

# **The United States Has Abundant Natural Gas Resources: It Lacks Only the Public Will to Develop Them**

**By**

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***UNITED STATES SENATE  
COMMITTEE ON ENERGY AND NATURAL RESOURCES***

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Thank you, Mr. Chairman. My name is G. Warfield “Skip” Hobbs. I am an independent petroleum geologist from New Canaan, Connecticut. I am also President of the Division of Professional Affairs of the American Association of Petroleum Geologists (AAPG), an international professional organization composed of more than 29,000 geologists, including 22,000 petroleum geologists in the United States. We are the scientists whose job it is to find the oil and natural gas, coal and other energy mineral resources that our nation depends on to fuel its economy.

The AAPG, founded in Tulsa, Oklahoma in 1917, was chartered to serve the geoscience profession through the identification and application of new science and technology for the discovery and production of hydrocarbon resources. The application of new exploration and development concepts and technologies has led to more efficient practices that have lowered the cost of produced energy, and significantly reduced the environmental consequences of energy production. The membership of AAPG is proud of their contributions in supplying the world with reliable and inexpensive energy, in developing new ways to do that job better, and in the education of new geoscientists to carry on the tradition.

I would also like to note that the AAPG is affiliated with the American Geological Institute. The AGI is an umbrella organization headquartered in Alexandria, Virginia that represents over 100,000 geoscience professionals. I want to acknowledge their assistance in preparing this testimony.

You did hear me correctly. I am not from Texas, and I do not work for “Big Oil”. I am a *bona fide* New Englander - raised in Connecticut, and educated at Yale College.

This gives me a slightly different perspective than most oil industry spokesmen. It is perhaps because I live in New England, at the end of the energy supply line, that I especially welcome the opportunity to testify here this morning.

### **Why We Have Convened Today**

This hearing has been convened to address an issue that directly impacts the continued economic well being and security of the United States.

Natural gas presently supplies about 25% of the nation's domestic energy requirements. Last year, gas consumption in the United States was approximately 22 Trillion cubic feet (TCF). According to the Department of Energy Information Agency (EIA), proven domestic gas reserves as of December 31, 1999 were 164 trillion cubic feet (TCF). At a consumption rate of 22 TCF/year, proved reserves represent only a 7.4-year supply. Gas demand is skyrocketing, particularly as a "clean" fuel for electric power generation. Recent studies by the EIA, Gas Research Institute, and the National Petroleum Council (NPC), indicate annual demand will grow to as much as 32 TCF over the next 15 to 20 years. In its 1999 study, the National Petroleum Council projected annual demand to reach 29 TCF as early as 2010. At 32 TCF/year consumption, currently proven reserves represent only a five-year supply.

Proven gas reserves in the United States have dropped 43% during the past 30 years, from 290 TCF at year-end 1970, to only 164 TCF now. In a report issued in late May, the EIA forecast that the nation's proved reserves would decline a further 2% during 2000, due to increased demand, and the very low drilling levels of the past few years.

This summer, instead of being injected at a normal seasonal rate into local storage sites in the Northern States for winter use, natural gas is firing electric power plants in the torrid Gulf Coast and Southwest to run air conditioners. Storage levels are well below where they should be this time of year. There may be no margin now for extended cold weather demand, or any significant gas production or deliverability disruption next winter.

The dynamics of the current supply/demand equation for natural gas have resulted in surging natural gas prices. Last year, the average NYMEX spot price at the Henry Hub was \$2.25/MMBTU. This year, the Henry Hub spot market price has soared over \$4.50/MMBTU. The NYMEX 12 and 24-month futures prices indicate that industrial gas consumers and traders alike believe that strong demand will continue to keep pressure on supply for the foreseeable future.

Some market analysts are predicting that a cold winter this year could result in a gas price spike over \$7.00/MMBTU. At current prices, residential gas consumers can expect a \$200 to \$300 increase in their winter gas-heating bill; and some can ill afford that cost.

The public must be made aware of the seriousness of the situation, and prepared for significant price increases and possible regional gas curtailments.

## **Gas Supply**

The Senate Energy Committee's principal question today is, do we have enough natural gas to meet future demand, and where will we get this gas?

As the spokesman for the geologists who assess the nation's fossil fuel resources, I can unequivocally answer in the affirmative. Yes, the United States has abundant natural gas resources to fuel the country well into the 21<sup>st</sup> Century.

It is my understanding that the Senate Energy Committee has received copies of the most recent resource assessments of the US Geological Survey (USGS), Minerals Management Service (MMS), EIA, and the National Petroleum Council. The AAPG has not made a recent independent natural gas resource assessment of its own. I would like to point out however, that many of the geoscience professionals that prepared the resource reports for the organizations just cited, are members of the AAPG. For example, the Director of the United States Geological Survey, Chip Groat, is a long-standing, and highly respected AAPG member. The AAPG Committee on Resource Evaluation was formed specifically to assist the USGS and MMS in the assessment of the undiscovered oil and gas resources of the United States. Our Resource Committee has recommended and evaluated methodologies, identified experts for each sedimentary basin, and has reviewed the resource estimates of the USGS and MMS.

The 1999 National Petroleum Council (NPC) study concluded that the United States has a remaining gas resource base in the Lower 48 States of 1,466 TCF. It should be noted that only 157 TCF, or just 10% of the identified resource, is considered proven. There are an additional 313 TCF in Alaska; however, this gas is useless without a pipeline to the Lower 48 markets. The total identified USA gas resource, including Alaska, is a whopping 1,779 TCF. Even at 32 TCF/year consumption, there is more than a 50-year supply. Cumulative domestic production over the past hundred plus years is estimated to be about 890 TCF.

## **Where is the Gas?**

There are significant remaining known gas resources in the traditional onshore gas producing areas of the Gulf Coast, West Texas and in the Mid-Continent. However, these areas are now intensely drilled and blanketed with 3-D seismic, and are not yielding the large new discoveries required to replace the nation's depleting proven gas reserves. Major oil companies and large independents are exiting onshore exploration and moving their operations into the sparsely drilled waters of the Deep Gulf of Mexico, and overseas.

Many small oil and gas companies, and the majority of the independent prospect originators, many of whom are AAPG members, are having trouble finding partners, as

well as the capital, to drill the smaller reserve exploratory prospects that remain in the traditional gas producing areas. Higher oil and gas prices have significantly increased the drilling rig count; however, over 90% of the current drilling activity is to develop known reserves.

The AAPG concurs with the 1999 NPC report conclusion that the most prospective areas for major new gas discoveries are on public lands in the Rocky Mountain sedimentary basins, offshore in the Gulf of Mexico, in the Eastern Gulf of Mexico, and on the Atlantic and Pacific OCS. Despite the huge potential of these areas, Federal law presently prohibits exploration on the Atlantic and Pacific OCS, and in the Eastern Gulf of Mexico. Access to much of the remaining resource potential of the Rocky Mountain basins is restricted or closed.

Exhibit 1 is a map from the NPC report that shows the resource potential of the Lower 48 public lands that are closed and/or subject to severe restrictions. The total estimated gas resource of these areas is 213 TCF, or a nine-year supply at current rates of gas consumption. It is likely that with further exploration, these resource figures would increase significantly.

The total area of the U.S. Federal offshore, including Alaska, to the 200-mile economic limit, is about 2 billion acres. Only 2 percent has been leased. In its 1995 study, the Minerals Management Service assessed a mean undiscovered recoverable resource of 46 billion barrels of oil and 268 trillion cubic feet of natural gas in the Federal OCS. This is 2.5 times the offshore reserves found to date.

The NPC map does not include Alaska. In its 1995 National Oil and Gas Assessment of Onshore Federal Lands, the USGS estimated that the Northern Alaska province accounts for more than half of the of the undiscovered conventional gas assessed on onshore Federal lands. As previously stated, Alaska's total gas resources were cited in the NPC report as 313 TCF. This represents a 14-year supply!

There is a huge domestic gas resource, yet access to much of this remaining resource is either closed, or so restricted that development is not economic.

Chevron Corporation, for example, has a 1 TCF dry gas discovery in the Eastern Gulf offshore Florida. The company has been prohibited from developing this giant gas field by federal and Florida State regulators.

Not included in the gas resource figures, is the potential of shallow gas hydrates on the Outer Continental Shelf. Although we do not presently have the technology to recover them, gas hydrates are another major future potential energy resource. In its 1995 assessment of gas hydrate resources for the Atlantic OCS, the USGS estimated a potential resource in the range of 6,000 to over 100,000 TCF. These figures dwarf the NPC conventional resource estimate. Coalbed methane, another unconventional gas resource, which was included in the NPC study, has risen from nil to about 6% of domestic gas

supply over the past 15 years. I firmly believe that gas hydrates will, like coal seam methane, also be commercialized, probably within a decade.

### **The Need to Provide Access to Gas Resources on Public Lands**

Natural gas is cited as a cleaner, more environmentally benign, energy resource to fuel our economy. However, the public has not had the will to permit access to the huge gas potential of its undeveloped public lands. Additionally, a federal regulatory maze has been created that discourages domestic petroleum exploration operations and investment.

As a result of more than a decade of US neglect in implementing a comprehensive National Energy Supply Policy, and the environmental protection priority of the public, gas demand has finally caught up with, and probably overtaken, peak demand supply. This situation cannot be blamed on “Big Oil and Gas”, nor the distribution companies.

The United States cannot depend on gas imports from OPEC to meet rising demand. Natural gas is a North American commodity that is locked into a pipeline infrastructure. As much as 14% of supply will come from Canada over the next 15 years. Imports from Mexico will be minimal. The 1999 NPC study projected LNG imports of less than 1% of supply through 2015. Accordingly, the United States must develop its own gas resources to meet future demand. This requires access to the public lands that are deemed most prospective for natural gas.

Conservation and renewable energy resources are cited by the opponents of access to public lands as the solution to our energy requirements. They are out of touch with reality. Energy conservation has been effective in certain areas, particularly in regard to increased mileage per gallon for automotive engines. Nevertheless, demand for transportation fuels continues to rise. Despite DOE expenditures of over \$9 billion since FY 1980 on solar and other renewable energy research, these alternative energy resources still provided only 0.08% of primary energy supply in 1999, exclusive of traditional hydroelectric power (4.5%). Research must continue on alternate energy resources. The fact is, however, that our economy will continue to depend on fossil fuels for the majority of the nation’s primary energy requirements for many more decades.

Improving access to natural gas-prospective public lands, is the most practical way to assure that the nation has the natural gas it requires to fuel our economy, and to keep its citizens warm in the winter and cool in the summer.

### **Environmentally Responsible Resource Development**

It is the firm belief of the AAPG that development of the natural gas resources in environmentally sensitive areas of the Rocky Mountains, the North Slope of Alaska, the Eastern Gulf of Mexico, and the Pacific and Atlantic OCS, can be done in an environmentally responsible manner, with no lasting harm.

To illustrate that drilling and production can take place in a safe and environmentally sensitive manner; we can look to the East Coast of Canada. For more than thirty years, offshore exploration, and now production, have calmly co-existed in the Canadian Maritimes with tourism and commercial fishing, in a cooperative, and even supportive environment, for the betterment of all concerned communities. More than 300 exploratory wells have been drilled within the offshore outer continental shelf waters of the Canadian Atlantic. At least 12 trillion cubic feet of natural gas and 2 billion barrels of oil have been discovered so far. More than 125,000 barrels of oil and 400 million cubic feet (MMcf) of natural gas are being produced per day within the prime commercial fishing waters and the pristine tourist coastlines of Eastern Canada. Much of this new gas is now flowing to New England.

There is a major new deep Jurassic Age reef trend discovery offshore Nova Scotia. If successfully delineated, this new field alone could add an additional 400 MMcf/day gas production. Incidentally, a former executive officer of the AAPG, a Canadian, originated the new gas discovery.

Petroleum geologists of the AAPG believe that the same types of oil and gas accumulations that exist in the Eastern Canadian offshore, may extend south along the U.S. Atlantic Coast, from George's Banks to the Carolina Trough, a distance of almost 1,000 miles

The Canadians have also successfully developed and have been producing natural gas from their portion of Lake Erie since the 1950's. The US portion of Lake Erie has a thicker sedimentary section, and would likely be more productive. New Yorkers could use the gas. United States law, however, prohibits exploration in the Great Lakes.

Brazil is successfully exploiting its substantial Atlantic OCS petroleum resources in an environmentally responsible manner. In doing so, it has become the world leader in ultra-deep water production technology.

New technologies also now permit oil and gas development in a way that minimizes onshore surface disruption in environmentally sensitive areas. The British, for example, who are even more fussy about open spaces than we are, agreed to develop the giant Wytch Farm Oil Field under Poole Harbour, smack in the middle of the most heavily visited coastal zone of the South of England. At the Wytch Farm development, long reach deviated wells are drilled in a radial pattern from a camouflaged central well pad onshore, to locations up to seven miles out into scenic Poole Bay.

Opponents to petroleum development cite old operating practices, and prior environmental abuses, that are simply out of touch with modern reality. Just like the Canadians, British, Brazilians, Norwegians, Qataris, Thais, Australians, and many other petroleum producing nations, Americans likewise can develop their offshore and onshore energy resources in environmentally sensitive areas in a safe and rational manner. To believe otherwise is simply inconsistent with what is being done every day all over the world.

As someone who vacations on the New England coast, and loves to sail and fish in Long Island Sound, and in the Gulf of Maine, I have a vested interest in the environmental consequences of petroleum operations in the Atlantic OCS. I can truthfully testify that I have no fears, and am confident that the environmental risks of exploring for oil and gas offshore New England are minimal, and acceptable. Experience in the Gulf of Mexico has demonstrated the best fishing is actually right around the artificial reefs created by offshore oil and gas production platforms.

## **GAS SUPPLY POLICY RECOMMENDATIONS OF THE AAPG**

The petroleum industry can and will be able to provide the gas supplies needed to maintain the economic stability and security of the United States. However, to do so, the nation must address three critical issues. These are: **1) Improved access to public lands; 2) Reform of the regulatory process; and 3), Fairer tax treatment to stimulate capital formation and investment.**

### **1. Public Lands Access**

In regard to the public lands access issue, the AAPG recommends the following:

- Lifting of the Moratorium on OCS Exploration and Development in areas where it exists today.
- Opening of the Eastern Gulf and Atlantic Margin OCS to Area-wide Leasing.
- Reform of the Dept. of Interior Policy regarding access to public lands in the Rockies.
- Opening the 1002 Area of the Arctic National Wildlife Refuge to Exploration.
- Amendment of the Federal Antiquities Act to prevent its misuse in restricting access to public lands.
- Balancing the needs of all stakeholders in shaping public lands policy.
- Assurance that there is no net loss of state and private land in creating new land restrictions.

### **2. Regulatory Reform**

Reforms are needed to streamline the federal petroleum regulatory and permitting process to stimulate natural gas exploration and production. Rules and regulations must be based on scientific reality, not on popular environmental misconceptions. The

practical economic impact of all regulations must be considered. In this regard, the AAPG recommends the following:

- Reform the Clean Water Act and Endangered Species Acts, especially those sections that pertain to wetlands.
- Reform the procedures used by the Department of the Interior in managing energy resources on public lands in the Rocky Mountain region and elsewhere.
- Limitation of the extensive delays of the permitting process.
- Limitation of the ability of the EPA to regulate drilling muds and hydraulic frac fluids as “hazardous wastes”.

### **3. Tax Reform**

The independent petroleum industry has historically drilled over 80% of the nation’s oil and gas wells. However, over the past 15 years, low oil and gas prices, changes in the tax code, and the attraction of alternative higher yielding investment opportunities, has resulted in capital starvation for independents. Petroleum exploration and production are extremely capital intensive and high risk. In order to get the independents back to work finding and developing the nation’s gas resources; we must stimulate capital formation.

Technology and dot.com stocks have peaked. With high gas prices, investors in New York and elsewhere are now beginning to look for direct investment opportunities in natural gas. However, most non-industry investors are deterred by the liability exposure of a direct working interest in a gas well. They would prefer to be limited partners, and be rewarded through tax benefits for assuming exploration risk to drill for a depleting asset.

The role of taxation is critically important to the development of oil and gas resources. However, the U.S. Tax Code currently contains provisions that serve as major disincentives to petroleum investment. While we currently enjoy significant budget surpluses, Congress can afford to reform the tax code.

The AAPG recommends the following tax reform legislation to stimulate the investment needed to increase domestic natural gas supply.

- Restoration of the write-off of intangible drilling costs for the passive investor. This tax deduction was eliminated by the Tax Reform Act of 1986, and effectively wiped out the major source of drilling capital for small independent oil and gas exploration companies. Billions of dollars of new drilling capital would quickly become available to the industry through restoration of the Intangible Drilling Cost (IDC) tax deduction for passive limited partnership investors.
- Elimination of the onerous Alternative Minimum Tax.

- Allow expensing of delay rentals in the year incurred, not capitalizing them as currently required.
- Allow expensing of geological and geophysical costs in the year when the costs are incurred.
- Make permanent the suspension of the net income limit for percentage depletion on marginal properties.
- Raise the depletion allowance provision to previous levels.

## CONCLUSION

The United States has abundant natural gas resources. However, absent access to these resources on public lands, and regulatory relief and tax incentives to stimulate domestic petroleum exploration and development, the nation will face a serious gas supply shortage.

The AAPG recommends that Congress focus its attention on the energy issue without further delay. Presidential candidates also need to respond realistically to the energy crunch, because high prices and supply disruptions will be front-page news in November. Politicians must also realize that kicking the petroleum industry in the shins and shaking fists at OPEC, makes for good press, but is no solution to the pending natural gas supply crunch.

A National Energy Policy that balances the interests of all stakeholders, should be developed and implemented as quickly as possible. If this is not done, and soon, some Americans will truly run the risk of “freezing in the dark”. Time is running out! The proverbial “doo doo” is hitting the fan as we speak.

Thank you for giving the American Association of Petroleum Geologists the opportunity to present to the Senate Committee on Energy and Natural Resources, the views of the professionals whose job it is to find the nation’s natural gas resources. The full text of the Position Papers of the AAPG on energy supply and public land withdrawal policy are attached as exhibits to this testimony.

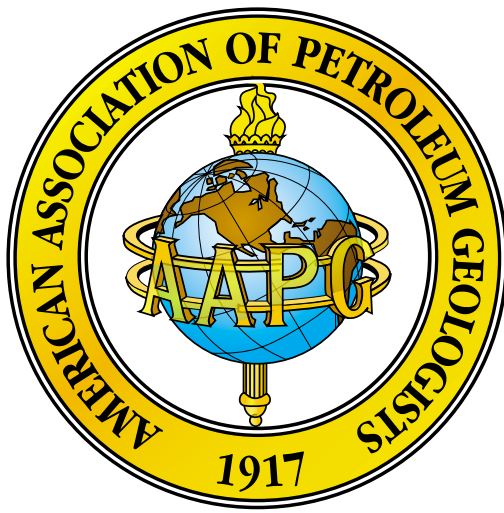
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### ***About the Speaker:***

G. Warfield “Skip” Hobbs is the Managing Partner of Ammonite Resources, a petroleum consulting firm that Hobbs founded in 1982 in New Canaan, Connecticut. He received his BS. Degree in Geology from Yale College in 1969, and an MSc. Degree in

Petroleum Geology from the Royal School of Mines, Imperial College, London. Prior to forming his consulting company, Hobbs worked internationally as an exploration geologist for Texaco and Amerada Hess. Mr. Hobbs was the 1993-1995 Secretary of the American Association of Petroleum Geologists, and is the current president of the AAPG Division of Professional Affairs.

Any questions or comments regarding this testimony can be directed to Skip Hobbs through his firm's website at: [www.ammoniteresources.com](http://www.ammoniteresources.com).



# THE UNITED STATES HAS ABUNDANT NATURAL GAS RESOURCES

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## *QUESTION:*

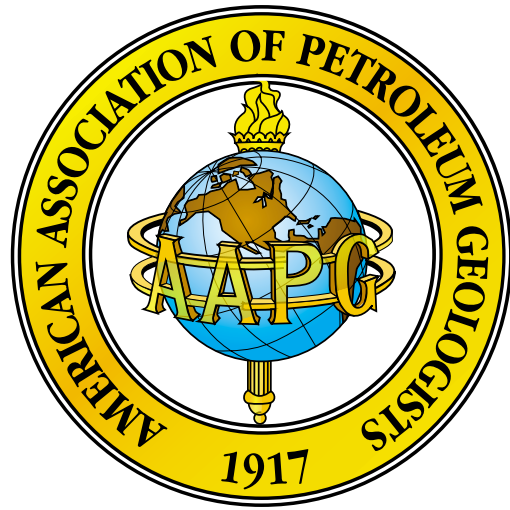
Why then, do we face a potential natural gas supply crisis?

## *ANSWER:*

The United States has lacked

- a) the will to access its gas resources on public lands; and
- b) regulatory and fiscal regimes that stimulate domestic gas production.

# **GAS SUPPLY POLICY RECOMMENDATIONS**



## **A. IMPROVE PETROLEUM INDUSTRY ACCESS TO PUBLIC LANDS**

- **Lift the Moratorium on OCS Exploration and Development**
- **Open the Eastern Gulf and Atlantic Margin to Area-wide Leasing**
- **Reform Dept. of Interior Policies regarding access to public lands in the Rockies and the permitting process.**
- **Open ANWR Area 1002 to Exploration**
- **Amend the Federal Antiquities Act to prevent its misuse in restricting access to public lands.**
- **Balance the needs of all stakeholders in shaping public lands policy**
- **Assure that there is no net loss of state and private land in creating new land restrictions**

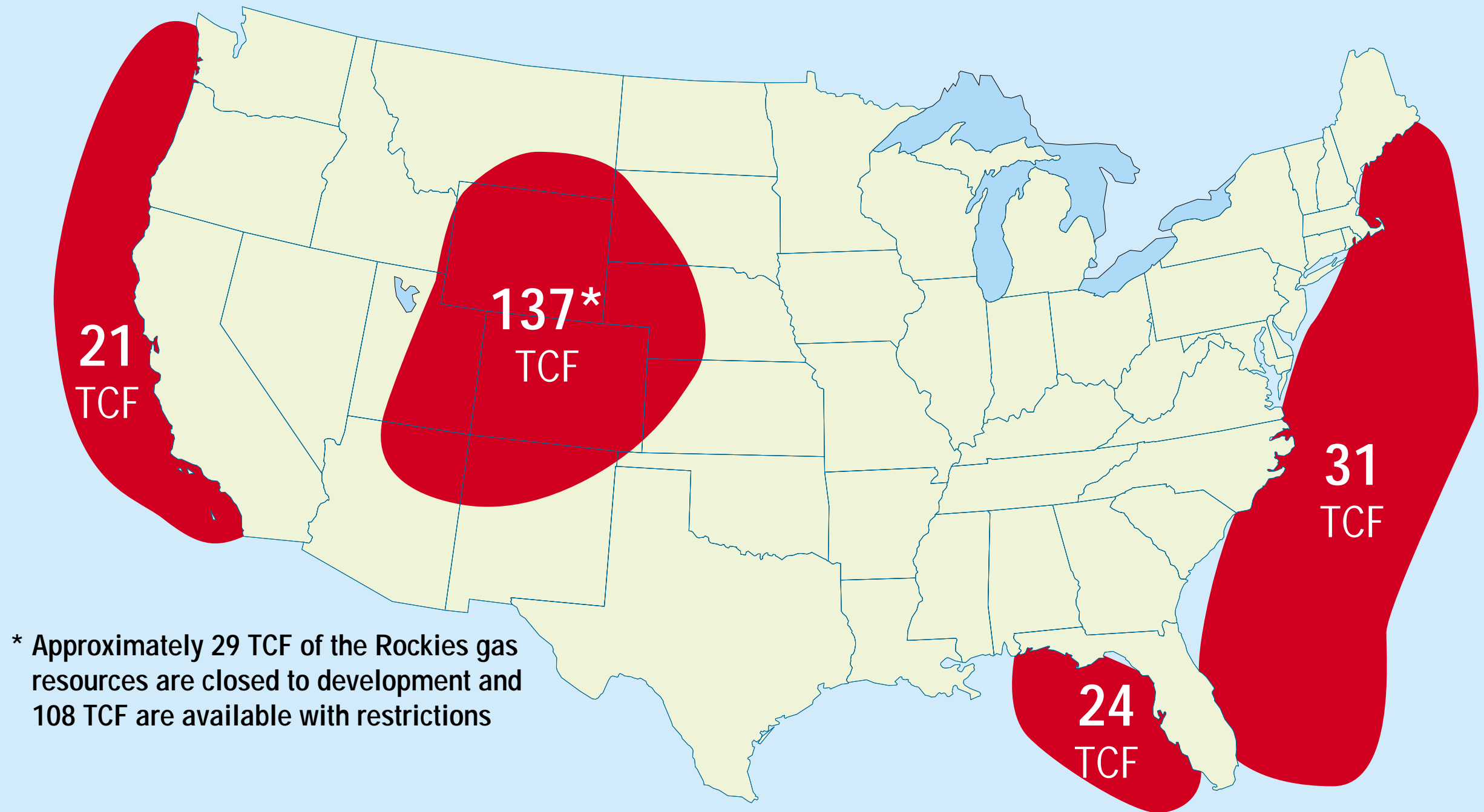
## **B. STREAMLINE THE REGULATORY PROCESS**

- **Reform the Clean Water Act and Endangered Species Acts (especially those sections that pertain to wetlands)**
- **Limit the ability of the EPA to regulate drilling muds and hydraulic frac fluids as “hazardous wastes”**
- **Limit the extensive delays of the permitting process**

## **C. TAX REFORM**

- **Restoration of the IDC Deduction for Passive Investors**
- **Elimination of the Alternative Minimum Tax**
- **Expensing of geological and geophysical costs in year incurred**
- **Expensing of Delay Rentals in year occurred**
- **Permanent suspension of net income limit for percentage depletion on marginal properties**
- **Raise the Depletion Allowance provision to previous levels**

## Lower 48 – Natural Gas Resources Subject to Access Restrictions



Significant amount of resource is subject to access restrictions

National Petroleum Council, December 1999