DOE Oil and Natural Gas Collaboration with States

Shawn Bennett
Deputy Assistant Secretary
Office of Oil and Natural Gas

February 17, 2020

Ground Water Protection Council
UIC Conference, San Antonio, Texas
Oil and Natural Gas Continue to Fuel the Economy

Key Elements:

- Resources
- Technology
- Infrastructure
- Supportive regulatory/policy framework
- Federal-State collaboration

Energy production (AEO2020 Reference case)
quadrillion British thermal units

Source: EIA, Annual Energy Outlook 2020
Expanded Energy Supplies for Economic Growth and Energy Security

The United States continues to produce historically high levels of...

- **Crude Oil**: U.S. crude oil production in million barrels per day.
  - Tight oil reaches 73% of U.S. crude oil production in 2050.

- **Natural Gas**: Dry natural gas production by type in trillion cubic feet.
  - Tight/shale gas reaches 91% of domestic natural gas production in 2050.

Tight oil development continues to be the main driver of total U.S. crude oil production.

Development of tight and shale resources continues to be the main driver of U.S. dry natural gas production.

Slower growth in domestic consumption of these fuels leads to increasing exports of...

- **Crude Oil, Petroleum Products**: U.S. petroleum and other liquids net exports in million barrels per day.
  - The United States becomes a net exporter of petroleum on an annual basis starting in 2020.

- **Liquefied Natural Gas**: Natural gas trade in trillion cubic feet.
  - Net exports of natural gas from the United States continue to grow because liquefied natural gas export facilities deliver domestic production to global markets.

Source: EIA, Annual Energy Outlook 2020
DOE’s Oil and Natural Gas Program

Mission: Maximize the value of U.S. oil and gas resources to the public and ensure their responsible development and delivery through policy, research, innovation, and outreach.

- Upstream Oil & Natural Gas R&D
- Natural Gas Infrastructure R&D
- Gas Hydrates R&D
- Natural Gas Import/Export - LNG
- Policy Analyses & International Relations
Engineered Water for Improvement of Oil Recovery from Fractured Reservoirs

Field Laboratory Locations

- First Ever Field Pilot on Alaska’s North Slope to Validate the Use of Polymer Floods for Heavy Oil
- Unlocking the Tight Oil Reservoirs of the Powder River Basin, Wyoming
- Improving Enhanced Oil Recovery Performance Through Data Analytics and Next-Generation Controllable Completions
- CO₂ Enhanced Oil Recovery Improvement in Conventional Fields Using Rich Gas
- Bakken Rich Gas Enhanced Oil Recovery
- Improving Production in the Emerging Paradox Oil Play
- Hydraulic Fracture Test Site II
- Field Pilot Test of Foam-assisted Hydrocarbon Gas Injection in Bakken Formations
- Chemically Enabled CO₂-Enhanced Oil Recovery in Multi-Porosity, Hydrothermally Altered Carbonates in the Southern Michigan Basin
- Marcellus Shale Energy and Environment Laboratory
- Improving Enhanced Oil Recovery Performance Through Data Analytics and Next-Generation Controllable Completions
- Hydraulic Fracture Test Site
- The Eagle Ford Shale Laboratory
- Tuscaloosa Marine Shale Laboratory

First Generation
New Phase
New Awards

U.S. DEPARTMENT OF ENERGY

5

States Leveraging Efforts to Enable Informed Regulatory Decision Making and Increased Transparency.

- Risk Based Data Management System (RBDMS). Over 20 states and the Osage Nation use RBDMS -- an integrated suite of data management tools -- for managing oil and gas regulatory data. Launched in 1992 with DOE support. With NorthSTAR, North Dakota is undertaking a major system upgrade, adapting new innovations previously developed for California WellSTAR. Texas LoneSTAR is under development.

- FracFocus.org. Jointly sponsored by the Ground Water Protection Council and Interstate Oil and Gas Compact Commission. 26 states require or allow operators to use this national registry for the public disclosure of chemicals used in hydraulic fracturing.

Ground Water Protection Council releases its Produced Water Report which examines current regulations, practices, and research needed to expand the use of produced water, a byproduct of oil and gas production, as a resource. June 2019.
Address the Energy Water Nexus

Advance transformational technology and innovation to meet the global need for safe, secure, and affordable water. By 2030:

1. Launch desalination technologies that deliver cost-competitive clean water.
2. **Transform produced water from a waste to a resource.**
3. Achieve near-zero water impact for new thermoelectric power plants, and significantly lower freshwater use intensity within the existing fleet.
4. Double resource recovery from municipal wastewater.
5. Develop small, modular energy-water systems for urban, rural, tribal, national security, and disaster response settings.

*White House Roundtable and Stakeholder Engagement.* Secretary Perry convened leading experts on water quality in 2018 to discuss competitive prizes to catalyze innovation in critical water issues and a request for information to solicit public comments on key water issues that could be tackled through prizes and challenges.
Developed by the GWPC and States in partnership with DOE, RBDMS is a suite of integrated modularized software products that assist states agencies in the effective regulation and oversight of oil, natural gas, injection and other facilities, and resource management.

**PRODUCTS**

- Core
- eForms
- Data Explorer
- GIS Interface
- RBDMS Wellbore
- Seismic Monitoring
- Field Inspection
- RBDMS Environmental
- WellFinder
- AOR
- Gas Storage
- RBDMS Classic and modules
- RBDMS Classic upgrading to RICS
- RBDMS .Net with 3.0 Online Forms and other modules
- RBDMS .Net and other modules
- eForms and other modules
- RBDMS 3.0
Policy Analyses & International Relations

National Petroleum Council

- Federally chartered **advisory committee** that advises the Secretary of Energy on matters related to oil and natural gas and the oil and natural gas industries
- **Established in 1946** at request of President Truman
- Since its establishment, the NPC has prepared over 200 reports for the Department