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

**U.S. DEPARTMENT OF ENERGY
UNDOCUMENTED ORPHANED WELL
RESEARCH PROGRAM**

Overview

The Undocumented Orphan Wells (UOWs) Program was formed through language in the Bipartisan Infrastructure Law (BIL) which was signed by President Biden on November 15, 2021. The BIL directs the U.S. Department of Energy to collaborate with the Interstate Oil and Gas Compact Commission and the U.S. Department of Interior to develop a program that reduces the impact of undocumented orphaned wells. The BIL allocated $30 million to the effort. The program establishes a consortium of National Laboratories dedicated to identifying and characterizing undocumented orphan wells across the United States and sharing the results with federal, state, and tribal partners.

An undocumented well is considered an orphaned well when the original operator is either unknown or insolvent. There is an estimated number of between 310,000 and 800,000 undocumented orphaned wells in the United States.[1] Hundreds of thousands of wells may leak unknown amounts of methane nationwide. The DOE effort, called the Consortium Advancing Technology for Assessment of Lost Oil & Gas Wells, also known as CATALOG, will assist in identifying and characterizing the environmental risk of undocumented orphan wells.

Resources from five DOE laboratories—the Lawrence Berkeley National Laboratory, Lawrence Livermore National Laboratory, Los Alamos National Laboratory, National Energy Technology Laboratory, and the Sandia National Laboratory—will be used to develop, test, and ultimately deploy these technologies. Based on the information gathered through the CATALOG consortium, state, tribal and federal agencies can prioritize newly discovered wells for plugging and remediation.
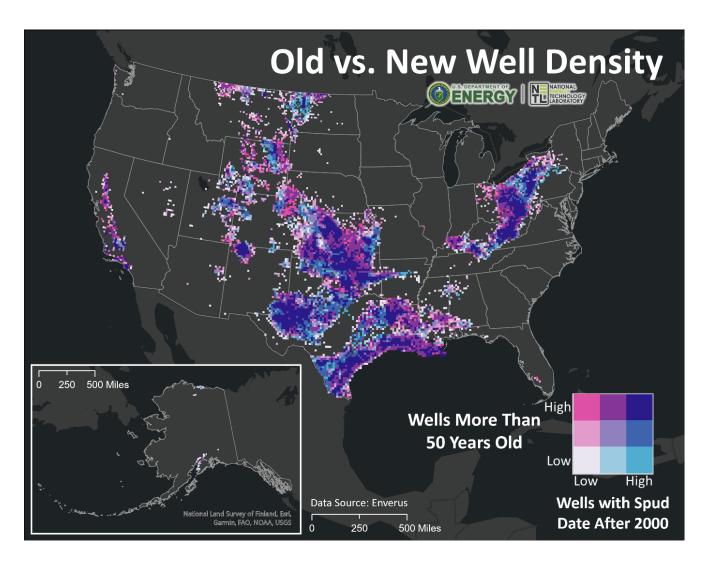
CATALOG Consists of Nine Focus Areas

- **Methane Detection and Quantification**: Evaluate available methane sensing technology for quantification of undocumented orphan well emissions.
  - Create a baseline evaluation of existing methane emissions.
  - Field demonstration of efficient, accurate and cost-effective technologies and methods.

- **Well Identification**: Advance the detection of UOWs by using multiple sensor packages and platforms for undocumented orphan well detection.

- **Sensor Fusion and Data Integration**: Develop sensor fusion hardware and software to simplify the detection of undocumented orphan wells in large multi-sensor data sets.

- **Well Characterization**: Provide cost-effective technology and techniques to characterize key well-plugging parameters before entering the wellbore.

- **Integration and Best Practices**: The efficient transfer of knowledge gained from the CATALOG program is needed to transition the work done in research and development into practice.

- **UOWP Data Management**: Undocumented Orphaned Well Program data and website maintenance. https://catalog.energy.gov/

- **Records Data Extraction**: Build online tools to extract data from well records using Artificial Intelligence and Machine Learning techniques. The program is currently testing a prototype in a collaborative effort with the Illinois State Geologic Society.

[1] IOGCC, 2021

- **Wells Database**: Interactive web-based nationwide well mapping interface. Utilizing a relational database to access/update primary well data sources (states, federal, tribes).

- **Field Teams**: Deploy existing and new technologies in field environments to test feasibility at scale while collecting needed well data. Partnering with early adopters to speed deployment of technology and techniques. Currently active in Osage County, in collaboration with the Osage Nation, among other locations.

The goal of DOE's undocumented orphan wells program is to establish a collaborative framework via the consortium, develop and test technologies and processes in the field, develop best practices for orphaned well identification and characterization, and identify and characterize these developed technologies in keeping with the climate goals of the United States.

Old vs. New Well Density

Wells More Than 50 Years Old

Wells with Spud Date After 2000

Data Source: Enverus