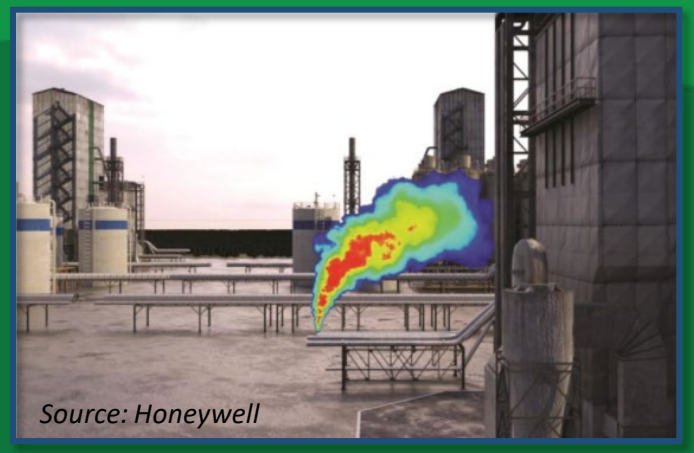
U.S. DEPARTMENT OF ENERGY
Fossil Energy and Carbon Management

Methane Mitigation Technology Program Updates

GTI CH_4 Connections

Jared Ciferno

October 4, 2023


Source: Honeywell


Source: NETL


Source: Konica Minolta

Methane Mitigation Technologies Program Overview

Methane Emissions Quantification

Direct and remote measurement sensor technologies and collection of data, research, and analytics that quantify methane emissions from point sources along the upstream and midstream portion of the natural gas value chain

Methane Emissions Mitigation

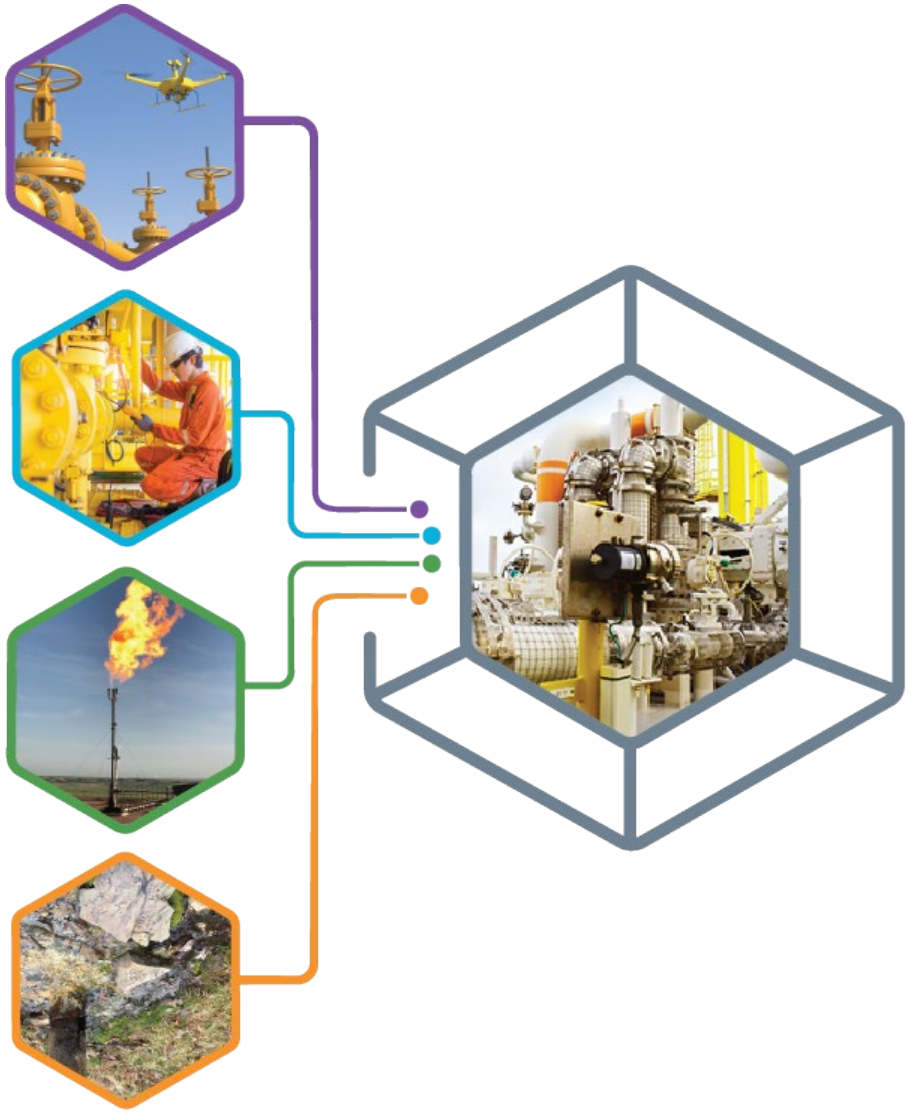
Advanced materials, data management tools, inspection and repair technologies, and dynamic compressor R&D for eliminating fugitive methane emissions across the natural gas value chain

Stranded and Underutilized Natural Gas Conversion

Technologies for conversion and utilization of natural gas to reduce venting and flaring of the resource

Undocumented Orphaned Wells Research

Developing tools, technologies, and processes to efficiently identify and characterize undocumented orphaned wells.



METHANE MITIGATION TECHNOLOGIES

Innovative Methane Measurement, Monitoring, and Mitigation Technologies (iM^4 Technologies)

Area of Interest 1

Mitigation of Methane Emissions from Upstream/Midstream Sources

Area of Interest 2

Surface-based Methane Monitoring and Measurement Network Pilot Demonstration

Area of Interest 3

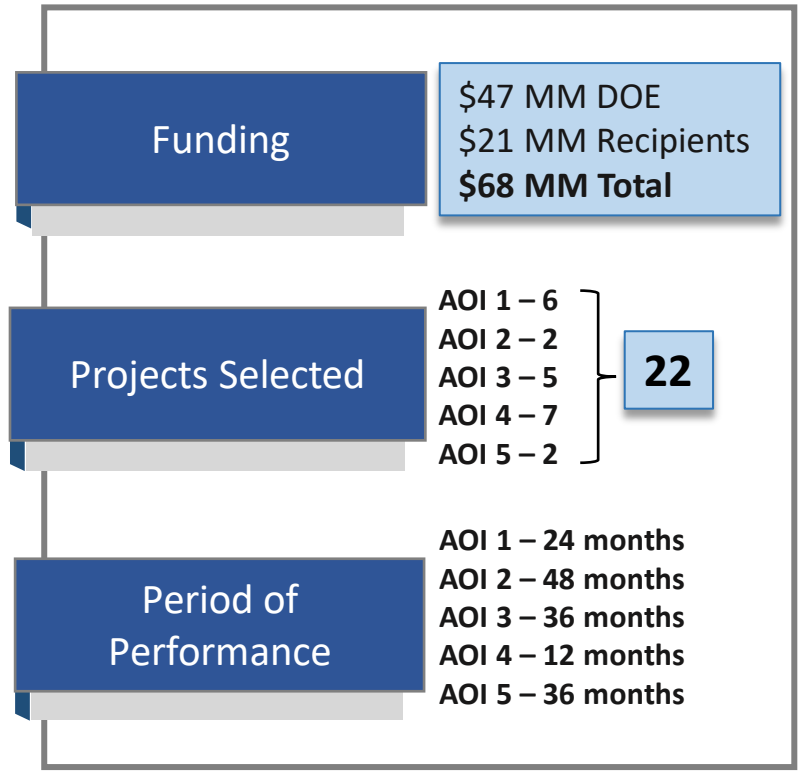
Basin-Specific Methane Emissions Inventory via Field Assessments

Area of Interest 4

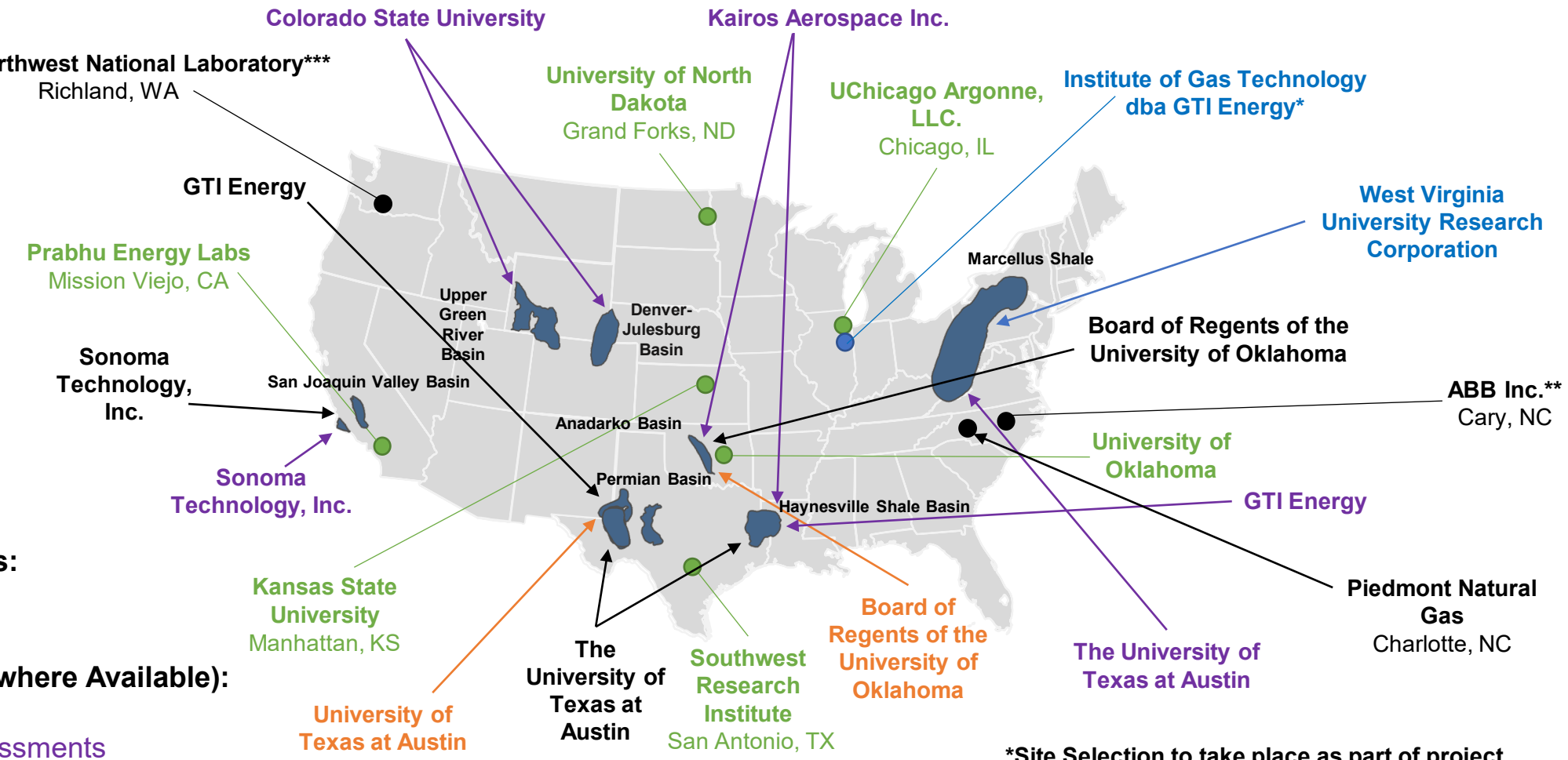
Integrated Methane Monitoring Platform Design

Area of Interest 5

Storage Tank Emissions Assessment and Quantification (STEAQ)



Selected Projects (iM^4 Technologies)



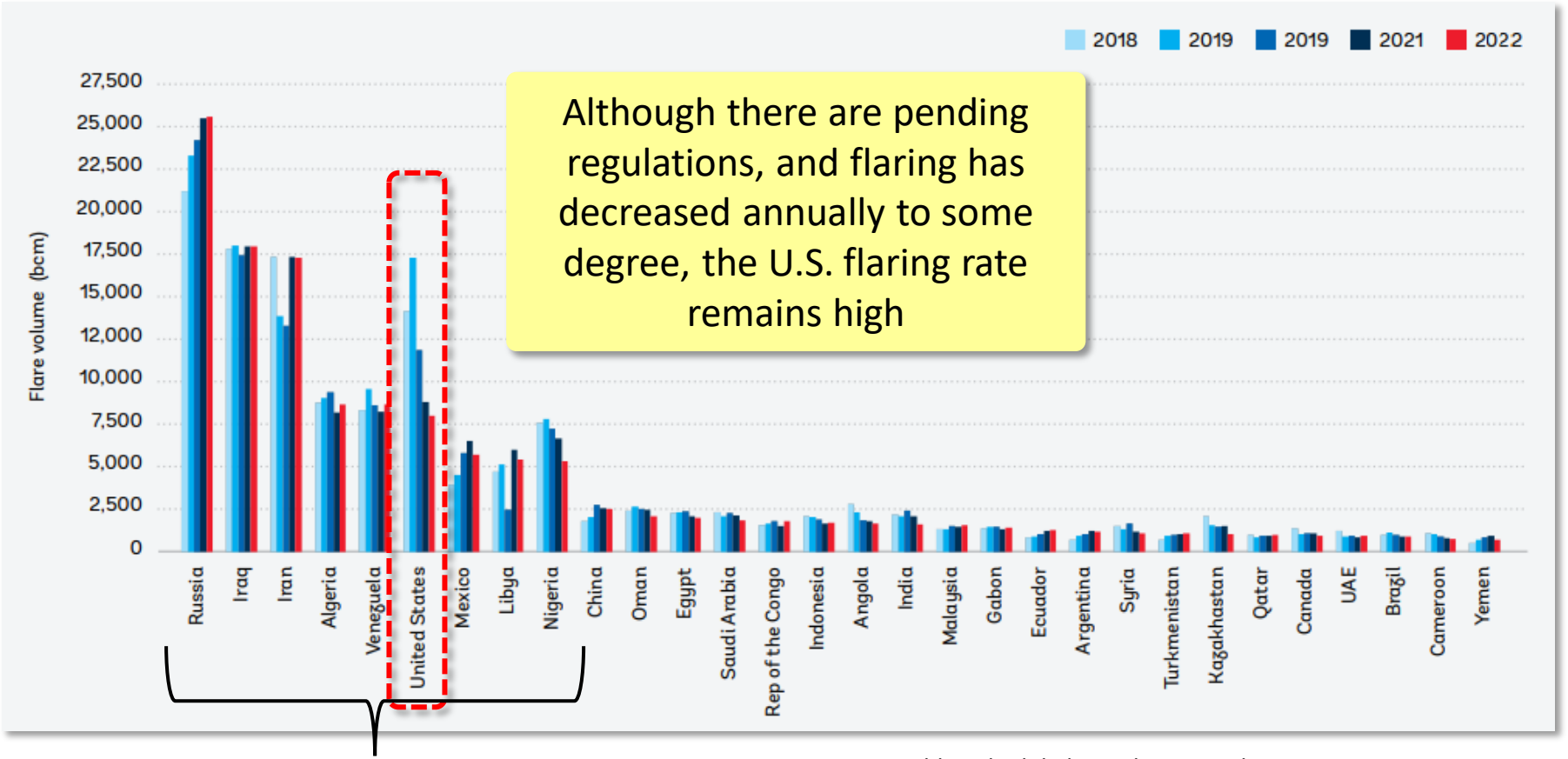
Applicant Locations:
Methane Mitigation

Project Locations (where Available):
Monitoring Network
Basin Methane Assessments
Integrated CH4 Monitoring Platform
Storage Tanks

***Site Selection to take place as part of project**
****Applicant info indicates project Congressional district in California, but no further information**
*****Project scope does not include specific location for testing**

Flaring Volumes in the United States Compared to the World

Flare volumes for the top 30 flaring countries from 2018 to 2022



Although there are pending regulations, and flaring has decreased annually to some degree, the U.S. flaring rate remains high

9 countries → 74% of all global flaring

Source: World Bank Global Gas Flaring Tracker Report, Mar 2023, https://thedocs.worldbank.org/en/doc/5d5c5c8b0f451b472e858ceb97624a18-0400072023/original/2023-Global-Gas-Flaring-Tracker-Report.pdf

Proposed regulations by the EPA and the BLM would require sale or alternate on-site uses of gas that is currently being flared and limit the overall volume of flaring at the federal level.

https://www.epa.gov/system/files/documents/2022-11/SAN%208510_OilandGasClimate_Preamble_Supplemental_20221107_AI.pdf

https://www.federalregister.gov/documents/2022/11/30/2022-25345/waste-prevention-production-subject-to-royalties-and-resource-conservation

Innovative Technologies to Eliminate Flaring from Oil & Natural Gas Production

AOI 1

Pilot Scale Field Validation of the Mitigation of Flared Natural Gas

Solicitation Number	DE-FOA-3017
Estimated Federal Funding	$30 MM
Anticipated Number of Awards	3
Award Size (DOE/Cost Share)	$10 MM/$2.5 MM
Period of Performance	Up to 60 months

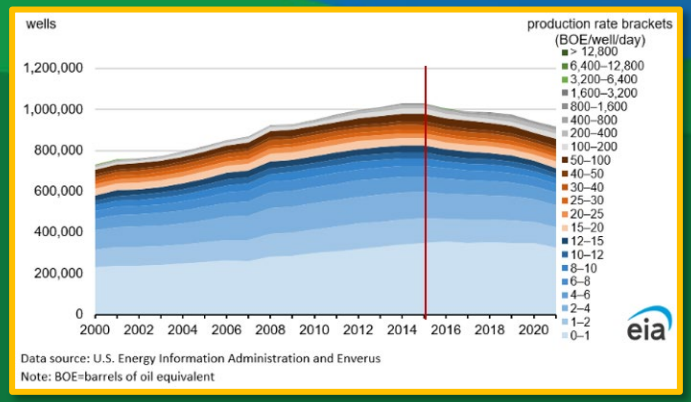
Schedule:

*Release mid-August 2023
*Selections February 2024
*Awards May 2024
*Early Results December 2025

U.S. DEPARTMENT OF ENERGY

Fossil Energy and Carbon Management

DOE EPA Collaboration
EPA Methane Emissions Reduction Program (MERP)



Methane Emissions Reduction Program

Financial and Technical Assistance

- **August 2022, $1.55 billion provided under the IRA to reduce methane emissions across the oil & natural gas industry**
  - Of this funding, **$700 million** is allocated specifically for **marginal conventional wells**
- **$500 Million allocated:**
  - Monitoring methane emissions
  - Reducing methane and other GHG emissions
  - Preparing / submitting GHG reports

Overview of Marginal Conventional Wells

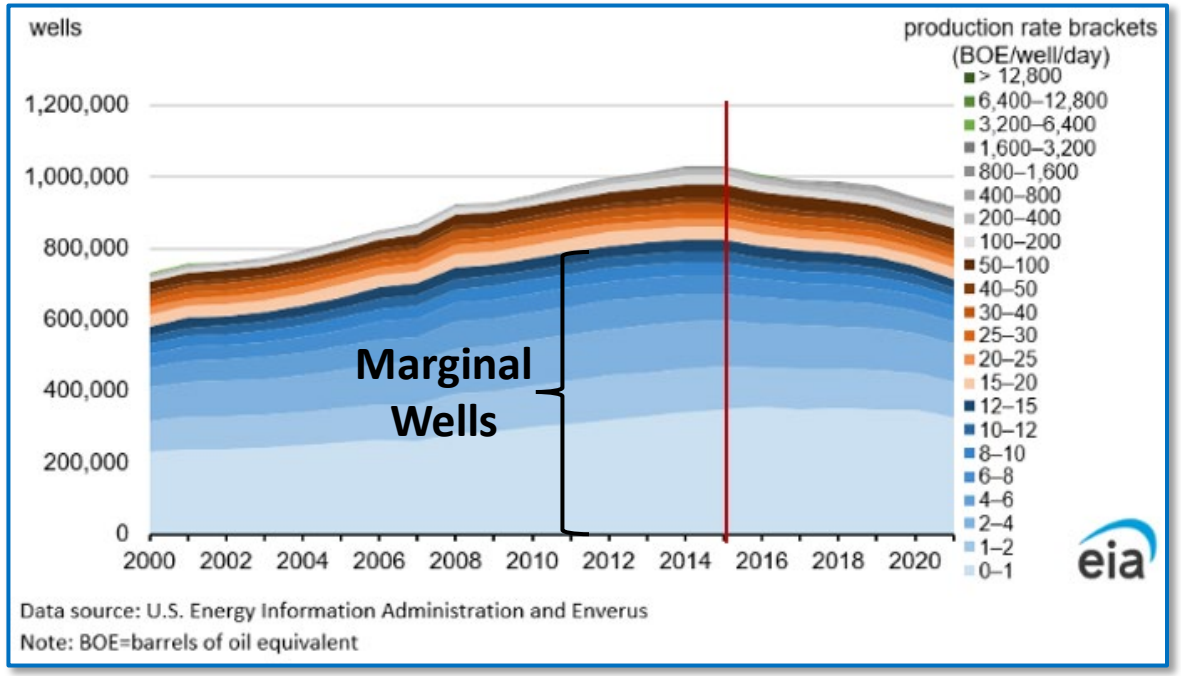
What is a marginal well?

A well is designated as a marginal well if it **produces less than 15 barrels of oil per day or 90 MCF per day of natural gas** for a period of at least a year[1] (industry accepted standard from IOGCC).

An estimated 565,000 low production well sites accounted for 81% of the total number of United States active onshore O&G well sites in 2019.[2]

Well Type	Oil Wells	Natural Gas Wells
Number of Wells	318,256	396,347
Percentage of Like Wells	79%	77%
Annual Production (MMbbls & BCF)	252	2,399
Percentage of Like Production	7%	7%

U.S. Oil and Natural Gas Wells by Production Rate, Release Date: December 29, 2022, https://www.eia.gov/petroleum/wells/



Number of Marginal Wells from 2000 to 2021

All marginal wells are represented by shades of blue

The share of United States oil and natural gas wells producing less than 15 BOE/d has remained steady at about 80% from 2000 through 2021.

1. Marginal and stripper wells: What tax breaks are available to low production oil and gas companies?, https://www.bakertilly.com/insights/marginal-and-stripper-wells-what-tax-breaks-are-available-to-low-production/
2. U.S. Oil and Natural Gas Wells by Production Rate, https://www.eia.gov/petroleum/wells/

Phase I: Marginal Conventional Well Plugging

PURPOSE

Identify and mitigate emissions from Marginal Conventional Wells

Methane Emissions Reduction Program (MERP) - IRA

NETL Technical Assistance

Up to $350M

- ALRD Issue: August 30
- Open Period: 30 Days
- Award: December 2023
- Type: Non-Competitive State Formula Grants

Funding Opportunity:

- DE-FOA-0003109
- Issued: 08/30/2023

Approximate Scope and Amounts:

- Phase I Funding: $350 Million
- Anticipated number of Primary Awards: 20-30 States
- Award Mechanism: Administrative & Legal Requirement Document (ALRD) (also referred to as “FOA”)
- Timeline: Awards by end of calendar year 2023
- ALDR Link:Fossil Energy and Carbon Management (FECM): Inflation Reduction Act (IRA) – Mitigating Emissions from Marginal Conventional Wells | netl.doe.gov

Thank you

Jared Ciferno
Senior Program Manager, Methane Mitigation Technologies
Office of Fossil Energy and Carbon Management| Office of Resource Sustainability