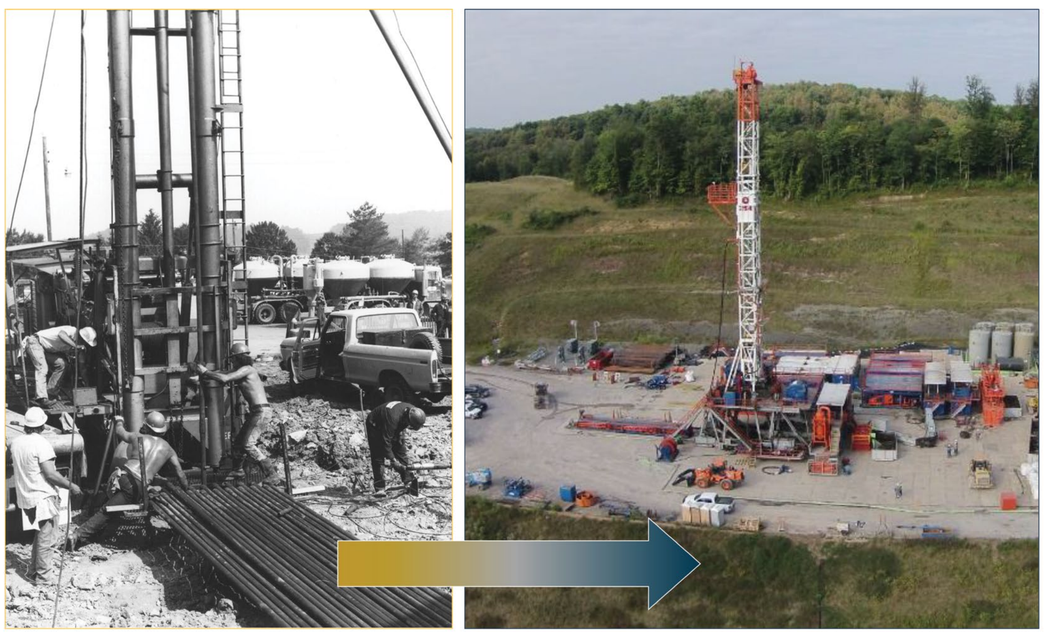
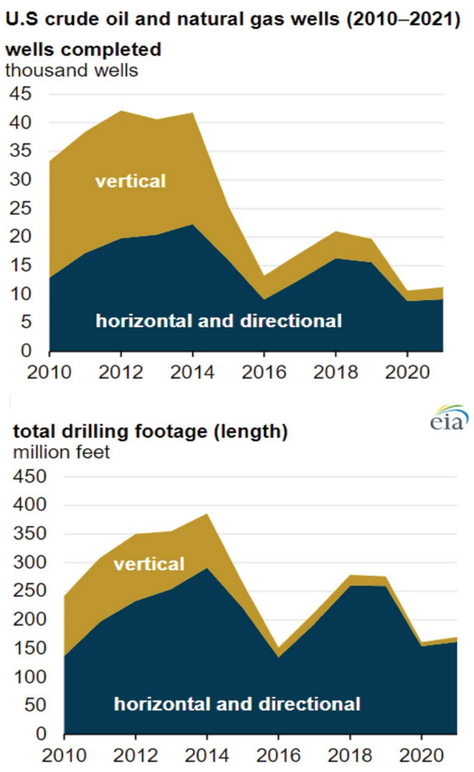
NETL ENERGY INNOVATIONS

NETL Research from the 1970s through the 1990s was pivotal in advancing technologies that enabled the subsequent shale gas revolution.

This foundational work contributed significantly to making the production of shale gas both practical and economically viable after 2005, leading to transformative changes in the U.S. energy landscape.



Matching technology to geology: leveraging scientific approaches to support reservoir characterization and analysis, field validating drilling technologies, and improving the viability of tight reservoir development while decreasing impacts to the environment.



- In 1975, NETL collaborated with industry to drill the first Appalachian Basin directional wells to tap shale gas and the first horizontal shale well to apply seven individual hydraulically fractured intervals.
- In 1976, NETL engineers patented an innovative early-stage directional drilling technology that laid the groundwork for modern drilling techniques that enabled operators to access larger radial expanses of shale strata.
- In 1985, NETL and partners conducted the Multi-Well Experiment (MWX) in Colorado, a pioneering effort in using micro-seismic mapping to monitor hydraulic fracturing in real time and improved the understanding of how hydraulic fractures develop underground. The legacy of the MWX continues to influence modern geophysical methods and hydraulic fracturing techniques.
- In the 1990s, NETL collaborated with various companies on demonstration projects that involved multiple wells with several hydraulically fractured zones. A notable highlight from this period was Mitchell Energy's pioneering first horizontal well, the C.W. Slay #1.

Per the U.S. Energy Information Administration, between 2010 and 2021, nearly 81% of well completions are now horizontal or directional. The U.S. crude oil production has more than doubled, and U.S. gross withdrawals of natural gas have increased 55% with 66% fewer wells completed and total footage has fallen by 30%.

DOE PROGRAM

Advanced Remediation Technologies

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