PROGRAM facts

U.S. DEPARTMENT OF ENERGY
OFFICE OF FOSSIL ENERGY
NATIONAL ENERGY TECHNOLOGY LABORATORY

Strategic Center for Natural Gas

01/2002

GAS EXPLORATION, PRODUCTION, AND STORAGE

The purpose of the Natural Gas Exploration, Production, and Storage (GEPS) program is to partner with industry and others to develop environmentally friendly technologies that will steadily expand the nation's natural gas resource base. This partnership will ensure that adequate supplies of reasonably priced natural gas are available to meet expected demand.

The GEPS Program supports the development and deployment of a steady stream of products and technologies that will progressively expand the nation's recoverable resource base and improve the efficiency of the gas storage system. Program areas include Drilling Completion and Stimulation (DCS), Advanced Diagnostics and Imaging (ADIS), Stripper Well Revitalization, Secondary Gas Recovery, Methane Hydrates, and Gas Storage Technologies.

The approach of the program is to work with industry, academia, non-profit trade organizations, other government agencies, and national labs to: 1) identify and characterize resources with significant unrealized production potential; 2) define the barriers currently blocking their production and distribution to market; 3) develop and test the most promising new approaches to overcoming these barriers; and 4) conduct demonstrations to support the commercialization of the most successful technologies and products.

In the **Near Term** (to 2005), the challenge is to maintain or reduce gas prices while sustaining high production rates. Therefore, NETL supports R&D efforts that promise to:

- Enhance the efficiency of production from discovered reservoirs through advanced secondary gas recovery technologies, and effective transfer and application of existing technologies
- Arrest the premature abandonment of the nation's stripper gas wells through technologies developed under the Stripper Well Consortium
- Improve the deliverability of the nation's gas storage system through improved reservoir management practices for conventional storage and the development of advanced storage concepts to support new, high-volume gas demands

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STRATEGIC CENTER FOR NATURAL GAS WEBSITE

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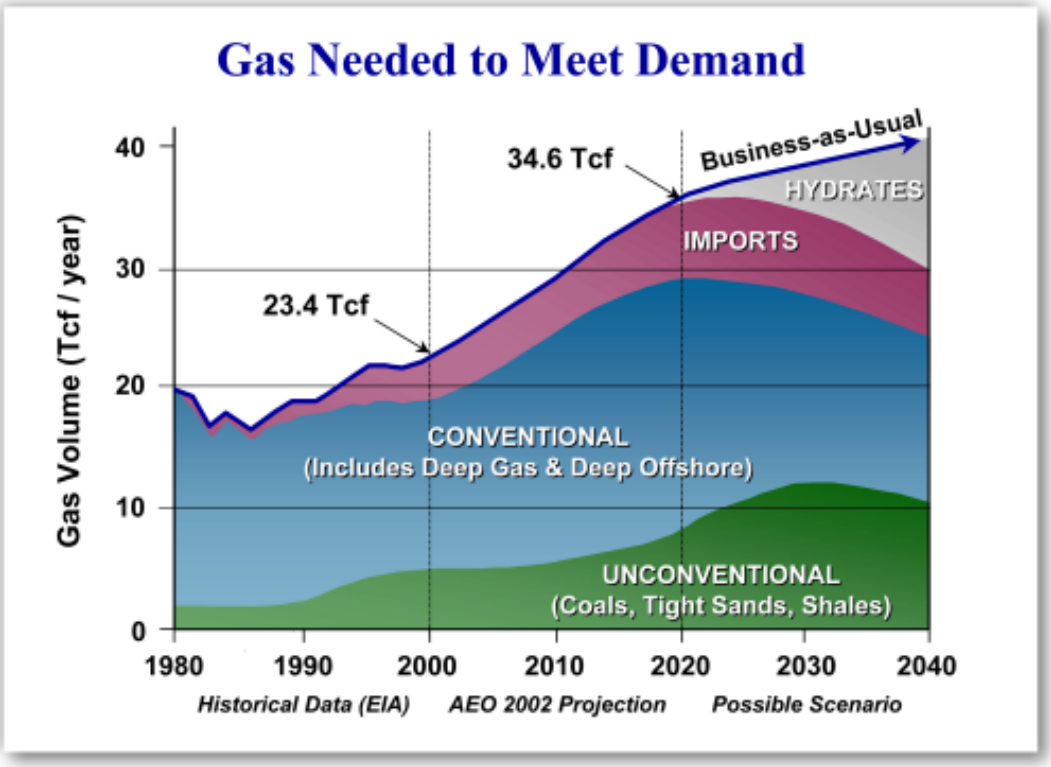
Gas Exploration, Production, and Storage

The **Mid Term** (2005-2015) energy supply picture calls for continued rapid expansion of gas use that will depend heavily on full exploitation of the nation's vast store of "unconventional" (marginally-economic and/or high-risk) resource base. Therefore, the GEPS program contains R&D, which will:

- Reduce drilling costs through technologies to increase rate of penetration, provide long-lasting multi-purpose bits, and lighter drilling rigs
- Provide critical information on unconventional resource volumes and characteristics through assessment of the distribution and potential of the nation's basin-centered and deep (>15,000 ft.) gas
- Deliver advanced exploration technologies for improved "sweet-spot" detection in low-permeability reservoirs featuring a tested, integrate system for natural fracture detection, prediction, simulation and characterization
- Improve the economics of marginal projects through improved completion and stimulation systems and demonstration of the benefits of horizontal drilling in fractured reservoir settings

Long Term (beyond 2015) gas supply is uncertain. However, it is clear that contributions from new sources for natural gas will be needed. NETL is working on these issues now, with particular focus on:

- Enable dramatic reductions in the costs and risks of deep drilling through improved, real-time, downhole telemetry systems, progressively higher-pressure and higher temperature MWD and LWD equipment, and casing-while-drilling systems
- Enabling the production of gas hydrates by investigating 1) the occurrence and nature of gas hydrates, 2) issues of sea-floor stability, 3) the interaction of methane hydrates and global climate, and 4) potential hydrate



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