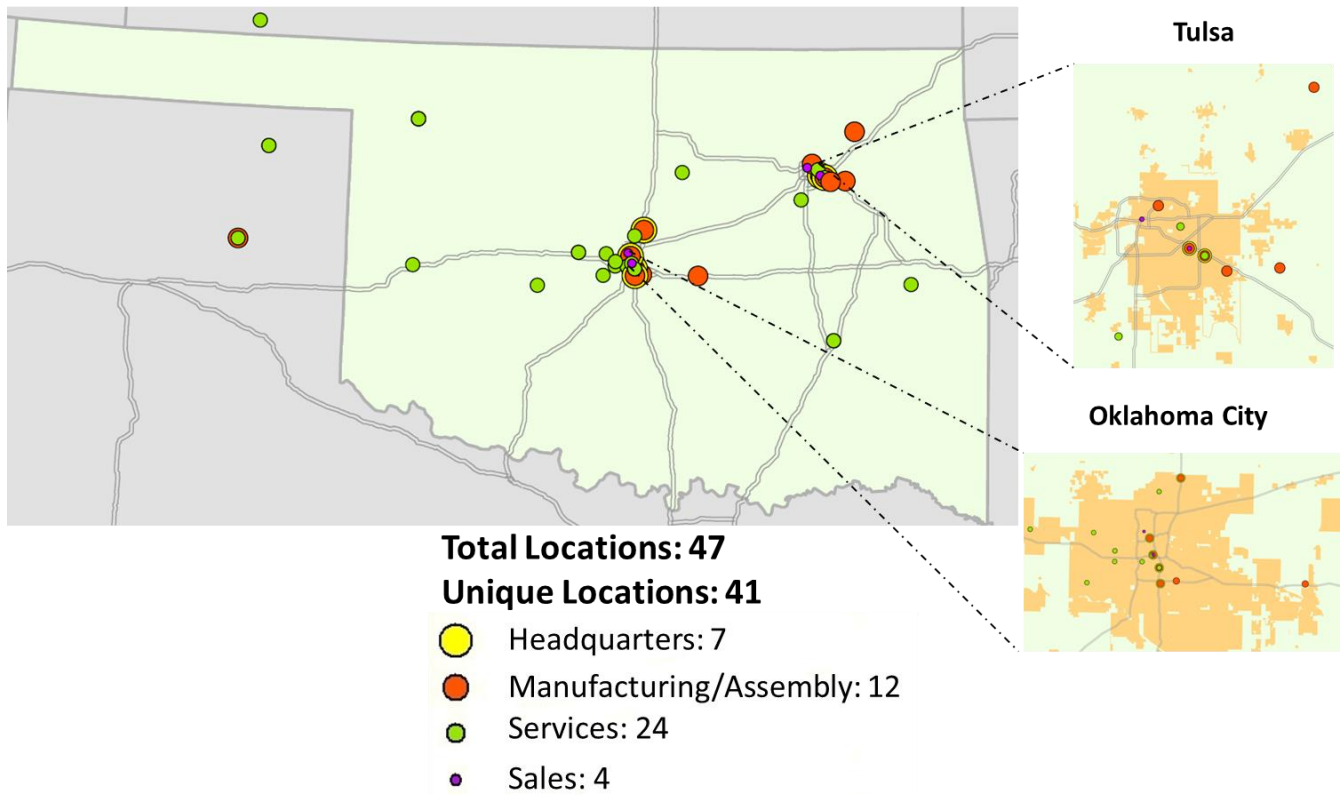


The Emerging U.S. Methane Mitigation Industry

Company Name	Technologies								Number of Locations
	LD	RPS	LEV	PC	S&EP	REC	PL/VT	VRU	
Cameron									4
Circor Energy, Circor International									1
COMM Engineering USA									1
Cook Compression									3
Dresser-Rand									5
EagleBurgmann									3
Emerson Process Management									1
Enovation Controls LLC									1
Epic Well Service LLC									1
Exterran Holdings									2
FlexEnergy									1
Flogistix, LP									1
Flowserve Corporation									1
FMC Technologies									7
Fracmaster									1
Gardner Denver									3
GE Oil & Gas									2
Grover Corporation									1
Heath Consultants									3
Hoerbiger									5
Hy-bon Engineering Company									3
Integrated Production Service (IPS)									11
John Crane									11
Kimray									3
Leak Finder, Inc									1
Leak Surveys									1
Lufkin Industries									8
Multi Products Company									1
MXROS									1
National Oilwell Varco									12
Norriseal									1
Patriot Artificial Lift, LLC									8
PCS Ferguson - Field Office									12
Pedcor									1
Pentair - Valves & Controls Services Center									3
Petrogas Environmental Systems									1
Production Lift Systems									1
Quincy Compressor Direct									9
Rebellion Photonics									1
Sage Environmental Consulting									4
Solar Injection Systems, Inc.									1
Stewart & Stevenson									8
Tenaris									2
TXAM Pumps									7
VisionMonitor Software									1
Weatherford - Artificial Lift Systems									14

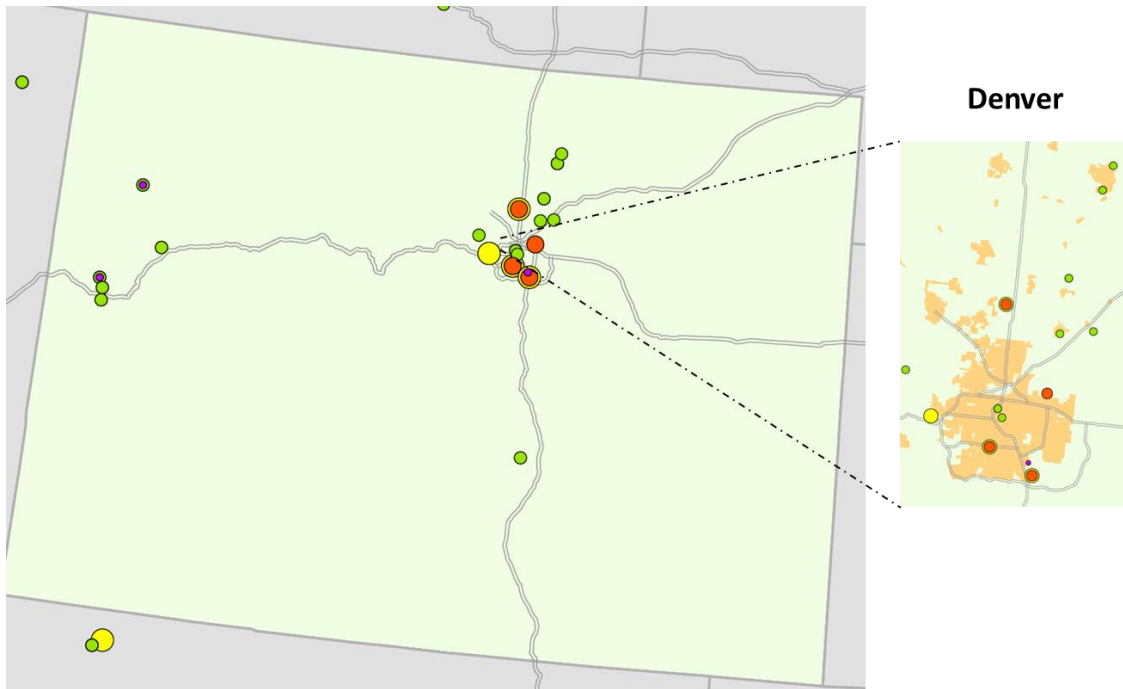
LD	Leak detection technologies & services	S&EP	Solar & electric pumps
RPS	Rod-packing & seal replacement	REC	Reduced-emissions completions
LEV	Low-emissions valves	PL/VT	Plunger lifts/Velocity tubing
PC	Pneumatic controllers	VRU	Vapor recovery units

2. Oklahoma



Company Name	Technologies								Number of Locations
	LD	RPS	LEV	PC	S&EP	REC	PL/VT	VRU	
Circo Energy - KF Valves									1
Cook Compression									2
Dresser-Rand									2
Engineered Concepts LLC (Heath Technologies, LLC)									1
Enovation Controls LLC									1
Exterran Holdings									1
Flogistix, LP									1
FMC Technologies - Completion Service									2
Gardner Denver									2
GE Oil & Gas									2
Hoerbiger									1
Hy-bon Engineering Company									1
IPS - Coiled Tubing									4
John Crane									1
Kimray									1
Lufkin Industries									2
Mclean Plunger Lift Inc.									1
Patriot Artificial Lift, LLC									1
PCS Ferguson - Field Office									3
Tenaris									1
Tescorp									1
TXAM Pumps - field office									2
Weatherford - Artificial Lift Systems									5
WellMark Company, LLC									1
Whirlwind Methane Recovery Systems									1

3. Colorado



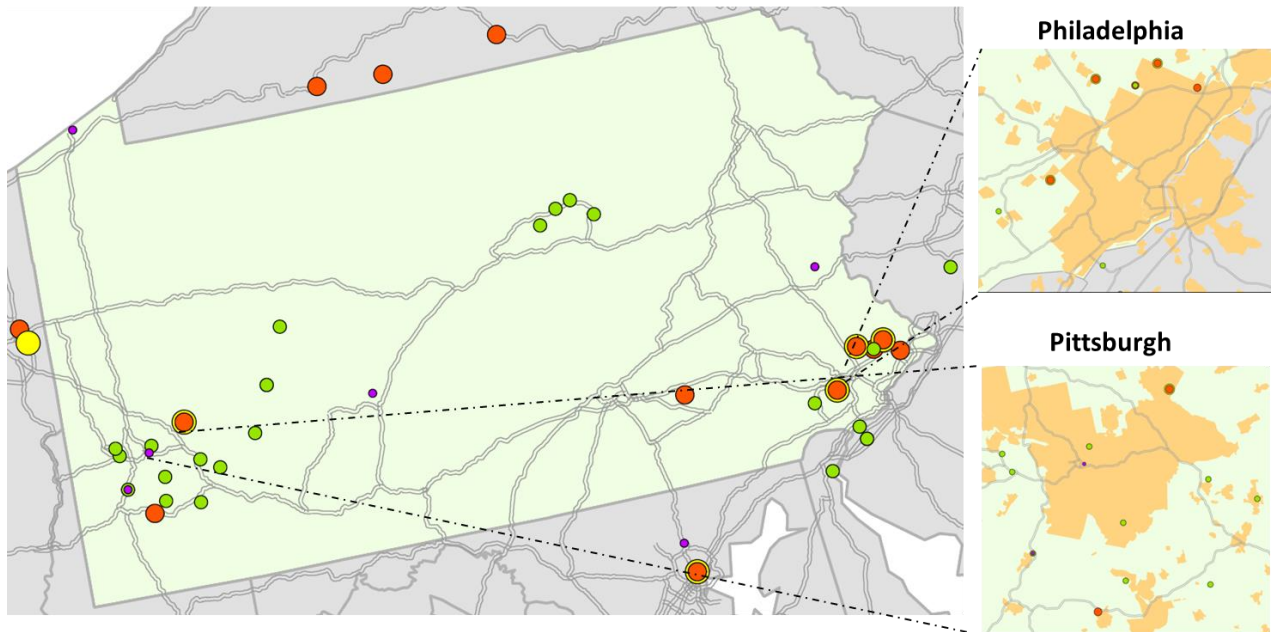
Total Locations: 40

Unique Locations: 41

- Headquarters: 4
- Manufacturing/Assembly: 4
- Services: 29
- Sales: 3

Company Name	Technologies								Number of Locations
	LD	RPS	LEV	PC	S&EP	REC	PL/VT	VRU	
Apogee Scientific									1
COMM Engineering USA									1
Cook Compression									2
EagleBurgmann									1
FlexEnergy Leasing									1
FMC Technologies - Completion Service									8
Hy-bon Engineering Company									1
IPS - East Colorado Sales & Services									3
John Crane									1
Leak Finder, Inc									1
Lufkin Industries									3
Multi Products Company									1
Nichols-Given Associates									1
Patriot Artificial Lift, LLC									2
PCS Ferguson									5
Sage Environmental Consulting									1
TXAM Pumps - field office									1
Weatherford - Artificial Lift Systems									1
Well Master Corporation									2

4. Pennsylvania



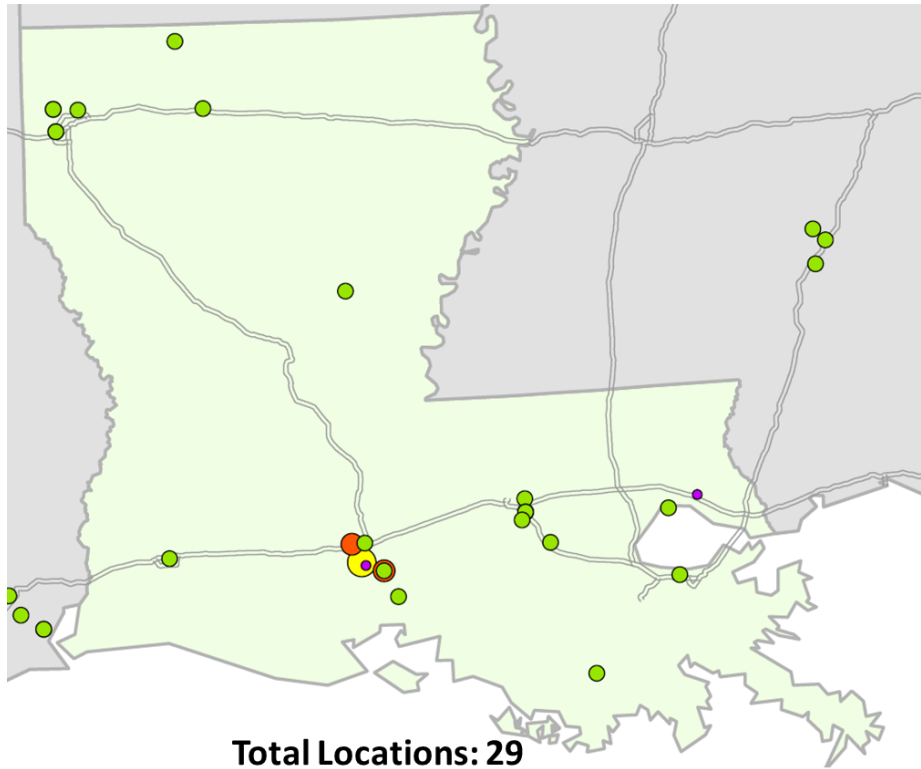
Total Locations: 36

Unique Locations: 32

- Headquarters: 4
- Manufacturing/Assembly: 8
- Services: 19
- Sales: 5

Company Name	Technologies								Number of Locations
	LD	RPS	LEV	PC	S&EP	REC	PL/VT	VRU	
Ametek									3
Bacharach									1
Dearing Compressor and Pump Co.									1
Dresser-Rand									1
FLSmidth									2
FMC Technologies - Completion Service									3
Gardner Denver - Nash									2
Heath Consultants									2
IPS - Coiled Tubing									3
John Crane									1
Kimray									1
Milton Roy									1
Multi Products Company									1
Patriot Artificial Lift, LLC									1
PCS Ferguson - Field Office									2
Pump Solutions Group									1
Sage Environmental Consulting									2
Tenaris									1
TXAM Pumps - field office									1
Weatherford - Artificial Lift Systems									2

5. Louisiana



Total Locations: 29

Unique Locations: 29

- Headquarters: 1
- Manufacturing/Assembly: 2
- Services: 24
- Sales: 2

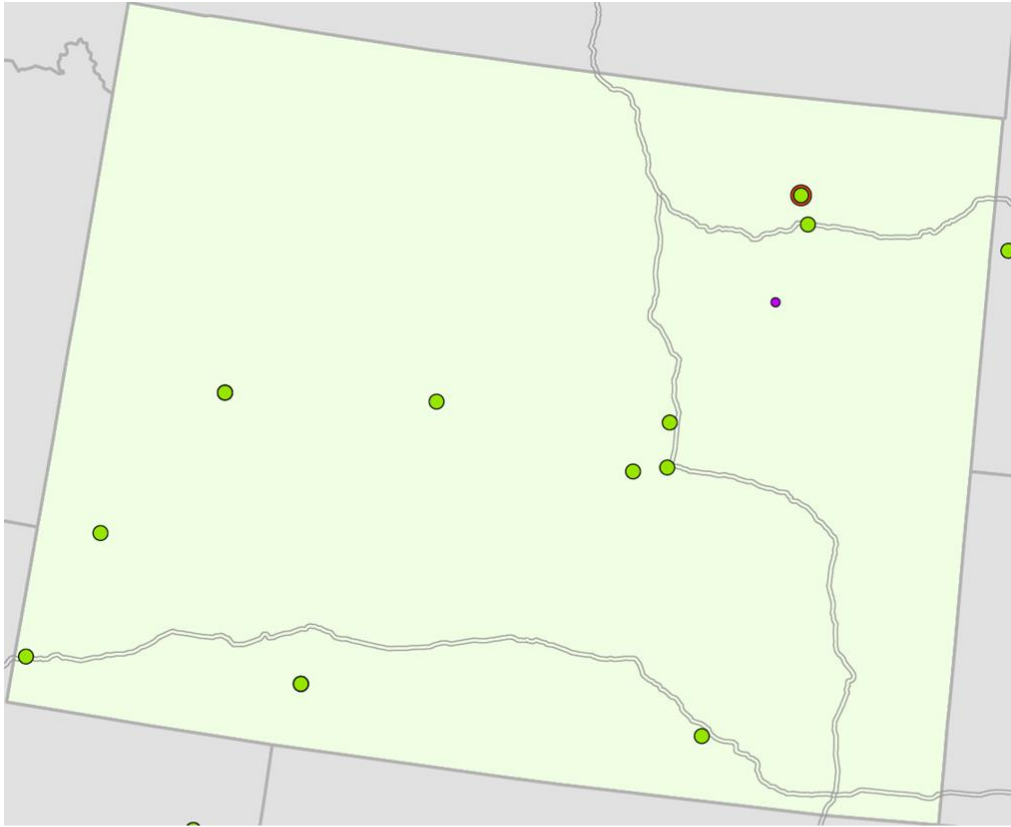
Company Name	Technologies								Number of Locations
	LD	RPS	LEV	PC	S&EP	REC	PL/VT	VRU	
COMM Engineering USA									1
Cook Compression									1
Dresser-Rand									2
EagleBurgmann									1
FMC Technologies - Fluid Control									2
Gardner Denver									1
Hoerbiger									1
IPS - Coiled Tubing									2
John Crane									1
Kimray									2
Lufkin Industries									2
Norriseal									1
PCS Ferguson - Field Office									3
Pentair									1
Sage Environmental Consulting									3
Weatherford - Artificial Lift Systems									5

6. California



Company Name	Technologies								Number of Locations
	LD	RPS	LEV	PC	S&EP	REC	PL/VT	VRU	
AESSEAL									1
Bauer 2									2
BST Lift Systems									1
Cook Compression									1
Dresser-Rand									3
Eagle Burgmann									1
Flex Energy									2
FLIR Systems, Inc.									1
FMC Technologies - Fluid Control									1
Gas Imaging Technology LLC									2
Heath Consultants									1
Hoerbiger									1
John Crane									2
Kimray									1
Leak Finder, Inc									1
Pentair									1
Picarro									1
Quincy Compressor Direct									4

7. Wyoming



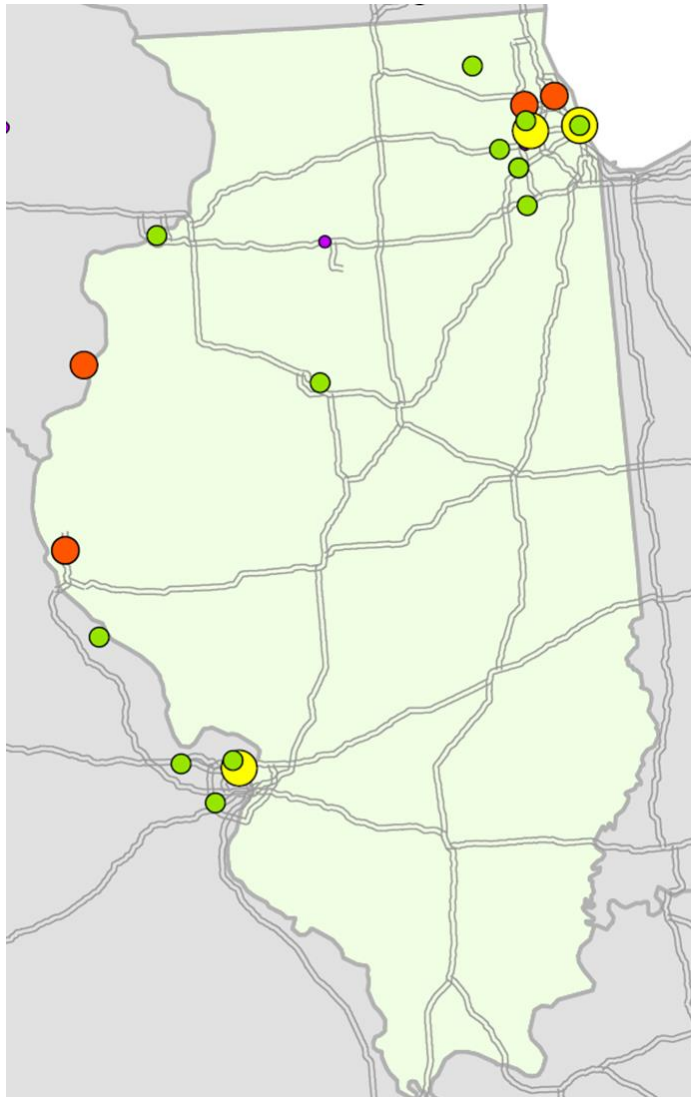
Total Locations: 19

Unique Locations: 19

- Headquarters: 0
- Manufacturing/Assembly: 1
- Services: 16
- Sales: 2

Company Name	Technologies								Number of Locations
	LD	RPS	LEV	PC	S&EP	REC	PL/VT	VRU	
Flogistix, LP									1
FMC Technologies									3
Hoerbiger									1
IPS - Coiled Tubing									2
Lufkin Industries									1
Multi Products Company									1
Patriot Artificial Lift, LLC									2
PCS Ferguson - Field Office									2
Sage Environmental Consulting									1
TXAM Pumps									1
Weatherford									4

8. Illinois



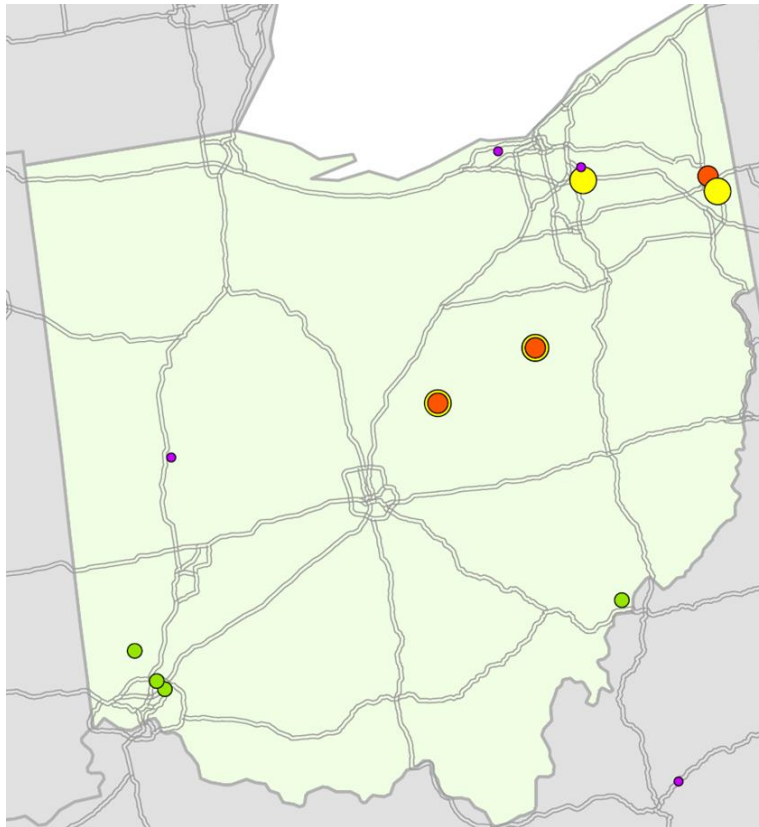
Total Locations: 17

Unique Locations: 17

- Headquarters: 3
- Manufacturing/Assembly: 4
- Services: 9
- Sales: 1

Company Name	Technologies								Number of Locations
	LD	RPS	LEV	PC	S&EP	REC	PL/VT	VRU	
Dover Corporation									1
Dresser-Rand									1
Gardner Denver									2
GE Oil & Gas									1
Hoerbiger									1
John Crane									4
Pentair									1
Pump Solutions Group									1
Quincy Compressor Direct									4
Sage Environmental Consulting									1

9. Ohio



Total Locations: 16

Unique Locations: 13

● Headquarters: 5

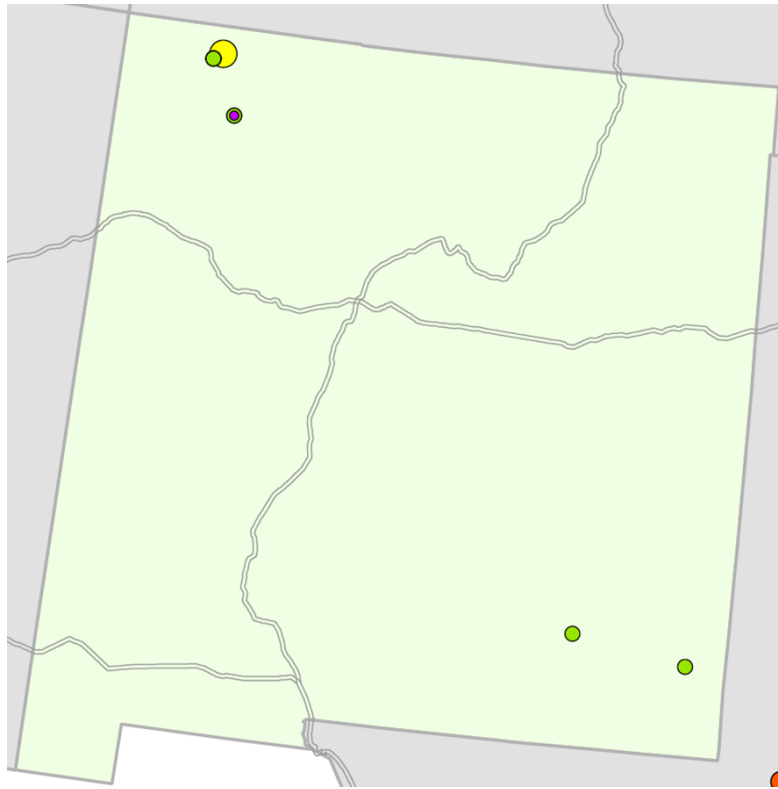
● Manufacturing/Assembly: 4

● Services: 4

● Sales: 3

Company Name	Technologies								Number of Locations
	LD	RPS	LEV	PC	S&EP	REC	PL/VT	VRU	
Ariel Corporation									1
Dearing Compressor and Pump Co.									2
Dresser-Rand									1
EagleBurgmann									1
Emerson Climate Technologies									1
Gardner Denver									1
Hoerbiger									1
Hy-bon Engineering Company									1
John Crane									1
Leak Finder, Inc									1
Multi Products Company									1
Tech Tool Inc.									1

10. New Mexico



Total Locations: 12
Unique Locations: 12

- Headquarters: 1
- Manufacturing/Assembly: 0
- Services: 9
- Sales: 2

Company Name	Technologies								Number of Locations
	LD	RPS	LEV	PC	S&EP	REC	PL/VT	VRU	
Engineered Concepts LLC									1
Flogistix, LP									1
FMC Technologies - Completion Service									2
Fracmaster									1
Hy-bon Engineering Company									1
IPS - Optimization & Plunger Lift									1
Lufkin Industries									1
Patriot Artificial Lift, LLC									1
PCS Ferguson - Field Office									1
Weatherford - Artificial Lift Systems									1
Well Master Corporation									1

Conclusion

Methane is a greenhouse gas far more powerful than carbon dioxide. Production of natural gas is the largest industrial source of methane emissions in the United States. As production of natural gas increases in coming years, so will the potential for methane emissions. This presents an environmental challenge for preventing climate change, and an economic challenge for the oil and gas industry.

This report has identified 76 firms, developing nearly a dozen technologies and services that provide proven solutions to help the oil and gas industry overcome the challenges of methane emissions. Collectively, with over 500 employee locations in 46 states, these firms are an emerging methane mitigation industry, capable of saving the oil and gas industry billions of dollars each year. In coming years, as oil and gas companies increase production of natural gas, they can rely on this growing industry to help meet their goals to protect the environment and reduce costs.

Appendix 1: Full set of firm-level data, by state

Annual Revenues (US Millions)		Employees	
<\$38.5	\$	1-500	0
\$38.6-\$500	\$\$	501-1000	00
\$501-\$1,000	\$\$\$	1001-5,000	000
\$1,001-\$10,000	\$\$\$\$	5,001-10,000	0000
\$10,000+	\$\$\$\$\$	10,001+	00000

1	Leak detection technologies and services	5	Solar and electric pumps
2	Seals	6	Reduced emissions completions
3	Low-emissions valves	7	Liquids unloading--plunger lifts & velocity tubing
4	Pneumatic controllers	8	Vapor recovery units

Company Name	Technology/Service	Location Description	City	State	Company Size Total Annual U.S. Revenues & Employees
Alaska					
Dresser-Rand	2	Services	Kenai	AK	0000 \$\$\$\$
FMC Technologies - Fluid Control	2, 4, 6	Services	Dead Horse	AK	00000 \$\$\$\$
FMC Technologies - Fluid Control	2, 4, 6	Services	Kenai	AK	
John Crane	2	Services	Anchorage	AK	0000 \$\$\$\$
Pentair - Valves & Controls Services Center	3	Services	Anchorage	AK	00000 \$\$\$\$
Weatherford - Artificial Lift Systems	6,7	Services	Anchorage	AK	0000 \$\$\$\$
Alabama					
Gardner Denver	2	Sales	Trussville	AL	0000 \$\$\$\$
John Crane	2	Services	Decatur	AL	0000 \$\$\$\$
John Crane	2	Services	Mobile	AL	
Quincy Compressor LLC	2	HQ & Manufacturing	Bay Minette	AL	0 \$\$

The Emerging U.S. Methane Mitigation Industry

Company Name	Technology/Service	Location Description	City	State	Company Size Total Annual U.S. Revenues & Employees
Arkansas					
Fracmaster	6,7	Services	Quitman	AR	O \$
IPS	7	Services	Paris	AR	OOO \$\$\$\$
IPS	7	Services	Damascus	AR	
Patriot Artificial Lift, LLC	7	Services	Conway	AR	O \$
PCS Ferguson - Field Office	7	Services	Conway	AR	OO \$\$
TXAM Pumps - field office	5	Services	Guy	AR	O \$
Arizona					
Heath Consultants	1	Services	Tucson	AZ	OOO \$\$\$
John Crane	2	Services	Phoenix	AZ	OOOO \$\$\$\$
California					
AESSEAL	2	Sales	Los Alamitos	CA	OOO \$\$
Bauer 2	2	Services	Livermore	CA	OO \$
Bauer 2	2	Services	Yorba Linda	CA	
BST Lift Systems	7	HQ & Manufacturing	Ventura	CA	O \$
Cook Compression	1,2	Manufacturing/Assembly	Santa Fe Springs	CA	OO \$
Dresser-Rand	2	Services	Chula Vista	CA	OOOO \$\$\$\$
Dresser-Rand	2	Services	Concord	CA	
Dresser-Rand	2	Services	Rancho Domingo	CA	
EagleBurgmann	2	Services	Benicia	CA	O \$\$
FlexEnergy	2	Sales	Irvine	CA	O \$
FlexEnergy	2	Sales	Mission Viejo	CA	

The Emerging U.S. Methane Mitigation Industry

Company Name	Technology/Service	Location Description	City	State	Company Size Total Annual U.S. Revenues & Employees
California (cont'd)					
FLIR Systems, Inc. - CVS World HQ	1	Sales	Goleta	CA	000 \$\$\$\$
FMC Technologies - Fluid Control	2,4,6	Services	Bakersfield	CA	00000 \$\$\$\$
Gas Imaging Technology LLC	1	HQ	Buellton	CA	0 \$
Gas Imaging Technology LLC	1	Manufacturing/Assembly	Solvang	CA	
Heath Consultants	1	Services	Sacramento	CA	000 \$\$\$
Hoerbiger	2	Services	Santa Clarita	CA	0000 \$\$\$\$
John Crane	2	Services	Cerritos	CA	0000 \$\$\$\$
John Crane	2	Services	Concord	CA	
Kimray	4,5	Services	Bakersfield	CA	00 \$\$
Leak Finder, Inc	1	Services	Auburn	CA	0 \$
Pentair - Valves & Controls Services Center	3	Services	Corona	CA	00000 \$\$\$\$
Picarro	1	HQ & Manufacturing	Santa Clara	CA	0 \$
Quincy Compressor Direct	2	Services	Dixon	CA	0 \$\$
Quincy Compressor Direct	2	Services	Irvine	CA	
Quincy Compressor Direct	2	Services	Sacramento	CA	
Quincy Compressor Direct	2	Services	San Jose	CA	
Colorado					
Apogee Scientific	1	HQ & Manufacturing	Englewood	CO	0 \$
COMM Engineering USA	1,8	Services	Denver	CO	0 \$

The Emerging U.S. Methane Mitigation Industry

Company Name	Technology/Service	Location Description	City	State	Company Size Total Annual U.S. Revenues & Employees
Colorado (cont'd)					
Cook Compression	1,2	Manufacturing/Assembly	Denver	CO	OO \$
Cook Compression	1,2	Services	Grand Junction	CO	
Eagle Burgmann	2	Services	Denver	CO	O \$\$
Flex Energy Leasing	2	Sales	Greenwood Village	CO	O \$
FMC Technologies - Completion Service	2,4,6	Services	Brighton	CO	OOOOO \$\$\$\$
FMC Technologies - Completion Service	2,4,6	Services	Denver	CO	
FMC Technologies - Completion Service	2,4,6	Services	Englewood	CO	
FMC Technologies - Completion Service	2,4,6	Services	Fort Lupton	CO	
FMC Technologies - Completion Service	2,4,6	Services	Grand Junction	CO	
FMC Technologies - Completion Service	2,4,6	Services	Grand Junction	CO	
FMC Technologies - Fluid Control	2,4,6	Services	Brighton	CO	
FMC Technologies - Fluid Control	2,4,6	Services	Grand Junction	CO	
Hy-bon Engineering Company	7,8	Services	Evans	CO	O \$\$
IPS	7	Services	Evans	CO	OOO \$\$\$\$
IPS	7	Services	Denver	CO	
IPS	7	Services	Grand Junction	CO	

The Emerging U.S. Methane Mitigation Industry

Company Name	Technology/Service	Location Description	City	State	Company Size Total Annual U.S. Revenues & Employees
Colorado (cont'd)					
John Crane	2	Services	Golden	CO	0000 \$\$\$\$
Leak Finder, Inc	1	Services	Pueblo	CO	0 \$
Lufkin Industries	7	Sales	Grand Junction	CO	000 \$\$
Lufkin Industries	7	Services	Denver	CO	
Lufkin Industries	7	Services	Parachute	CO	
Multi Products Company - Western Region (Rockies) Sales and Services	7	Services	Rifle	CO	0 \$
Nichols-Given Associates	4	HQ & Manufacturing	Centennial	CO	0 \$
Patriot Artificial Lift, LLC	7	Services	Grand Junction	CO	0 \$
Patriot Artificial Lift, LLC	7	Services	Greeley	CO	
PCS Ferguson	7	HQ & Manufacturing	Frederick	CO	00 \$\$
PCS Ferguson - Field Office	7	Services	Evans	CO	
PCS Ferguson - Field Office	7	Services	Fort Lupton	CO	
PCS Ferguson - Field Office	7	Services	Grand Junction	CO	
PCS Ferguson - Field Office	7	Services	Parachute	CO	
Sage Environmental Consulting	1	Services	Denver	CO	00 \$
TXAM Pumps - field office	5	Services	Rifle	CO	0 \$
Weatherford - Artificial Lift Systems	6,7	Services	Grand Junction	CO	0000 \$\$\$\$\$
Well Master Corporation	7	HQ	Golden	CO	0 \$
Well Master Corporation	7	Other	Rifle	CO	

The Emerging U.S. Methane Mitigation Industry

Company Name	Technology/Service	Location Description	City	State	Company Size Total Annual U.S. Revenues & Employees
Connecticut					
Gardner Denver	2	Other	Trumbull	CT	0000 \$\$\$\$
GE Oil & Gas	2,3,4,5	HQ	Fairfield	CT	00000 \$\$\$\$
Delaware					
Hoerbiger	2	Services	New Castle	DE	0000 \$\$\$\$
Florida					
Bauer 2	2	Services	Sunrise	FL	00 \$
Cook Compression	1,2	Services	Ft. Lauderdale	FL	00 \$
Dresser-Rand	2	Services	Atlantic Beach	FL	0000 \$\$\$\$
Hoerbiger	2	HQ & Manufacturing	Pompano Beach	FL	0000 \$\$\$\$
Quincy Compressor Direct	2	Services	Jacksonville	FL	0 \$\$
Quincy Compressor Direct	2	Services	Miami Gardens	FL	
Quincy Compressor Direct	2	Services	Orlando	FL	
Quincy Compressor Direct	2	Services	Tampa	FL	
Georgia					
John Crane	2	Services	Norcross	GA	0000 \$\$\$\$
Quincy Compressor Direct	2	Services	Covington	GA	0 \$\$
Tescorp	8	Manufacturing/Assembly	Cartersville	GA	0 \$
Iowa					
AESSEAL	2	Sales	Marion	IA	000 \$\$
Dresser-Rand	2	Manufacturing/Assembly	Burlington	IA	0000 \$\$\$\$
Emerson Process Management - Fisher	3,4,8	Manufacturing/Assembly	Marshalltown	IA	00000 \$\$\$\$

The Emerging U.S. Methane Mitigation Industry

Company Name	Technology/Service	Location Description	City	State	Company Size Total Annual U.S. Revenues & Employees
Iowa (cont'd)					
John Crane	2	Services	Cedar Rapids	IA	0000 \$\$\$\$
Illinois					
Grover Corporation	2,5	Sales	Downers Grove	IL	0 \$
Dresser-Rand	2	Services	Naperville	IL	0000 \$\$\$\$
Gardner Denver	2	Manufacturing/Assembly	Quincy	IL	0000 \$\$\$\$
Gardner Denver	2	Sales	Princeton	IL	
GE Oil & Gas	2,3,4,5	Manufacturing/Assembly	Elk Grove Village	IL	0000 \$\$\$\$
Hoerbiger	2	Services	Joliet	IL	0000 \$\$\$\$
John Crane	2	HQ	Chicago	IL	0000 \$\$\$\$
John Crane	2	Manufacturing/Assembly	Morton Grove	IL	
John Crane	2	Services	Bolingbrook	IL	
John Crane	2	Services	Crystal Lake	IL	
Pentair - Valves & Controls Services Center	3	Services	Bolingbrook	IL	00000 \$\$\$\$
Pump Solutions Group	2,5	HQ	Oakbrook Terrace	IL	000 \$\$
Quincy Compressor Direct	2	Services	Addison	IL	0 \$\$
Quincy Compressor Direct	2	Services	East Peoria	IL	
Quincy Compressor Direct	2	Services	Rock Island	IL	
Quincy Compressor LLC	2	Manufacturing/Assembly	Quincy	IL	
Sage Environmental Consulting	1	Services	Chicago	IL	00 \$
Indiana					
Cook Compression	1,2	Manufacturing/Assembly	Jeffersonville	IN	00 \$

The Emerging U.S. Methane Mitigation Industry

Company Name	Technology/Service	Location Description	City	State	Company Size Total Annual U.S. Revenues & Employees
Indiana (cont'd)					
Cook Compression	1,2	Services	La Porte	IN	OO \$
John Crane	2	Services	Indianapolis	IN	OOOO \$\$\$\$
John Crane	2	Services	New Albany	IN	
Kansas					
Hoerbiger	2	Services	Liberal	KS	OOOO \$\$\$\$
IPS - Coiled Tubing	7	Services	Pratt	KS	OOO \$\$\$\$
John Crane	2	Services	Derby	KS	OOOO \$\$\$\$
Kentucky					
Gardner Denver	2	Sales	Mayfield	KY	OOOO \$\$\$\$
Multi Products Company - Eastern Region	7	Services	Jenkins	KY	O \$
Louisiana					
COMM Engineering USA	1,8	HQ	Lafayette	LA	O \$
Cook Compression	1,2	Services	Gonzales	LA	OO \$
Dresser-Rand	2	Services	Baton Rouge	LA	OOOO \$\$\$\$
Dresser-Rand	2	Services	Jena	LA	
EagleBurgmann	2	Services	Baton Rouge	LA	O \$\$
FMC Technologies - Fluid Control	2,4,6	Services	Bossier City	LA	OOOOO \$\$\$\$
FMC Technologies - Fluid Control	2,4,6	Services	Broussard	LA	
Gardner Denver	2	Services	Shreveport	LA	OOOO \$\$\$\$
Hoerbiger	2	Services	Baton Rouge	LA	OOOO \$\$\$\$
IPS - Coiled Tubing	7	Services	Arcadia	LA	OOO \$\$\$\$

The Emerging U.S. Methane Mitigation Industry

Company Name	Technology/Service	Location Description	City	State	Company Size Total Annual U.S. Revenues & Employees
Louisiana (cont'd)					
IPS - Gulf Coast Region Office	7	Services	Broussard	LA	000 \$\$\$\$
John Crane	2	Services	Baton Rouge	LA	0000 \$\$\$\$
Kimray	4,5	Services	Houma	LA	00 \$\$
Kimray	4,5	Services	Shreveport	LA	
Lufkin Industries	7	Services	Madisonville	LA	000 \$\$
Lufkin Industries	7	Services	New Iberia	LA	
Norriseal	4	Services	Broussard	LA	0 \$
PCS Ferguson - Field Office	7	Services	Haynesville	LA	00 \$\$
PCS Ferguson - Field Office	7	Services	Lafayette	LA	
PCS Ferguson - Field Office	7	Services	Shreveport	LA	
Pentair - Valves & Controls Services Center (Offshore Gulf of Mexico Services)	3	Services	Baton Rouge	LA	00000 \$\$\$\$
Sage Environmental Consulting	1	Services	Baton Rouge	LA	00 \$
Sage Environmental Consulting	1	Services	Lake Charles	LA	
Sage Environmental Consulting	1	Services	Metarie	LA	
Weatherford - Artificial Lift Systems	6,7	Manufacturing/Assembly	Broussard	LA	0000 \$\$\$\$\$
Weatherford - Artificial Lift Systems	6,7	Manufacturing/Assembly	Scott	LA	
Weatherford - Artificial Lift Systems	6,7	Sales	Lafayette	LA	
Weatherford - Artificial Lift Systems	6,7	Sales	Mandeville	LA	

The Emerging U.S. Methane Mitigation Industry

Company Name	Technology/Service	Location Description	City	State	Company Size Total Annual U.S. Revenues & Employees
Louisiana (cont'd)					
Weatherford - Artificial Lift Systems	6,7	Services	Shreveport	LA	0000 \$\$\$\$
Massachusetts					
A. W. Chesteron Company	2	HQ & Manufacturing	Woburn	MA	0 \$
A. W. Chesteron Company	2	Manufacturing/Assembly	Groveland	MA	
Cameron - Valves & Measurement	3,4	Manufacturing/Assembly	Millbury	MA	00000 \$\$\$\$
Foxboro Eckhardt (Invensys Foxboro)	2,4,6	HQ & Manufacturing	Foxboro	MA	000 \$\$\$
GE Oil & Gas	2,3,4,5	Manufacturing/Assembly	Avon	MA	00000 \$\$\$\$
GE Oil & Gas	2,3,4,5	Sales	Billerica	MA	
Pentair - Valves & Controls Services Center	3	Services	Mansfield	MA	00000 \$\$\$\$
Maryland					
Gardner Denver	2	Sales	Timonium	MD	0000 \$\$\$\$
Kaydon Ring & Seal	2	HQ & Manufacturing	Baltimore	MD	000 \$\$
Maine					
AESSEAL	2	Sales	Fairfield	ME	000 \$\$
Michigan					
EagleBurgmann	2	Services	Midland	MI	0 \$\$
John Crane	2	Services	Midland	MI	0000 \$\$\$\$
Pump Solutions Group - Blackmer	2,5	HQ & Manufacturing	Grand Rapids	MI	000 \$\$
Minnesota					
John Crane	2	Services	Bursville	MN	0000 \$\$\$\$
Pentair - U.S. Corporate Office	3	HQ & Manufacturing	Minneapolis	MN	00000 \$\$\$\$
Dresser-Rand	2	Services	Louisiana	MO	0000 \$\$\$\$

The Emerging U.S. Methane Mitigation Industry

Company Name	Technology/Service	Location Description	City	State	Company Size Total Annual U.S. Revenues & Employees
Missouri					
Emerson	3,4,8	HQ	St. Louis	MO	00000 \$\$\$\$
Gardner Denver	2	Services	Sedalia	MO	0000 \$\$\$\$
Gardner Denver	2	Services	St. Peters	MO	
John Crane	2	Services	Florissant	MO	0000 \$\$\$\$
Sage Environmental Consulting	1	Services	Kirkwood	MO	00 \$
Mississippi					
IPS - Coiled Tubing	7	Services	Laurel	MS	000 \$\$\$\$
Kimray	4,5	Services	Laurel	MS	00 \$\$
Weatherford - Artificial Lift Systems	6,7	Services	Laurel	MS	0000 \$\$\$\$\$
Montana					
TXAM Pumps - field office	5	Services	Baker	MT	0 \$
North Carolina					
EagleBurgmann	2	Services	Charlotte	NC	0 \$\$
Quincy Compressor Direct	2	Services	Charlotte	NC	0 \$\$
North Dakota					
FlexEnergy Leasing	2	Sales	Tioga	ND	0 \$
FMC Technologies - Completion Service	2,4,6	Services	Dickinson	ND	00000 \$\$\$\$
FMC Technologies - Completion Service	2,4,6	Services	Minot	ND	
FMC Technologies - Completion Service	2,4,6	Services	Williston	ND	
FMC Technologies - Fluid Control	2,4,6	Services	Williston	ND	

The Emerging U.S. Methane Mitigation Industry

Company Name	Technology/Service	Location Description	City	State	Company Size Total Annual U.S. Revenues & Employees
North Dakota (cont'd)					
Hy-bon Engineering Company	7,8	Services	Dickenson	ND	O \$\$
IPS - Coiled Tubing	7	Services	Dickinson	ND	OOO \$\$\$\$
Lufkin Industries	7	Services	Dickinson	ND	OOO \$\$
TXAM Pumps - field office	5	Services	Dickinson	ND	O \$
Nebraska					
John Crane	2	Manufacturing/Assembly	Columbus	NE	OOOO \$\$\$\$
New Hampshire					
FlexEnergy	2	HQ & Manufacturing	Portsmouth	NH	O \$
FLIR Systems, Inc.	1	Manufacturing/Assembly	Nashua	NH	OOO \$\$\$\$
New Jersey					
EagleBurgmann	2	Services	Logan Township	NJ	O \$\$
John Crane	2	Services	Somerset	NJ	OOOO \$\$\$\$
John Crane	2	Services	Swedesboro	NJ	
Pentair - Valves & Controls Services Center	3	Services	Bridgeport	NJ	OOOOO \$\$\$\$
New Mexico					
Engineered Concepts LLC	8	HQ	Farmington	NM	O \$
Flogistix, LP	8	Sales	Bloomfield	NM	O \$\$
FMC Technologies -	2,4,6	Services	Hobbs	NM	OOOOO \$\$\$\$
FMC Technologies -	2,4,6	Services	Farmington	NM	
Fracmaster	6,7	Services	Farmington	NM	O \$
Hy-bon Engineering Company	7,8	Services	Artesia	NM	O \$\$

The Emerging U.S. Methane Mitigation Industry

Company Name	Technology/Service	Location Description	City	State	Company Size Total Annual U.S. Revenues & Employees
New Mexico (cont'd)					
IPS - Optimization & Plunger Lift	7	Services	Bloomfield	NM	000 \$\$\$\$
Lufkin Industries	7	Services	Bloomfield	NM	000 \$\$
Patriot Artificial Lift, LLC	7	Services	Farmington	NM	0 \$
PCS Ferguson - Field Office	7	Services	Farmington	NM	00 \$\$
Weatherford - Artificial Lift Systems	6,7	Services	Farmington	NM	0000 \$\$\$\$\$
Well Master Corporation	7	Sales	Bloomfield	NM	0 \$
Nevada					
GE Oil & Gas	2,3,4,5	Sales	Minden	NV	00000 \$\$\$\$
Quincy Compressor Direct	2	Services	Reno	NV	0 \$\$
New York					
Dresser-Rand	2	Manufacturing/Assembly	Olean	NY	0000 \$\$\$\$
Dresser-Rand	2	Manufacturing/Assembly	Painted Post	NY	
Dresser-Rand	2	Manufacturing/Assembly	Wellsville	NY	
John Crane	2	Services	Seneca Falls	NY	0000 \$\$\$\$
John Crane	2	Services	Tonawanda	NY	
Ohio					
Ariel Corporation	2	HQ & Manufacturing	Mount Vernon	OH	000 \$\$
Dearing Compressor and Pump Co.	2	HQ	Youngstown	OH	0 \$\$
Dearing Compressor and Pump Co.	2	Sales	Twinsburg	OH	
Dresser-Rand	2	Services	Hamilton	OH	0000 \$\$\$\$
EagleBurgmann	2	Services	Cincinnati	OH	0 \$\$

The Emerging U.S. Methane Mitigation Industry

Company Name	Technology/Service	Location Description	City	State	Company Size Total Annual U.S. Revenues & Employees
Ohio (cont'd)					
Emerson Climate Technologies	3,4,8	Sales	Sidney	OH	00000 \$\$\$\$
Gardner Denver	2	Sales	Westlake	OH	0000 \$\$\$\$
Hoerbiger	2	Manufacturing/Assembly	Girard	OH	0000 \$\$\$\$
Hy-bon Engineering Company	7,8	Services	Belpre	OH	0 \$\$
John Crane	2	Services	Blue Ash	OH	0000 \$\$\$\$
Leak Finder, Inc	1	HQ	Hudson	OH	0 \$
Multi Products Company	7	HQ & Manufacturing	Millersburg	OH	0 \$
Tech Tool Inc.	7	HQ & Manufacturing	Millersburg	OH	
Oklahoma					
Circo Energy - KF Valves	3	Manufacturing/Assembly	Oklahoma City	OK	000 \$\$\$
Cook Compression	1,2	Services	Oklahoma City	OK	00 \$
Cook Compression	1,2	Services	Tulsa	OK	
Dresser-Rand	2	Services	Kiefer	OK	0000 \$\$\$\$
Dresser-Rand	2	Services	Tulsa	OK	
Engineered Concepts LLC (Heath Technologies, LLC)	8	Manufacturing/Assembly	Claremore	OK	0 \$
Enovation Controls LLC	4	HQ & Manufacturing	Tulsa	OK	00 \$
Exterran Holdings	8	Manufacturing/Assembly	Broken Arrow	OK	0000 \$\$\$\$
Flogistix, LP	8	HQ & Manufacturing	Oklahoma City	OK	0 \$\$
FMC Technologies - Completion Service	2,4,6	Services	Yukon	OK	00000 \$\$\$\$
FMC Technologies - Fluid Control	2,4,6	Services	Oklahoma City	OK	

The Emerging U.S. Methane Mitigation Industry

Company Name	Technology/Service	Location Description	City	State	Company Size Total Annual U.S. Revenues & Employees
Oklahoma (cont'd)					
Gardner Denver	2	Sales	Tulsa	OK	0000 \$\$\$\$
Gardner Denver	2	Services	Oklahoma City	OK	
GE Oil & Gas	2,3,4,5	Manufacturing/Assembly	Oklahoma City	OK	00000 \$\$\$\$
GE Oil & Gas	2,3,4,5	Manufacturing/Assembly	Shawnee	OK	
Hoerbiger	2	Services	Oklahoma City	OK	0000 \$\$\$\$
Hy-bon Engineering Company	7,8	Services	Oklahoma City	OK	0 \$\$
IPS - Coiled Tubing	7	Services	Elk City	OK	000 \$\$\$\$
IPS - Coiled Tubing	7	Services	McAlester	OK	
IPS - Mid-Con Region Office	7	Services	Yukon	OK	
IPS - Optimization & Plunger Lift	7	Services	El Reno	OK	
John Crane	2	Manufacturing/Assembly	Tulsa	OK	0000 \$\$\$\$
Kimray	4,5	HQ & Manufacturing	Oklahoma City	OK	00 \$\$
Lufkin Industries	7	Services	Mustang	OK	000 \$\$
Lufkin Industries	7	Services	Oklahoma City	OK	
McLean Plunger Lift Inc.	7	HQ	Woodward	OK	0 \$
Patriot Artificial Lift, LLC	7	Services	Oklahoma City	OK	0 \$
PCS Ferguson - Field Office	7	Services	Oklahoma City	OK	00 \$\$
PCS Ferguson - Field Office	7	Services	Stigler	OK	
PCS Ferguson - Field Office	7	Services	Woodward	OK	
Tenaris	7	Sales	Oklahoma City	OK	00000 \$\$\$\$
Tescorp	8	HQ & Manufacturing	Tulsa	OK	0 \$

The Emerging U.S. Methane Mitigation Industry

Company Name	Technology/Service	Location Description	City	State	Company Size Total Annual U.S. Revenues & Employees
Oklahoma (cont'd)					
TXAM Pumps - field office	5	Services	El Reno	OK	O \$
TXAM Pumps - field office	5	Services	McAlester	OK	
Weatherford - Artificial Lift Systems	6,7	Sales	Oklahoma City	OK	OOOO \$\$\$\$
Weatherford - Artificial Lift Systems	6,7	Sales	Tulsa	OK	
Weatherford - Artificial Lift Systems	6,7	Services	Oklahoma City	OK	
Weatherford - Artificial Lift Systems	6,7	Services	Woodward	OK	
Weatherford - Artificial Lift Systems	6,7	Services	Woodward	OK	
WellMark Company, LLC	2	HQ & Manufacturing	Oklahoma City	OK	O \$
Whirlwind Methane Recovery Systems	8	HQ & Manufacturing	Edmond	OK	O \$
Oregon					
Enovation Controls LLC	4	Sales	Grants Pass	OR	OO \$
FLIR Systems, Inc.	1	HQ	Wilsonville	OR	OOO \$\$\$\$
John Crane	2	Services	Portland	OR	OOOO \$\$\$\$
Pennsylvania					
Ametek	4	HQ & Manufacturing	Berwyn	PA	OOOOO \$\$\$\$
Ametek	4	Manufacturing/Assembly	Feasterville	PA	
Ametek	4	Manufacturing/Assembly	Horsham	PA	
Bacharach	1	HQ & Manufacturing	New Kensington	PA	O \$
Dearing Compressor and Pump Co.	2	Sales	Erie	PA	O \$

The Emerging U.S. Methane Mitigation Industry

Company Name	Technology/Service	Location Description	City	State	Company Size Total Annual U.S. Revenues & Employees
Pennsylvania (cont'd)					
Dresser-Rand	2	Services	Horsham	PA	0000 \$\$\$\$
FLSmith	8	Manufacturing/Assembly	Manheim	PA	00000 \$\$\$
FLSmith - FMC Technologies - Completion Service	8	HQ	Bethlehem	PA	
FMC Technologies - Fluid Control	2,4,6	Services	Canonsburg	PA	00000 \$\$\$\$
FMC Technologies - Fluid Control	2,4,6	Services	Blairsville	PA	
FMC Technologies - Fluid Control	2,4,6	Services	Muncy	PA	
Gardner Denver - Nash	2	Manufacturing/Assembly	Bentleyville	PA	0000 \$\$\$\$
Gardner Denver - Pumps	2	Sales	Altoona	PA	
Heath Consultants	1	Services	Greensburg	PA	000 \$\$\$
Heath Consultants	1	Services	Monongahela	PA	
IPS - Coiled Tubing	7	Services	Smithton	PA	000 \$\$\$\$
IPS - Coiled Tubing	7	Services	Williamsport	PA	
IPS - Pennsylvania Sales & Support	7	Services	Pittsburgh	PA	
John Crane	2	Services	Pittsburgh	PA	0000 \$\$\$\$
Kimray	4,5	Services	Indiana	PA	00 \$\$
Milton Roy	5	HQ & Manufacturing	Ivyland	PA	00 \$\$
Multi Products Company - Eastern Region (Appalachians) Sales and Services	7	Services	Indiana	PA	0 \$
Patriot Artificial Lift, LLC	7	Services	Pittsburgh	PA	0 \$

The Emerging U.S. Methane Mitigation Industry

Company Name	Technology/Service	Location Description	City	State	Company Size Total Annual U.S. Revenues & Employees
Pennsylvania (cont'd)					
PCS Ferguson - Field Office	7	Services	Coraopolis	PA	OO \$\$
PCS Ferguson - Field Office	7	Services	Williamsport	PA	
Pump Solutions Group - Neptune (TM) Chemical Pump Company	2,5	HQ & Manufacturing	North Wales	PA	OOO \$\$
Sage Environmental Consulting	1	Services	Harrison City	PA	OO \$
Sage Environmental Consulting	1	Services	West Chester	PA	
Tenaris	7	Sales	Pittsburgh	PA	OOOOO \$\$\$\$
TXAM Pumps - field office	5	Services	Montoursville	PA	O \$
Weatherford - Artificial Lift Systems	6,7	Sales	Canonsburg	PA	OOOO \$\$\$\$\$
Weatherford - Artificial Lift Systems	6,7	Services	Punxsutawney	PA	
Rhode Island					
John Crane	2	Services	Warwick	RI	OOOO \$\$\$\$
South Carolina					
Quincy Compressor Direct	2	Services	Greenville	SC	O \$\$
South Dakota					
TXAM Pumps - field office	5	Services	Lead	SD	O \$
Tennessee					
AESSEAL	2	HQ & Manufacturing	Rockford	TN	OOO \$\$
AESSEAL	2	Sales	Kingsport	TN	
Cook Compression	1,2	Services	Knoxville	TN	OO \$
Heath Consultants	1	Services	Nashville	TN	OOO \$\$\$

The Emerging U.S. Methane Mitigation Industry

Company Name	Technology/Service	Location Description	City	State	Company Size Total Annual U.S. Revenues & Employees
Texas					
Cameron	3,4	HQ	Houston	TX	00000 \$\$\$\$
Cameron - Compression Systems	3,4	Sales	Houston	TX	
Cameron - Drilling & Production Systems	3,4	Sales	Houston	TX	
Cameron - Valves & Measurement	3,4	Sales	Houston	TX	
Circor Energy, COMM Engineering USA	3	HQ	Houston	TX	000 \$\$\$
	1,8	Services	Houston	TX	0 \$
Cook Compression	1,2	HQ	Houston	TX	00 \$
Cook Compression	1,2	Manufacturing/Assembly	Odessa	TX	
Cook Compression	1,2	Services	Tyler	TX	
Cook Compression	1,2	Services	Van Vleck	TX	
Dresser-Rand	2	HQ	Houston	TX	0000 \$\$\$\$
Dresser-Rand	2	Manufacturing/Assembly	Houston	TX	
Dresser-Rand	2	Services	Houston	TX	
Dresser-Rand	2	Services	Houston	TX	
Dresser-Rand	2	Services	Odessa	TX	
EagleBurgmann	2	HQ & Manufacturing	Houston	TX	0 \$\$
EagleBurgmann	2	Services	Clute	TX	
EagleBurgmann	2	Services	Pasadena	TX	
Emerson Process Management - Bristol	3,4,8	Sales	Houston	TX	00000 \$\$\$\$

The Emerging U.S. Methane Mitigation Industry

Company Name	Technology/Service	Location Description	City	State	Company Size Total Annual U.S. Revenues & Employees
Texas (cont'd)					
Enovation Controls LLC	4	Manufacturing/Assembly	Rosenberg	TX	OO \$
Epic Well Service LLC	7	HQ	Fort Worth	TX	O \$
Exterran Holdings	8	HQ	Houston	TX	OOOO \$\$\$\$
Exterran Holdings	8	Manufacturing/Assembly	Columbus	TX	
FlexEnergy	2	Sales	Houston	TX	O \$
Flogistix, LP	8	Manufacturing/Assembly	Pampa	TX	O \$\$
Flowserve Corporation	2	HQ	Irving	TX	OOOOO \$\$\$\$
FMC Technologies	2,4,6	HQ	Houston	TX	OOOOO \$\$\$\$
FMC Technologies - Fluid Control	2,4,6	Manufacturing/Assembly	Stephenville	TX	
FMC Technologies - Fluid Control	2,4,6	Services	Alice	TX	
FMC Technologies - Fluid Control	2,4,6	Services	Bryan	TX	
FMC Technologies - Fluid Control	2,4,6	Services	Longview	TX	
FMC Technologies - Fluid Control	2,4,6	Services	Odessa	TX	
FMC Technologies - Fluid Control	2,4,6	Services	Weatherford	TX	
Fracmaster	6,7	HQ	Houston	TX	O \$
Gardner Denver	2	Sales	Houston	TX	OOOO \$\$\$\$
Gardner Denver - Pumps	2	Manufacturing/Assembly	Odessa	TX	
Gardner Denver - Pumps	2	Services	Fort Worth	TX	
GE Oil & Gas	2,3,4,5	Manufacturing/Assembly	Houston	TX	OOOOO \$\$\$\$
GE Oil & Gas	2,3,4,5	Services	Deer Park	TX	

The Emerging U.S. Methane Mitigation Industry

Company Name	Technology/Service	Location Description	City	State	Company Size Total Annual U.S. Revenues & Employees
Texas (cont'd)					
Grover Corporation	2	Manufacturing/Assembly	Richland Hills	TX	0 \$
Heath Consultants	1	HQ	Houston	TX	000 \$\$\$
Heath Consultants	1	Services	Houston	TX	
Heath Consultants	1	Services	Houston	TX	
Hoerbiger	2	Manufacturing/Assembly	Garland	TX	0000 \$\$\$\$
Hoerbiger	2	Manufacturing/Assembly	Houston	TX	
Hoerbiger	2	Services	Houston	TX	
Hoerbiger	2	Services	La Porte	TX	
Hoerbiger	2	Services	Odessa	TX	
Hy-bon Engineering Company	7,8	HQ & Manufacturing	Midland	TX	0 \$\$
Hy-bon Engineering Company	7,8	Services	San Antonio	TX	
Hy-bon Engineering Company	7,8	Services	Weatherford	TX	
Integrated Production Service (IPS)	7	HQ	Houston	TX	000 \$\$\$\$
IPS - Coiled Tubing	7	Services	Denton	TX	000 \$\$\$\$
IPS - Coiled Tubing	7	Services	Longview	TX	
IPS - Coiled Tubing	7	Services	Odessa	TX	
IPS - Coiled Tubing	7	Services	Victoria	TX	
IPS - East Texas Sales & Services	7	Services	Kilgore	TX	
IPS - Manufacturing & Admin	7	Manufacturing/Assembly	Waller	TX	
IPS - North Region Office	7	Services	Weatherford	TX	

The Emerging U.S. Methane Mitigation Industry

Company Name	Technology/Service	Location Description	City	State	Company Size Total Annual U.S. Revenues & Employees
Texas (cont'd)					
IPS - South Region Office	7	Services	San Antonio	TX	
IPS - South Texas Sales & Services	7	Services	Pleasanton	TX	
IPS - West Texas Sales & Services	7	Services	Ozona	TX	
John Crane	2	Manufacturing/Assembly	Big Spring	TX	0000 \$\$\$\$
John Crane	2	Manufacturing/Assembly	Pharr	TX	
John Crane	2	Services	Beaumont	TX	
John Crane	2	Services	Corpus Christi	TX	
John Crane	2	Services	Houston	TX	
John Crane	2	Services	Midland	TX	
John Crane	2	Services	Odessa	TX	
John Crane	2	Services	Oyster Creek	TX	
John Crane	2	Services	Pasadena	TX	
John Crane	2	Services	Sugar Land	TX	
John Crane	2	Services	Tyler	TX	
Kimray	4,5	Services	Conroe	TX	00 \$\$
Kimray	4,5	Services	Corpus Christi	TX	
Kimray	4,5	Services	Kilgore	TX	
Leak Finder, Inc	1	Services	Houston	TX	0 \$
Leak Surveys, Inc	1	HQ	Early	TX	0 \$
Lufkin Industries	7	HQ	Lufkin	TX	000 \$\$
Lufkin Industries	7	Manufacturing/Assembly	Houston	TX	

The Emerging U.S. Methane Mitigation Industry

Company Name	Technology/Service	Location Description	City	State	Company Size Total Annual U.S. Revenues & Employees
Texas (cont'd)					
Lufkin Industries	7	Services	Bryan	TX	000 \$\$
Lufkin Industries	7	Services	Freer	TX	
Lufkin Industries	7	Services	Kilgore	TX	
Lufkin Industries	7	Services	Odessa	TX	
Lufkin Industries	7	Services	San Angelo	TX	
Lufkin Industries	7	Services	Victoria	TX	
Multi Products Company - Houston Regional Sales and Marketing	7	Sales	Houston	TX	O \$
MXROS	7	HQ & Manufacturing	Mineral Wells	TX	O \$
National Oilwell Varco	7	HQ & Manufacturing	Houston	TX	00000 \$\$\$\$
National Oilwell Varco	7	Manufacturing/Assembly	Anderson	TX	
National Oilwell Varco	7	Manufacturing/Assembly	Broken Arrow	TX	
National Oilwell Varco	7	Manufacturing/Assembly	Bryan	TX	
National Oilwell Varco	7	Manufacturing/Assembly	Conroe	TX	
National Oilwell Varco	7	Manufacturing/Assembly	Englewood	TX	
National Oilwell Varco	7	Manufacturing/Assembly	Fort Worth	TX	
National Oilwell Varco	7	Manufacturing/Assembly	Houston	TX	
National Oilwell Varco	7	Sales	China Grove	TX	
National Oilwell Varco	7	Sales	Houston	TX	
National Oilwell Varco	7	Sales	Houston	TX	
National Oilwell Varco	7	Services	San Antonio	TX	

The Emerging U.S. Methane Mitigation Industry

Company Name	Technology/Service	Location Description	City	State	Company Size Total Annual U.S. Revenues & Employees
Texas (cont'd)					
Norriseal	4	HQ & Manufacturing	Houston	TX	O \$
Patriot Artificial Lift, LLC	7	HQ	College Station	TX	O \$
Patriot Artificial Lift, LLC	7	Manufacturing/Assembly	Houston	TX	
Patriot Artificial Lift, LLC	7	Services	Aledo	TX	
Patriot Artificial Lift, LLC	7	Services	Beeville	TX	
Patriot Artificial Lift, LLC	7	Services	Buffalo	TX	
Patriot Artificial Lift, LLC	7	Services	Carrizo Springs	TX	
Patriot Artificial Lift, LLC	7	Services	Kilgore	TX	
Patriot Artificial Lift, LLC	7	Services	Sonora	TX	
PCS Ferguson - Field Office	7	Services	Bridgeport	TX	OO \$\$
PCS Ferguson - Field Office	7	Services	Buffalo	TX	
PCS Ferguson - Field Office	7	Services	Cleburne	TX	
PCS Ferguson - Field Office	7	Services	Freer	TX	
PCS Ferguson - Field Office	7	Services	Houston	TX	
PCS Ferguson - Field Office	7	Services	Karnes City	TX	
PCS Ferguson - Field Office	7	Services	Odessa	TX	
PCS Ferguson - Field Office	7	Services	Perryton	TX	
PCS Ferguson - Field Office	7	Services	San Angelo	TX	
PCS Ferguson - Field Office	7	Services	Sonora	TX	

The Emerging U.S. Methane Mitigation Industry

Company Name	Technology/Service	Location Description	City	State	Company Size Total Annual U.S. Revenues & Employees
Texas (cont'd)					
PCS Ferguson - Field Office	7	Services	Tyler	TX	OO \$\$
PCS Ferguson - Field Office	7	Services	Weatherford	TX	
Pedcor	7	HQ & Manufacturing	Tomball	TX	O \$
Pentair - Valves & Controls Services Center	3	Services	Port Arthur	TX	OOOOO \$\$\$\$
Pentair - Valves & Controls Services Center	3	Services	Stafford	TX	
Pentair - Valves & Controls Services Center (Main)	3	Services	Pasadena	TX	
Petrogas Environmental Systems	8	HQ & Manufacturing	Angleton	TX	O \$
Production Lift Systems	7	HQ & Manufacturing	Midland	TX	O \$
Quincy Compressor Direct	2	Services	Corpus Christi	TX	O \$\$
Quincy Compressor Direct	2	Services	Dallas	TX	
Quincy Compressor Direct	2	Services	Fort Worth	TX	
Quincy Compressor Direct	2	Services	Houston	TX	
Quincy Compressor Direct	2	Services	Oyster Creek	TX	
Quincy Compressor Direct	2	Services	Port Arthur	TX	
Quincy Compressor Direct	2	Services	Schertz	TX	
Quincy Compressor Direct	2	Services	Tyler	TX	
Quincy Compressor Direct	2	Services	Waco	TX	
Rebellion Photonics	1	HQ & Manufacturing	Houston	TX	O \$

The Emerging U.S. Methane Mitigation Industry

Company Name	Technology/Service	Location Description	City	State	Company Size Total Annual U.S. Revenues & Employees
Texas (cont'd)					
Sage Environmental Consulting	1	HQ	Austin	TX	OO \$
Sage Environmental Consulting	1	Services	Beaumont	TX	
Sage Environmental Consulting	1	Services	Cedar Park	TX	
Sage Environmental Consulting	1	Services	Houston	TX	
Solar Injection Systems, Inc.	5	HQ & Manufacturing	Odessa	TX	O \$
Stewart & Stevenson	7	HQ & Manufacturing	Houston	TX	OOO \$\$\$\$
Stewart & Stevenson	7	Services	Edmond	TX	
Stewart & Stevenson	7	Services	Houston	TX	
Stewart & Stevenson	7	Services	Killeen	TX	
Stewart & Stevenson	7	Services	Mills	TX	
Stewart & Stevenson	7	Services	Odessa	TX	
Stewart & Stevenson	7	Services	Victoria	TX	
Stewart & Stevenson	7	Services	Williston	TX	
Tenaris	7	HQ	Houston	TX	OOOOO \$\$\$\$
Tenaris	7	Services	Houston	TX	
TXAM Pumps	5	HQ & Manufacturing	Houston	TX	O \$
TXAM Pumps - field office	5	Services	Asherton	TX	
TXAM Pumps - field office	5	Services	Corpus Christi	TX	
TXAM Pumps - field office	5	Services	Corpus Christi	TX	
TXAM Pumps - field office	5	Services	Fort Worth	TX	

The Emerging U.S. Methane Mitigation Industry

Company Name	Technology/Service	Location Description	City	State	Company Size Total Annual U.S. Revenues & Employees
Texas (cont'd)					
TXAM Pumps - field office	5	Services	Karnes City	TX	0 \$
TXAM Pumps - field office	5	Services	Pampa	TX	
VisionMonitor Software	1	HQ	Houston	TX	0 \$
Weatherford - Artificial Lift Systems	6,7	HQ	Houston	TX	0000 \$\$\$\$\$
Weatherford - Artificial Lift Systems	6,7	Sales	Addison	TX	
Weatherford - Artificial Lift Systems	6,7	Sales	San Antonio	TX	
Weatherford - Artificial Lift Systems	6,7	Services	Houston	TX	
Weatherford - Artificial Lift Systems	6,7	Services	Longview	TX	
Weatherford - Artificial Lift Systems	6,7	Services	Longview	TX	
Weatherford - Artificial Lift Systems	6,7	Services	McAllen	TX	
Weatherford - Artificial Lift Systems	6,7	Services	Midland	TX	
Weatherford - Artificial Lift Systems	6,7	Services	Midland	TX	
Weatherford - Artificial Lift Systems	6,7	Services	North Kilgore	TX	
Weatherford - Artificial Lift Systems	6,7	Services	Odessa	TX	
Weatherford - Artificial Lift Systems	6,7	Services	Perryton	TX	
Weatherford - Artificial Lift Systems	6,7	Services	San Antonio	TX	
Weatherford - Artificial Lift Systems	6,7	Services	Victoria	TX	
Utah					
Dresser-Rand	2	Services	North Salt Lake City	UT	0000 \$\$\$\$

The Emerging U.S. Methane Mitigation Industry

Company Name	Technology/Service	Location Description	City	State	Company Size Total Annual U.S. Revenues & Employees
Utah (cont'd)					
FMC Technologies - Fluid Control	2,4,6	Services	Vernal	UT	00000 \$\$\$\$
Hycomp	2	HQ & Manufacturing	Hyde Park	UT	0 \$
IPS - Optimization & Plunger Lift	7	Services	Roosevelt	UT	000 \$\$\$\$
IPS - Utah Sales & Services	7	Services	Vernal	UT	
John Crane	2	Services	North Salt Lake City	UT	0000 \$\$\$\$
Patriot Artificial Lift, LLC	7	Services	Vernal	UT	0 \$
PCS Ferguson - Field Office	7	Services	Vernal	UT	00 \$\$
Weatherford - Artificial Lift Systems	6,7	Services	Roosevelt	UT	0000 \$\$\$\$
Virginia					
Bauer 2	2	HQ & Manufacturing	Norfolk	VA	00 \$
Dresser-Rand	2	Manufacturing/Assembly	Salem	VA	
Dresser-Rand	2	Services	Chesapeake	VA	0000 \$\$\$\$
John Crane	2	Services	Richmond	VA	0000 \$\$\$\$
Quincy Compressor Direct	2	Services	Richmond	VA	0 \$\$
Weatherford - Artificial Lift Systems	6,7	Sales	Elkview	VA	0000 \$\$\$\$
Washington					
AESSEAL	2	Sales	Longview	WA	000 \$\$
Dresser-Rand	2	Services	Seattle	WA	0000 \$\$\$\$
Gardner Denver	2	Sales	Vancouver	WA	0000 \$\$\$\$
Pentair - Valves & Controls Services Center	3	Services	Everett	WA	00000 \$\$\$\$
Pergam Technical Service	1	HQ	Renton	WA	0 \$

The Emerging U.S. Methane Mitigation Industry

Company Name	Technology/Service	Location Description	City	State	Company Size Total Annual U.S. Revenues & Employees
Wisconsin					
Emerson Climate Technologies (Vilter)	3,4,8	Manufacturing/Assembly	Cudahy	WI	00000 \$\$\$\$
Gardner Denver	2	HQ	Milwaukee	WI	0000 \$\$\$\$
Grover Corporation	2	HQ & Manufacturing	Milwaukee	WI	0 \$
John Crane	2	Manufacturing/Assembly	Grafton	WI	0000 \$\$\$\$
Pentair - Flow Technologies Main Office	3	Manufacturing/Assembly	Delavan	WI	00000 \$\$\$\$
Wyoming					
Flogistix, LP	8	Manufacturing/Assembly	Gillette	WY	0 \$\$
FMC Technologies - Completion Service	2,4,6	Services	Casper	WY	00000 \$\$\$\$
FMC Technologies - Completion Service	2,4,6	Services	Evanston	WY	
FMC Technologies - Fluid Control	2,4,6	Services	Rock Springs	WY	
Hoerbiger	2	Services	Rock Springs	WY	0000 \$\$\$\$
IPS - Coiled Tubing	7	Services	Rock Springs	WY	000 \$\$\$\$
IPS - Wyoming Sales & Support	7	Services	Pinedale	WY	
Lufkin Industries	7	Services	Pinedale	WY	000 \$\$
Multi Products Company - Western Region (Rockies) Sales and Services	7	Services	Kemmerer	WY	0 \$
Patriot Artificial Lift, LLC	7	Services	Casper	WY	0 \$
Patriot Artificial Lift, LLC	7	Services	Pinedale	WY	
PCS Ferguson - Field Office	7	Services	Gillette	WY	00 \$\$

The Emerging U.S. Methane Mitigation Industry

Company Name	Technology/Service	Location Description	City	State	Company Size Total Annual U.S. Revenues & Employees
Wyoming (cont'd)					
PCS Ferguson - Field Office	7	Services	Rock Springs	WY	OO \$\$
Sage Environmental Consulting	1	Services	Laramie	WY	OO \$
TXAM Pumps - field office	5	Services	Gillette	WY	O \$
Weatherford - Artificial Lift Systems	6,7	Sales	Gillette	WY	OOOO \$\$\$\$\$
Weatherford - Artificial Lift Systems	6,7	Sales	Rock Springs	WY	
Weatherford - Artificial Lift Systems	6,7	Services	Gillette	WY	
Weatherford - Artificial Lift Systems	6,7	Services	Riverton	WY	

Appendix 2: Full set of firm-level data, by technology

US Millions		Employees	
<\$38.5	\$	1-500	O
\$38.6-\$500	\$\$	501-1000	OO
\$501-\$1,000	\$\$\$	1001-5,000	OOO
\$1,001-\$10,000	\$\$\$\$	5,001-10,000	OOOO
\$10,000+	\$\$\$\$\$	10,001+	OOOOO

Company Name	U.S. Headquarters* and Relevant U.S. Employee Locations		Company Size Total Annual U.S. Revenues & Employees
Leak Detection Technologies & Services			
Leak Detection Technologies			
Apogee Scientific	Englewood*	CO	0 \$
FLIR Systems, Inc.	Wilsonville*	OR	000
	Goleta	CA	\$\$\$\$
	Nashua	NH	
Gas Imaging Technology LLC	Buellton*	CA	0
	Solvang	CA	\$
Heath Consultants (see Leak Detection Services)			
Pergam Technical Service	Renton*	WA	0 \$
Picarro	Santa Clara	CA	0 \$
Rebellion Photonics	Houston*	TX	0 \$
Leak Detection Services			
COMM Engineering USA (see Vapor Recovery Units)			
Heath Consultants	Houston*	TX	000
	Tucson	AZ	\$
	Sacramento	CA	
	Greensburg	PA	
	Monongahela	PA	
	Nashville	TN	
	Houston	TX	
	Houston	TX	
Leak Finder, Inc.	Hudson*	OH	0
	Auburn	CA	\$
	Pueblo	CO	
	Houston	TX	

The Emerging U.S. Methane Mitigation Industry

Company Name	U.S. Headquarters* and Relevant U.S. Employee Locations		Company Size Total Annual U.S. Revenues & Employees	
Leak Detection Services				
Leak Surveys, Inc.	Early*	TX	0	
	Denver	CO	\$	
	Chicago	IL		
	Baton Rouge	LA		
	Lake Charles	LA		
	Metairie	LA		
	Kirkwood	MO		
	Harrison City	PA		
	West Chester	PA		
	Beaumont	TX		
	Cedar Park	TX		
	Houston	TX		
	Laramie	WY		
Whirlwind Methane Recovery Systems (<i>see Vapor Recovery Units</i>)				
Seals				
AESSEAL	Rockford*	TN	000	
	Los Alamitos	CA	\$	
	Marion	IA	\$	
	Fairfield	ME		
	Kingsport	TN		
	Longview	WA		
Ariel Corporation	Mount Vernon*	OH	000	
Bauer Compressors	Norfolk*	VA	00	
	Livermore	CA	\$	
	Yorba Linda	CA	\$	
	Sunrise	FL		
Cook Compression	Houston*	TX		00
	Santa Fe Springs	CA		\$
	Denver	CO		\$
	Grand Junction	CO		
	Ft. Lauderdale	FL		
	Jeffersonville	IN		
	La Porte	IN		
	Gonzales	LA		
	Oklahoma City	OK		
	Tulsa	OK		
	Knoxville	TN		
	Odessa	TX		
	Tyler	TX		
Van Vleck	TX			
Dearing Compressor and Pump Co.	Youngstown*	OH	0	
	Twinsburg	OH	\$	
	Erie	PA	\$	

The Emerging U.S. Methane Mitigation Industry

Company Name	U.S. Headquarters* and Relevant U.S. Employee Locations		Company Size Total Annual U.S. Revenues & Employees
Seals			
Dresser-Rand	Houston*	TX	0000
	Kenai	AK	\$\$\$\$
	Chula Vista	CA	
	Concord	CA	
	Rancho Domingo	CA	
	Atlantic Beach	FL	
	Burlington	IA	
	Naperville	IL	
	Baton Rouge	LA	
	Jena	LA	
	Louisiana	MO	
	Olean	NY	
	Painted Post	NY	
	Wellsville	NY	
	Hamilton	OH	
	Kiefer	OK	
	Tulsa	OK	
	Horsham	PA	
	Houston	TX	
	Houston	TX	
	Houston	TX	
	Odessa	TX	
	North Salt Lake City	UT	
	Chesapeake	VA	
	Salem	VA	
	Seattle	WA	
EagleBurgmann	Houston*	TX	0 (US)
	Benicia	CA	\$\$ (US)
	Denver	CO	
	Baton Rouge	LA	
	Midland	MI	
	Charlotte	NC	
	Logan Township	NJ	
	Cincinnati	OH	
	Clute	TX	
	Pasadena	TX	
FlexEnergy	Portsmouth*	NH	0
	Irvine	CA	\$
	Mission Viejo	CA	
	Greenwood Village	CO	
	Tioga	ND	
	Houston	TX	
Flowserve Corporation	Irving*	TX	00000 \$\$\$\$
FMC Technologies (see Pneumatic Controllers)			

The Emerging U.S. Methane Mitigation Industry

Company Name	U.S. Headquarters* and Relevant U.S. Employee Locations		Company Size Total Annual U.S. Revenues & Employees
Seals (cont'd)			
Gardner Denver	Milwaukee*	WI	0000
	Trussville	AL	\$\$\$\$
	Trumbull	CT	
	Princeton	IL	
	Quincy	IL	
	Mayfield	KY	
	Shreveport	LA	
	Timonium	MD	
	Sedalia	MO	
	St. Peters	MO	
	Westlake	OH	
	Oklahoma City	OK	
	Tulsa	OK	
	Altoona	PA	
	Bentleyville	PA	
	Fort Worth	TX	
	Houston	TX	
	Odessa	TX	
	Vancouver	WA	
Grover Corporation	Milwaukee*	WI	0
	Richland Hills	TX	\$
Hoerbiger	Pompano Beach*	FL	0000
	Santa Clarita	CA	\$\$\$\$
	New Castle	DE	
	Deerfield Beach	FL	
	Joliet	IL	
	Liberal	KS	
	Baton Rouge	LA	
	Girard	OH	
	Oklahoma City	OK	
	Garland	TX	
	Houston	TX	
	Houston	TX	
	La Porte	TX	
	Odessa	TX	
	Rock Springs	WY	
Hycomp	Hyde Park*	UT	0 \$
John Crane	Chicago*	IL	0000
	Anchorage	AK	\$\$\$\$
	Decatur	AL	
	Mobile	AL	
	Phoenix	AZ	
	Cerritos	CA	

The Emerging U.S. Methane Mitigation Industry

Company Name	U.S. Headquarters* and Relevant U.S. Employee Locations	Company Size Total Annual U.S. Revenues & Employees
Seals (cont'd)		
John Crane (cont'd)	Concord	CA
	Golden	CO
	Norcross	GA
	Cedar Rapids	IA
	Bolingbrook	IL
	Crystal Lake	IL
	Morton Grove	IL
	Indianapolis	IN
	New Albany	IN
	Derby	KS
	Baton Rouge	LA
	Midland	MI
	Bursville	MN
	Florissant	MO
	Columbus	NE
	Somerset	NJ
	Swedesboro	NJ
	Seneca Falls	NY
	Tonawanda	NY
	Blue Ash	OH
	Tulsa	OK
	Portland	OR
	Pittsburgh	PA
	Warwick	RI
	Beaumont	TX
	Big Spring	TX
	Corpus Christi	TX
	Houston	TX
	Midland	TX
	Odessa	TX
	Oyster Creek	TX
	Pasadena	TX
	Pharr	TX
	Sugar Land	TX
	Tyler	TX
	North Salt Lake City	UT
	Richmond	VA
	Grafton	WI
Kaydon Ring & Seal	Baltimore*	MD
Quincy Compressor LLC	Bay Minette*	AL
	Dixon	CA
	Irvine	CA
	Sacramento	CA
	San Jose	CA

The Emerging U.S. Methane Mitigation Industry

Company Name	U.S. Headquarters* and Relevant U.S. Employee Locations		Company Size Total Annual U.S. Revenues & Employees
Seals (cont'd)			
Quincy Compressor LLC (cont'd)	Jacksonville	FL	0
	Miami Gardens	FL	\$\$
	Orlando	FL	
	Tampa	FL	
	Covington	GA	
	Addison	IL	
	East Peoria	IL	
	Quincy	IL	
	Rock Island	IL	
	Charlotte	NC	
	Reno	NV	
	Greenville	SC	
	Corpus Christi	TX	
	Dallas	TX	
	Fort Worth	TX	
	Houston	TX	
	Oyster Creek	TX	
	Port Arthur	TX	
	Schertz	TX	
	Tyler	TX	
Waco	TX		
Richmond	VA		
WellMark Company, LLC (see Pneumatic Controllers)			
Low-emissions Valves			
Cameron	Houston*	TX	00000
	Millbury	MA	\$\$\$\$
	Houston	TX	
	Houston	TX	
	Houston	TX	
Circor Energy	Houston*	TX	000
	Oklahoma City	OK	\$\$\$
Emerson (see Pneumatic Controllers)			
FMC Technologies (see Pneumatic Controllers)			
GE (see Pneumatic Controllers)			
Pentair	Minneapolis*	MN	00000
	Anchorage	AK	\$\$\$\$
	Corona	CA	
	Bolingbrook	IL	
	Baton Rouge	LA	
	Mansfield	MA	
	Bridgeport	NJ	
	Pasadena	TX	
	Port Arthur	TX	
	Stafford	TX	

The Emerging U.S. Methane Mitigation Industry

Company Name	U.S. Headquarters* and Relevant U.S. Employee Locations		Company Size Total Annual U.S. Revenues & Employees
Low-emissions Valves			
Pentair (cont'd)	Everett	WA	00000
	Delavan	WI	\$\$\$\$
Pneumatic Controllers			
Ametek	Berwyn*	PA	00000
	Feasterville	PA	\$\$\$\$
	Horsham	PA	
Cameron (see Low-emissions Valves)			
Emerson	St. Louis*	MO	00000
	Marshalltown	IA	\$\$\$\$
	Sidney	OH	
	Houston	TX	
Enovation Controls LLC	Tulsa*	OK	00
	Grants Pass	OR	\$
	Rosenberg	TX	
FMC Technologies	Houston*	TX	00000
	DeadHorse	AK	\$\$\$\$
	Kenai	AK	
	Bakersfield	CA	
	Brighton	CO	
	Brighton	CO	
	Denver	CO	
	Englewood	CO	
	Fort Lupton	CO	
	Grand Junction	CO	
	Grand Junction	CO	
	Grand Junction	CO	
	Bossier City	LA	
	Broussard	LA	
	Dickinson	ND	
	Minot	ND	
	Williston	ND	
	Williston	ND	
	Farmington	NM	
	Hobbs	NM	
	Oklahoma City	OK	
	Yukon	OK	
	Blairsville	PA	
	Canonsburg	PA	
	Muncy	PA	
	Alice	TX	
	Bryan	TX	
	Longview	TX	
	Odessa	TX	
	Stephenville	TX	
	Weatherford	TX	

The Emerging U.S. Methane Mitigation Industry

Company Name	U.S. Headquarters* and Relevant U.S. Employee Locations		Company Size Total Annual U.S. Revenues & Employees
Pneumatic Controllers (cont'd)			
FMC Technologies (cont'd)	Vernal	UT	00000
	Casper	WY	\$\$\$\$
	Evanston	WY	
	Rock Springs	WY	
Foxboro Eckhardt (Invensys Foxboro)	Foxboro	MA	000 \$\$\$\$
GE	Fairfield*	CT	00000
	Elk Grove Village	IL	\$\$\$\$
	Billerica	MA	
	Minden	NV	
	Oklahoma City	OK	
	Shawnee	OK	
	Deer Park	TX	
	Houston	TX	
Kimray	Oklahoma City*	OK	00
	Bakersfield	CA	\$
	Houma	LA	
	Shreveport	LA	
	Laurel	MS	
	Indiana	PA	
	Conroe	TX	
	Corpus Christi	TX	
	Kilgore	TX	
Nichols-Given Associates	Centennial*	CO	0 \$
Norriseal	Houston*	TX	0
	Broussard	LA	\$
WellMark Company, LLC	Oklahoma City*	OK	0 \$
Pumps			
GE (see Pneumatic Controllers)			
Kimray (see Pneumatic Controllers)			
Milton Roy	Ivyland*	PA	00 \$
Pump Solutions Group	Oakbrook Terrace*	IL	000 \$
Pump Solutions Group – Blackmer	Grand Rapids*	MI	00 \$
Pump Solutions Group - Neptune	North Wales*	PA	0 \$
Solar Injection Systems, Inc.	Odessa*	TX	0 \$

The Emerging U.S. Methane Mitigation Industry

Company Name	U.S. Headquarters* and Relevant U.S. Employee Locations		Company Size Total Annual U.S. Revenues & Employees
Pumps			
TXAM Pumps	Houston*	TX	0
	Guy	AR	\$
	Rifle	CO	
	Baker	MT	
	Dickinson	ND	
	El Reno	OK	
	McAlester	OK	
	Montoursville	PA	
	Lead	SD	
	Asherton	TX	
	Corpus Christi	TX	
	Corpus Christi	TX	
	Fort Worth	TX	
	Karnes City	TX	
	Pampa	TX	
	Gillette	WY	
Reduced Emissions Completions			
FMC Technologies (see Pneumatic Controllers)			
Fracmaster	Houston*	TX	0
	Quitman	AR	\$
	Farmington	NM	
Weatherford	Houston*	TX	0000
	Anchorage	AK	\$\$\$\$
	Grand Junction	CO	
	Lafayette	LA	
	Mandeville	LA	
	Scott	LA	
	Shreveport	LA	
	Laurel	MS	
	Farmington	NM	
	Oklahoma City	OK	
	Oklahoma City	OK	
	Tulsa	OK	
	Woodward	OK	
	Woodward	OK	
	Canonsburg	PA	
	Punxsutawney	PA	
	Addison	TX	
	Houston	TX	
	Longview	TX	
	Longview	TX	
	McAllen	TX	
	Midland	TX	
	Midland	TX	

The Emerging U.S. Methane Mitigation Industry

Company Name	U.S. Headquarters* and Relevant U.S. Employee Locations	Company Size Total Annual U.S. Revenues & Employees
Reduced Emissions Completions (cont'd)		
Weatherford (cont'd)	North Kilgore	TX 0000
	Odessa	TX \$\$\$\$
	Perryton	TX
	San Antonio	TX
	San Antonio	TX
	Victoria	TX
	Roosevelt	UT
	Elkview	VA
	Gillette	WY
	Gillette	WY
	Riverton	WY
	Rock Springs	WY
Plunger Lifts		
Epic Well Service LLC	Fort Worth*	TX 0 \$
Hy-bon Engineering Company (see Vapor Recovery Units)		
Integrated Production Service (IPS)	Houston*	TX 000
	Damascus	AR \$\$\$\$
	Paris	AR
	Denver	CO
	Evans	CO
	Grand Junction	CO
	Pratt	KS
	Arcadia	LA
	Broussard	LA
	Laurel	MS
	Dickinson	ND
	Bloomfield	NM
	El Reno	OK
	Elk City	OK
	McAlester	OK
	Yukon	OK
	Pittsburgh	PA
	Smithton	PA
	Williamsport	PA
	Denton	TX
	Kilgore	TX
	Longview	TX
	Odessa	TX
	Ozona	TX
	Pleasanton	TX
	San Antonio	TX
	Victoria	TX
	Waller	TX
	Weatherford	TX

The Emerging U.S. Methane Mitigation Industry

Company Name	U.S. Headquarters* and Relevant U.S. Employee Locations		Company Size Total Annual U.S. Revenues & Employees
Plunger Lifts (cont'd)			
Integrated Production Service (IPS) (cont'd)	Roosevelt	UT	000
	Vernal	UT	\$\$\$\$
	Pinedale	WY	
	Rock Springs	WY	
Lufkin Industries (acquired by GE Oil & Gas)	Lufkin*	TX	000
	Denver	CO	\$
	Grand Junction	CO	
	Parachute	CO	
	Madisonville	LA	
	New Iberia	LA	
	Dickinson	ND	
	Bloomfield	NM	
	Mustang	OK	
	Oklahoma City	OK	
	Bryan	TX	
	Freer	TX	
	Houston	TX	
	Kilgore	TX	
	Odessa	TX	
	San Angelo	TX	
	Victoria	TX	
	Pinedale	WY	
Mclean Plunger Lift Inc.	Woodward*	OK	0 \$
Multi Products Company	Millersburg*	OH	0
	Rifle	CO	\$
	Jenkins	KY	
	Indiana	PA	
	Houston	TX	
	Kemmerer	WY	
Patriot Artificial Lift, LLC	College Station*	TX	0
	Conway	AR	\$
	Grand Junction	CO	
	Greeley	CO	
	Farmington	NM	
	Oklahoma City	OK	
	Pittsburgh	PA	
	Aledo	TX	
	Beeville	TX	
	Buffalo	TX	
	Carrizo Springs	TX	
	Houston	TX	
	Kilgore	TX	
	Sonora	TX	
	Vernal	UT	

The Emerging U.S. Methane Mitigation Industry

Company Name	U.S. Headquarters* and Relevant U.S. Employee Locations	Company Size Total Annual U.S. Revenues & Employees
Plunger Lifts (cont'd)		
Patriot Artificial Lift, LLC (cont'd)	Casper	WY 0
	Pinedale	WY \$
PCS Ferguson	Frederick*	CO 00
	Conway	AR \$\$
	Evans	CO
	Fort Lupton	CO
	Grand Junction	CO
	Parachute	CO
	Haynesville	LA
	Lafayette	LA
	Shreveport	LA
	Farmington	NM
	Oklahoma City	OK
	Stigler	OK
	Woodward	OK
	Coraopolis	PA
	Williamsport	PA
	Bridgeport	TX
	Buffalo	TX
	Cleburne	TX
	Freer	TX
	Houston	TX
	Karnes City	TX
	Odessa	TX
	Perryton	TX
	San Angelo	TX
	Sonora	TX
	Tyler	TX
	Weatherford	TX
	Vernal	UT
	Gillette	WY
	Rock Springs	WY
Production Lift Systems	Midland*	TX 0 \$
Tech Tool Inc.	Millersburg*	OH 0 \$
Weatherford (see Reduced Emissions Completions)		
Well Master Corporation	Golden*	CO 0
	Rifle	CO \$
	Bloomfield	NM
Velocity Tubing		
BST Lift Systems	Ventura*	CA 0 \$

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Company Name	U.S. Headquarters* and Relevant U.S. Employee Locations		Company Size Total Annual U.S. Revenues & Employees
Velocity Tubing (cont'd)			
MXROS	Mineral Wells*	TX	0 \$
National Oilwell Varco	Houston*	TX	00000
	Anderson	TX	\$\$\$\$
	Broken Arrow	TX	
	Bryan	TX	
	China Grove	TX	
	Conroe	TX	
	Englewood	TX	
	Fort Worth	TX	
	Houston	TX	
	Houston	TX	
	Houston	TX	
	San Antonio	TX	
Pedcor	Tomball*	TX	0 \$
Stewart & Stevenson	Houston*	TX	000
	Edmond	TX	\$\$\$\$
	Houston	TX	
	Killeen	TX	
	Mills	TX	
	Odessa	TX	
	Victoria	TX	
	Williston	TX	
Tenaris	Houston*	TX	00000
	Oklahoma City	OK	\$\$\$\$
	Pittsburgh	PA	
	Houston	TX	
Vapor Recovery Units			
COMM Engineering USA	Lafayette*	LA	0
	Denver	CO	\$
	Houston	TX	
Emerson (see Pneumatic Controllers)			
Engineered Concepts LLC	Farmington*	NM	0
	Claremore	OK	\$
Exterran Holdings	Houston*	TX	0000
	Broken Arrow	OK	\$\$\$\$
	Columbus	TX	
FL Smidth	Bethlehem	PA	
	Manheim*	PA	00000 \$\$\$

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Company Name	U.S. Headquarters* and Relevant U.S. Employee Locations		Company Size Total Annual U.S. Revenues & Employees
Vapor Recovery Units (cont'd)			
Flogistix, LP	Oklahoma City*	OK	0
	Bloomfield	NM	\$\$
	Pampa	TX	
	Gillette	WY	
Hy-bon Engineering Company	Midland*	TX	0
	Evans	CO	\$\$
	Dickenson	ND	
	Artesia	NM	
	Belpre	OH	
	Oklahoma City	OK	
	San Antonio	TX	
	Weatherford	TX	
Petrogas Environmental Systems	Angleton*	TX	0 \$
Tescorp	Tulsa*	OK	0
	Cartersville	GA	\$
Whirlwind Methane Recovery Systems	Edmond*	OK	0 \$

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