

## **REQUEST FOR INFORMATION LEAK DETECTION AT OIL AND GAS OPERATIONS**

The Department of Conservation, California Geologic Energy Management Division (CalGEM) is seeking information on technologies and processes that can be used to effectively ensure leaks associated with oil and gas operations are being detected using cost-effective technologies. Information on appropriate community data access and notification are also of interest. Information gathered from this Request for Information (RFI), as well as additional discussions with stakeholders, will guide future actions, which may include implementation of leak detection and response plan requirements.

This document outlines CalGEM's objectives with this RFI and some discussion questions to aid CalGEM in information and data-gathering. Members of the public are encouraged to provide input on how best to accomplish these goals. Suggestions about a specific regulatory approach, comments on objectives, and answers to general discussion questions are most useful if they are supported by discussion of the value and benefits of each approach. References to specific technologies, fields where these technologies are in use, published data, and research is highly encouraged.

### **Submission of Written Comments**

Written submissions can be provided through May 31, 2024, by email

at: [CalGEMRFI@conservation.ca.gov](mailto:CalGEMRFI@conservation.ca.gov)

or by mail at:           Department of Conservation  
                                  Attn: Leak Detection RFI  
                                  715 P Street, MS 1907  
                                  Sacramento, CA 95814

Written comments received during the comment period will be reviewed and considered to inform the requirements for operators to maintain their production facilities and operations in a leak-free environment.

### **Contact Information**

If you have any questions regarding the process for this public comment period, please contact the Office of Legislative and Regulatory Affairs, at: (916) 694-7577 or [CalGEMRFI@conservation.ca.gov](mailto:CalGEMRFI@conservation.ca.gov).

## **BACKGROUND**

CalGEM has broad authority to address leaks from oil and gas operations. Public Resources Code section 3106 provides the supervisor broad authority to supervise the drilling, operation, maintenance, and abandonment of wells and facilities to “prevent, as far as possible, damage to life, health, property, and natural resources ...” In addition, Public Resources Code section 3011 provides that CalGEM's mandate includes “protecting public health and safety and environmental quality, including reduction and mitigation of greenhouse gas emissions associated with the development of hydrocarbon ... resources in a manner that meets the energy needs of the state.”

When a well or attendant production facility is leaking gas, it is an indication that the well or facility is not being properly maintained and therefore may pose a threat to life, health, property, and natural resources. California Code of Regulations, title 14, section 1777, subdivision (a) requires operators to “maintain production facilities in good condition and in a manner to prevent leakage or corrosion and to safeguard life, health, property, and natural resources.” Section 1777, subdivision (c) further requires facilities that are leaking to be repaired or replaced.

Given that CalGEM's objective is to minimize and eliminate health hazards to nearby communities, our primary objective is to detect leaks quickly, including those that are in-field and leaving the fence line, so that operators can respond and be required to take action immediately.

The objectives of this RFI are to:

- Identify constituents appropriate for leak detection
- Identify available detection systems, their enabling technology, and their performance
- Learn what is/isn't working from operators currently using existing fence line detection
- Identify appropriate data sharing systems and community notification in case of a leak

## **DISCUSSION QUESTIONS**

In your response, please feel free to respond to only one question or as many questions as you wish. Provide evidence, examples, research, and documentation supporting your responses and recommendations wherever possible.

### **Chemical Constituents for Leak Detection**

1. In a continuously operating detection system, what chemical constituent(s) would be appropriate to serve as a proxy for early detection of a leak?
  - If surrogate measurements are proposed, identify the relationship to the compound of interest.
  - What are the appropriate thresholds to trigger action by the operator for each constituent monitored given ideal/relevant siting of monitoring components?

### **Continuous Monitoring Leak Detection Technologies**

For the purposes of these questions, "fence-line" refers to the area of the property that represents the limit of the operation. The fence line separates the oil operation from people and property. In urban and suburban areas, the operation must be enclosed by a fence. Where there is not an enclosure, the fence line may be the property line. In-plant refers to an area of property within an operation that may be further enclosed by a fence or containment berm that can contain liquid spills and that contains production or separation equipment attendant to the oil and gas production operation. In-field refers to an area within an oil field that may contain oil wells, flowlines, and gathering pipelines and may contain tanks and other production equipment, production facilities, or plants.

2. For continuously measured in-field, in-plant or fence-line detection measurements, what technologies, methodologies, and tools enhance leak detection capabilities? What monitoring network infrastructure components should be considered?
  - What are some operational or technical limitations of instrumentation or sampling methodologies (ex: sensitivity, accuracy, cost, continuous vs semi-continuous)?
  - What are some positive and negative attributes of each detection method, monitoring approach, measurement, and alarm method for each target gas or pollutant?
  - What considerations should be made to determine proper location of in-field and in-plant detection equipment or fence-line systems and what are appropriate sampling locations near likely leak sources?

- What are some potential interferences and what is required in order to avoid false indications of leaks, particularly at the fence-line for high emissions events?
  - What considerations should determine which oil and gas fields require continuous leak monitoring detection systems?
  - Are there oil and gas fields that should be prioritized and if so, why?
3. What should be considered when developing measurement quality objectives?
- How should the system be designed for effective detection?
  - What type of instrument siting criteria should be used?
  - What should the time resolution of the equipment be?
  - How often should the instrumentation be calibrated?
  - What should the accuracy/precision/completeness requirements of the data be?
  - What other quality control/assurance requirements should be put in place?
4. In time periods when data cannot be collected by an in-field, in-plant, or a fence line monitoring system due to operational issues or maintenance, what technologies, methodologies, or tools can be used to continue monitoring?
5. Is there a benefit to having in-field data collected in addition to fence line monitoring or is fence line monitoring sufficient to identify potential leaks from wells?
6. For operators with existing fence line monitoring systems, what technology is being used? How have existing systems performed and what are the limitations, costs, and maintenance/calibration requirements?
- What is the existing alarm response protocol including any communication plan for notifying emergency responders, public authorities, the Division, and people in the community?
  - What are the existing alarm trigger points and threshold levels? Are these levels effective in avoiding alarms due to background levels while detecting meaningful leaks?
  - Do existing systems offer methods for providing public access to data generated?

- Are there challenges that have been encountered that should be considered when establishing either in-field, in-plant, or fence-line detection or monitoring?

### **Community Data Access and Notification**

7. How should the data be provided to the public? What systems are available to provide communities access to monitoring data?
  - What information should be provided to the public to help define the context of the measurements and make the data readily understandable?
  - What information should be provided to make it clear when concentrations are within normal ambient ranges and what constitutes concentrations that might indicate potential issues?
  - What means should exist for the public to provide feedback on the data display?
  
8. How should community notification be made if concentrations reach levels of concern? What are the specific thresholds that should trigger community notification?
  
9. What other questions or considerations are important for us to ask or be aware of related to leak detection?