

Meeting US gas demand will challenge contractors

John Kennedy, Contributing Editor

A DRAMATIC INCREASE in US demand for natural gas in the next decade may well be one of the biggest challenges industry has faced in recent years.

Natural gas use will increase in all consumption sectors, according to a study completed late last year by the **National Petroleum Council**.

"The Council believes that an unprecedented and cooperative effort among industry, government, and other stakeholders will be required to develop production from new and existing fields and build infrastructure at sufficient rates to meet the high level of demand..." said the report on the study.

Meeting this demand will be a significant challenge for US drilling contractors, both onshore and offshore.

NPC estimated that the "high level" of demand will be 29 tcf in 2010, up from 22 tcf in 1998. By 2015, US natural gas demand could reach 31 tcf.

The Council's report said the ability to meet that demand hinges on addressing these critical factors:

- Access to the resource base, particularly that portion on federal lands or in federal waters;
- Continued technical advances to handle more difficult conditions of temperature, pressure, and deep water;
- A large financial investment from both inside and outside industry;
- Availability of skilled workers at all levels;
- Reduction of development lead times;
- Changing customer needs;
- An expanded US drilling fleet to undertake a dramatic increase in drilling activity.

DEMAND FORECAST

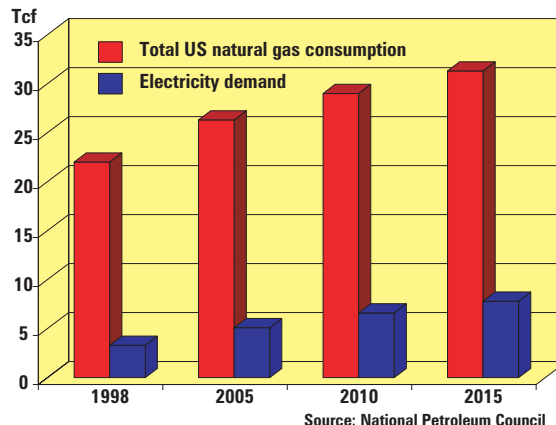
As demand moves to 29 tcf in 2010, all consumption sectors will grow. But the electricity generation sector will account

for almost 50% of the increase through the period, according to the Council report.

Natural gas is now the preferred fuel for new electricity generation facilities. Of nearly 250 new generation projects surveyed by the NPC, 98% were planning to burn natural gas.

For power projects, natural gas offers improved efficiencies, lower capital costs, reduced construction time, more expeditious permitting, and environmental compliance advantages, said the report.

Projected US natural gas demand



Future environmental regulations could further increase natural gas demand, said the report.

The study did not quantify the impact of additional regulation on demand, but the **US Energy Information Administration** estimates Kyoto-related regulations could raise demand by 2-12%; the **Edison Electric Institute** estimates it could increase its reference case demand by 10-22%.

The US natural gas resource base is up to this demand challenge, according to NPC. It concludes that, excluding Alaska, the US natural gas resource is 1,466 tcf, an increase of 171 tcf over the 1992 NPC estimate. NPC expects future demand to be filled with US production, increased imports from Canada, and a small but growing contribution from LNG imports.

Deepwater Gulf of Mexico and the Rocky Mountain region will contribute significantly to the new supply.

NPC expects US natural gas production to increase from 19 tcf in 1998 to 25 tcf in 2010. Deeper wells, deeper water and nonconventional sources will be important in adding new supply.

For example, deepwater production will increase from 0.8 tcf in 1998 to 4.5 tcf in 2010. Onshore production from nonconventional formations is expected to increase 50% to almost 7 tcf in 2010, much of it coming from the Rocky Mountain region.

THE DRILLING CHALLENGE

"The US drilling fleet must expand to undertake the dramatic increase in activity that will be required over the next decade to produce the additional supply," said the NPC report.

"The total number of oil and gas wells drilled per year (including dry holes) will have to double, from approximately 24,000 in 1998 to over 48,000 by 2015."

Even accounting for improved drilling efficiency, NPC estimates 2,300 active rigs (over 2,100 land rigs and 180 offshore) would be needed to achieve this level of drilling.

The oil service and supply sectors have been hit hard by the boom and bust cycles, said the report. Very few new onshore drilling rigs have been built since the mid 1980s. If the 5% per year historical attrition rate continues, most of the existing 1,700 onshore rigs would be retired by 2015 and 1,900 onshore rigs would have to be built, said the report.

Capital requirement for onshore rig construction is projected at \$12 billion.

Needed additions to the offshore fleet include 10 deepwater drilling rigs, 32 platform rigs, and 30 jackup rigs and barges. If all these additions were new rigs, capital requirement would be about \$7 billion, the study estimates.

TECHNOLOGY ADVANCES

The advance of technology has already played a big part in increasing the North American natural gas resource base. Key among these advances are improvements

NPC RECOMMENDATIONS

1. Establish an Interagency Work Group to work with industry, other stakeholders to formulate strategy and resolve issues;
2. Establish a balanced, long-term approach for responsibly developing the nation's natural gas resource base;
3. Drive research and technology development at a rapid rate;
4. Plan for capital, infrastructure, and human resource needs;
5. Streamline processes that impact gas development;
6. Assess the impact of environmental regulation on natural gas supply and demand;
7. Design new services to meet changing customer needs.

in 3D seismic data collection and interpretation, directional drilling and completion techniques.

Continued and increased funding of research and development is required, said the NPC. It cited a number of technologies that will have a significant impact on future gas production, including improved seismic techniques, deep wireline measurements, integrated well planning, and others.

BUBBLE TO BOTTLENECK?

Additional insight into the future of natural gas and how that future will affect drilling contractors was provided by a panel at the 2000 IADC Annual Meeting, 27-29 Sept in Houston.

In that session, **Bill Whitsitt**, President, Domestic Petroleum Council, said, "today's gas market is working." Drilling is up and gas production is beginning to respond to that increased activity, said Mr Whitsitt.

However, current administration energy policies are at odds with the government's environmental and other goals.

Noting that the NPC study recommended that an interagency work group be formed, Mr Whitsitt said that the IWG has been organized as recommended. But little action has been taken on other recommendations of the report.

Mr Whitsitt said members of the Domestic Petroleum Council feel that access to new areas is critical. Members also see more tightness in the market this fall, resulting in higher prices.

OTHER CHALLENGES

Drilling enough wells to find the gas needed won't be the only challenge. Expansion of the transportation and dis-

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The NPC report Reference Case indicates transmission and distribution companies will need to invest about \$123 billion through 2015 to fit the infrastructure to emerging demand patterns.

At the 2000 IADC Annual Meeting session, **Blaise Poole**, Manager Strategy & Business Development, **El Paso Energy**, said the eastern US will see the highest

growth in demand, "but all producing areas will need to increase production."

Capital expenditures for the lower 48 states will average about \$2½ billion/year, he said, similar to past annual investment.

Underground storage will have to be expanded, particularly in the Rocky Mountain and West Coast regions.

Access is a challenge for transmission and distribution, as well as for exploration and drilling, said Mr Poole. Development has encroached on existing rights-of-way, requiring that pipelines be reclassified, for example. Communities are also more resistant to new infrastructure and permitting is more restrictive.

Finding the \$123 billion needed to reshape the transmission and distribution network "is doable," said Mr Poole.

"It is unclear at this point who will accept and manage the risk involved in financing and building these new facilities," he said.

"But someone will." ■