

Constraints to Natural Gas Production

Environmental constraints, including laws, regulations, and implementation procedures, can limit natural gas development and production on both federal and private lands. A study by Argonne's Environmental Science Division has identified and described more than 30 environmental policy and regulatory impediments to domestic natural gas production.

PROBLEM/OPPORTUNITY

As demand for natural gas in the United States continues to increase, resource and policy experts are questioning how domestic resources can meet this demand. An important component in an effort to increase natural gas production is



Natural gas well drilling site

to develop an understanding of the various constraints and approaches to mitigating those constraints. At the request of the U.S. Department of Energy (DOE), Argonne's Environmental Science Division (EVS) conducted a study to identify environmental policy and regulatory constraints to increasing natural gas production in the United States.

APPROACH

The EVS study builds on 1999 and 2003 studies by the National Petroleum Council (NPC) and the 2003 interagency study of access restrictions to resources on federal lands mandated by the Energy Policy and Conservation Act (EPCA). The study goes further than the NPC and EPCA studies, however, by considering not only access restrictions, but drilling, production, and transportation constraints. It also

identifies constraints that apply to both federal and nonfederal lands — onshore and offshore. Existing and possible future regulations developed and implemented by agencies, such as the U.S. Environmental Protection Agency (EPA) and the U.S. Army Corps of Engineers, which could impede increased natural gas production, are also included. While the study does not recommend policy options, it does provide a basis for a possible follow-up study that would suggest means of mitigating the constraints.

RESULTS

Environmental policy and regulatory constraints that currently affect natural gas exploration, production, and transportation include individual laws and regulations, presidential policies, and actions taken by implementing agencies. Laws, such as the Coastal Zone Management Act, whose consistency provisions can allow states to effectively prohibit development already approved by federal entities, and the Endangered Species Act, whose court-interpreted definitions extend protected areas, can limit development on both private and federal lands. Some rules, such as essential fish habitat regulations, with requirements that duplicate those of other federal regulations, can delay leasing or permitting decisions. Other rules can directly affect access and production.

For example, the Roadless Rule, which could prohibit road construction in roughly one-third (58.5 million acres) of the National Forest System, would deny access to an estimated 11 trillion cubic feet (TCF) of gas. Local enforcement agencies, through their own policies and procedures, can also constrain production. For example, federal land management agencies control development on their lands through land use planning documents. If these documents do not specifically provide for oil and gas

drilling, the agencies can prohibit such drilling until the plans are updated, which add to the time before extraction from a leased site can begin.

Compounding these problems are requirements for approval from other federal, state, and local agencies before a permit can be issued. As the number of permit applications increases, the ability to coordinate among the various agencies in a timely fashion diminishes, further increasing delays. This concern is particularly important for interstate natural gas pipelines, which are the backbones for transporting gas across the country. The Federal Energy Regulatory Commission (FERC) grants certifications to build new pipelines, but only after it has received approval from other federal, state, and local agencies that have environmental jurisdiction.

Congressional and presidential initiatives can also decrease access to natural gas. Congress has enacted, and presidents have extended, offshore drilling moratoria. These actions not only deny the extraction of natural gas, they deny federal agencies and others the ability to determine the extent of resources in waters off the coasts of most of the United States.

Additional environmental rules continue to be under development, and the potential impacts of these rules require active monitoring. For example, regional haze rules are designed to protect visibility in national parks and Wilderness Areas. These rules could apply to drilling and production equipment and affect the ability to produce natural gas in a timely and cost-effective manner. Other rules are developed to ensure the structural safety of gas pipelines. The implementation of these rules could disrupt supplies as companies are forced to meet certain inspection deadlines by using specific technologies that may not be available when needed.

An individual constraint can significantly impact natural gas production. For example, an estimated 60 TCF of natural gas is off limits because of Outer Continental Shelf drilling moratoria in the Eastern Gulf of Mexico, West Coast, and Atlantic Ocean. Other constraints may have less of an impact on an individual basis. When combined with other regulations or policies, however, they could be so costly or produce so many delays that small, independent operators may opt to leave the business.

FUTURE

The EVS study recommends that mitigation approaches to address these impacts should be developed so that the ability to extract and distribute gas to users in a cost-effective and environmentally protective fashion can be maintained, if not increased.

COMMUNICATION OF RESULTS

The results of this investigation are summarized in the Argonne report *Environmental Policy and Regulatory Constraints to Natural Gas Production*, (ANL/EAD/04-1, December 2004), which was reviewed by resource and industry experts within and external to Argonne and recently released by DOE's Office of Policy and International Affairs. DOE delivered copies of the report to Senate and House staff interested in domestic energy supply and demand. The U.S. House of Representatives, Committee on Resources, subsequently issued a news release based on this study, and several of the issues identified in the report were subsequently addressed in the Energy Policy Act of 2005.